

**LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2022**

No. 47

Introduced by Council Members Borelli, Gennaro, Kallos and Louis (by request of the Mayor).

A LOCAL LAW

To amend the New York city fire code, in relation to the advancement and regulation of energy storage systems and the adoption of current fire safety standards as incorporated in the 2015 edition of the international fire code.

Be it enacted by the Council as follows:

1 Section 1. Legislative intent. This local law arises from the mandate of section 29-104 of the
2 administrative code, which requires the fire commissioner to review the latest edition of the
3 international fire code and submit to the city council such proposed amendments to the New York
4 city fire code as the fire commissioner determines should be made. Section 29-104 was enacted by
5 local law 26 of 2008, which adopted a new fire code for New York city based on the international
6 fire code, with amendments to reflect the unique New York city environment. The first code
7 revision cycle was completed with the enactment of local law 148 of 2013, commonly referred to
8 as the 2014 fire code. This local law completes the second code revision cycle and amends the
9 2014 fire code to incorporate new fire safety standards and technologies adopted or reflected in
10 the international fire code since the 2009 edition that was the basis for the 2014 fire code. The fire
11 code amendments enacted by this local law include a comprehensive revision of the requirements
12 for energy storage systems, with the goal of establishing a regulatory framework that opens the
13 door to the use of lithium-ion and other new battery technologies to power buildings and building
14 systems, while assuring appropriate building fire safety. These technologies offer the potential to
15 increase energy efficiency and reduce New York city’s carbon footprint. The amendments enacted
16 by this local law will fulfill the goal of local law 26 of keeping the New York city fire code current
17 and relevant to the fire safety challenges facing New York city.

18 § 2. Chapters 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31,
19 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44 and 45 of the New York city fire code, chapter 2

1 of title 29 of the administrative code of the city of New York, are renumbered chapters 20, 21, 22,
2 33, 24, 25, 26, 27, 28, 29, 30, 23, 32, 31, 34, 35, 50, 51, 37, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62,
3 63, 64, 65, 66, 67 and 80, respectively.

4 §3. The New York city fire code, chapter 2 of title 29 of the administrative code of the city of
5 New York, as added by local law 26 for the year 2008, and amended by local laws 37, 39, 41 and
6 64 for the year 2009, local laws 2, 100 and 148 for the year 2013, local laws 1 and 17 for the year
7 2014, local law 187 for the year 2017, local law 195 for the year 2018, local law 103 for the year
8 2019, and local laws 33 and 34 for the year 2021, and section 2 of this local law, is amended to
9 read as follows:

10 **CHAPTER 1**
11 **ADMINISTRATION**

12 **SECTION FC 101**
13 **GENERAL**

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15
16 **101.1 Title.** This code, including any appendices hereto, shall be known as the New York City
17 Fire Code, hereinafter referred to as “this code” or “the code.” All section numbers in this code
18 shall be deemed to be preceded by the designation “FC.”

19
20 **101.2 Scope.** This code governs:

- 21
22 1. The manufacturing, storage, handling, use, sale and transportation of hazardous materials
23 and combustible materials, except for the installation of storage tanks and auxiliary storage
24 tanks for oil-burning equipment.
25
26 2. The design, installation, operation and maintenance of devices, equipment and systems
27 designed to prevent, mitigate, control and extinguish fire, explosions or other life safety
28 hazards.
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30 3. Emergency preparedness and planning, including procedures to provide information,
31 guidance, direction and assistance to protect occupants of buildings, structures and premises
32 in the event of fire[, explosion, biological, chemical or hazardous material incident or release,
33 natural disaster, medical emergency or other emergency] or non-fire emergency, or the threat
34 thereof.
35
36 4. The prevention, mitigation and control of hazards to firefighters and emergency responders
37 during emergency operations.
38

1 5. The operation and maintenance of any manual, automatic or other fire alarm or fire
2 extinguishing device, equipment or system.
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4 **101.3 Intent.** The purpose of this code is to establish reasonable minimum requirements and
5 standards for life safety and property protection, to accomplish the purposes set forth in FC101.2.
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7 **101.4 Severability.** If a section, subsection, sentence, clause or phrase of this code is adjudged by
8 any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or
9 invalidate the remainder thereof, but shall be confined in its operation to the section, subsection,
10 sentence, clause or phrase thereof directly involved in the controversy in which such judgment
11 shall have been rendered.
12

13 **SECTION FC 102**
14 **APPLICABILITY**
15

16 **102.1 Design and installation provisions.** The design and installation provisions of this code shall
17 apply to:
18

- 19 1. Facilities established and conditions arising on or after the effective date of this code.
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- 21 2. Facilities and conditions not lawfully existing prior to the effective date of this code.
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- 23 3. Facilities and conditions lawfully existing prior to the effective date of this code, except as
24 otherwise provided in FC 102.3, 102.4 and 102.5.
25

26 **102.2 Operational and maintenance provisions.** The operational and maintenance provisions of
27 this code, including permit and certification requirements, shall apply to all facilities, operations,
28 conditions, uses and occupancies, regardless of when they were established or arose.
29

30 **102.2.1 Existing permits and certificates continued.** Permits and certificates for facilities,
31 operations, conditions, uses and occupancies issued pursuant to the New York City Fire
32 Prevention Code and in effect on the effective date of this code shall remain in effect until they
33 expire unless sooner revoked or suspended in accordance with this code. Renewal of such
34 permits and certificates shall be in accordance with the provisions of this code.
35

36 **102.2.2 New permits and certificates.** Whenever this code is amended or a rule is
37 promulgated to require a permit or certificate for a facility, operation, condition, use or
38 occupancy, and no permit or certificate was previously required therefor pursuant to this code
39 or the rules, such facility, operation, condition, use or occupancy may be continued without
40 such permit or certificate for a period of 1 year from the effective date of such amendment or
41 rule, except as may otherwise be provided by such amendment or rule.
42

43 **102.3 Lawfully existing conditions as of June 30, 2008.** Except as otherwise provided in
44 FC102.5, the following conditions, which were lawfully existing on June 30, 2008, but which
45 would not be allowed or approved under the fire code enacted effective as of July 1, 2008, may be
46 continued in compliance with the requirements of the New York City Fire Prevention Code and

1 other laws, rules, regulations and permit conditions that existed when such conditions were
2 lawfully allowed or approved and as such requirements may be amended from time to time:

- 3
- 4 1. The facilities that may be maintained on a premises, and the design and installation of such
5 facilities;
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- 7 2. The materials that may be manufactured, stored, handled or used in or on a premises, and
8 the conditions of such manufacturing, storage, handling and/or use; and
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- 10 3. The operations that may be conducted and/or the conditions under which such operation
11 may be conducted.
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13 **102.4 Lawfully existing conditions as of the date of fire code amendments.** Except as otherwise
14 provided in FC102.5, the following conditions lawfully arising on or after July 1, 2008, and
15 lawfully existing on the effective date of an amendment to this code, which would not be allowed
16 or approved under such amendment, may be continued in compliance with the provisions of this
17 code existing prior to such amendment, and other applicable laws, rules and regulations, and the
18 terms and conditions of any permits and other approvals, applicable at the time such facility was
19 lawfully allowed or approved, and as such provisions may be amended from time to time:

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- 21 1. The facilities that may be maintained on a premises, and the design and installation of such
22 facilities;
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- 24 2. The materials that may be manufactured, stored, handled or used in or on premises, and the
25 conditions of such manufacturing, storage, handling and/or use; and
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- 27 3. The operations that may be conducted and/or the conditions under which such operation
28 may be conducted.
- 29

30 **102.5 Fire code compliance of lawfully existing conditions.** A lawfully existing condition, as set
31 forth in FC 102.3 and 102.4, shall, notwithstanding the provisions of such sections, comply with
32 the requirements of this code under the following circumstances:

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- 34 1. When specifically required by this code.
- 35
- 36 2. When the commissioner determines such facility or condition constitutes a life safety hazard.
- 37
- 38 3. When the part of the building, structure, facility or premises in which the lawfully existing
39 condition exists undergoes a change in use or occupancy.
- 40
- 41 4. When the part of the building, structure, facility or premises in which the lawfully existing
42 condition exists undergoes alteration, whether made voluntarily, or as a result of damage,
43 deterioration or other cause.
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45 **102.6 Relationship with other applicable codes, standards and rules.**

1 **102.6.1 Referenced codes.** Any codes or other provisions of law referenced in this code,
2 including those referenced in FC Chapter [45] 80, shall be considered part of the requirements
3 of this code to the prescribed extent of each such reference. Where differences or
4 inconsistencies arise between the provisions of this code and any other code or provision of
5 law referenced in this code, the more restrictive provision shall govern.
6

7 **102.6.1.1 Construction codes and Electrical Code references.** References in this code to
8 the construction codes or the Electrical Code shall not be deemed to be a grant of authority
9 to the commissioner to enforce such codes, provided, however, that the department may
10 require proof of compliance with the requirements of such codes [pursuant to FC105.3.9]
11 in connection with permit issuance, plan approval or other department approval or
12 authorization.
13

14 **102.6.2 Appendices and referenced standards.** Any appendix to this code and any referenced
15 standard in FC Chapter [45] 80 shall be considered part of the requirements of this code to the
16 prescribed extent of each such reference. The provisions of any appendix or referenced
17 standard may be amended by the commissioner pursuant to the rule making process set forth
18 in the charter. Where differences or inconsistencies arise between the referenced standards, the
19 provisions of this code or any rules promulgated thereunder, the provisions of this code or such
20 rules shall govern.
21

22 **102.6.3 Rules.** The commissioner may promulgate rules in accordance with the charter and
23 this code.
24

25 **102.7 Subjects not regulated by this code.** Where no applicable fire safety or other safety
26 standards or requirements are set forth in this code, or applicable laws, codes, rules or regulations
27 enforced by the commissioner, facilities, operations and conditions in a building, structure, facility
28 or other premises shall comply with nationally recognized fire safety or other safety standards of
29 the particular industry, as approved. Nothing herein shall derogate from the authority of the
30 commissioner to determine compliance with the requirements of the codes, standards, or rules for
31 those facilities, operations and conditions within such buildings, structures, facilities or other
32 premises within the commissioner’s jurisdiction or responsibility.
33

34 **102.8 Matters not adequately provided for in this code.** Requirements that are essential for fire
35 safety in an existing or proposed building, structure, or premises, or in connection with the
36 regulation of any material, operation or facility, which are not specifically provided for by this
37 code may be established by the commissioner.
38

39 **102.9 Internal references and inconsistent provisions.** Where one chapter, section or other
40 provision of this code requires compliance with or otherwise references another chapter, section
41 or other provision of this code, such reference shall be construed in a manner that harmonizes the
42 various provisions and furthers the purpose of this code. Where British and metric units of
43 measurement conflict, the British units shall govern.
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45 **SECTION FC 103**
46 **RESERVED**
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SECTION FC 104
DUTIES AND POWERS OF COMMISSIONER

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104.1 Enforcement. The commissioner shall be responsible for the administration, interpretation and enforcement of this code. The commissioner may adopt policies, procedures, rules and regulations in order to clarify or implement the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this code and shall, except in those instances in which a modification has been granted, not have the effect of waiving requirements specifically provided for in this code.

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104.1.1 Asbestos abatement activity. Notwithstanding any other provision of law, the commissioner may designate officers and employees of the Department of Environmental Protection to issue notices of violation, violation orders and Criminal Court process at premises in which asbestos abatement activity is taking place, for violations of this code and other laws, rules and regulations enforced by the department.

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104.1.2 Review of design and installation. The commissioner may authorize the Department of Buildings to review construction documents filed with that agency for compliance with the design and installation requirements of this code for [battery] stationary energy storage systems, fire apparatus access roads, rooftop access and obstructions, and such other design and installation requirements as the commissioner, in consultation with the Commissioner of Buildings, may determine facilitates the design and construction process. The manner and scope of such review and the standards to be applied thereto shall be established by the commissioner in consultation with the Commissioner of Buildings, consistent with FC104.2.1.

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104.2 Applications and approvals. The [commissioner] department shall receive, review and, if satisfactory, approve, applications for permits, certificates and other approvals, and design and installation documents required to be submitted to the [commissioner] department by this code or the construction codes, issue permits, inspect buildings, structures, facilities, premises, marine vessels, watercraft and motor vehicles for the purpose of enforcing compliance with the requirements of this code, and otherwise administer, implement and enforce the provisions of this code.

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104.2.1 Acceptance of professional certification. The [commissioner] department shall not accept professional certification of compliance with the requirements of this code and the rules in lieu of required department inspections, witnessing of tests, or approval of design and installation documents, except as otherwise provided in this section. [Professional certification may only be accepted] The department may accept professional certification of compliance with the construction codes, this code and the rules with respect to fire alarm system devices or equipment that are not part of the [building's core fire alarm system. The commissioner shall adopt a written policy setting forth procedures by which professionally certified fire alarm system devices or equipment will be audited by the department to ensure the accuracy of such professional certifications.] building core, in accordance with the following requirements:

1. For purposes of this section, "professional certification" or "professionally certified" means the submission to the department of a signed, personal verification by a person holding a certificate of fitness for professional certification of fire alarm and emergency

1 alarm installations and testing who is a registered design professional, master electrician,
2 special electrician, or fire alarm system installer with NICET-Level III certification
3 licensed by or registered with the State of New York, that accompanies an application
4 and/or design and installation documents filed with the department that attests that such
5 application or design and installation documents do not contain any false information and
6 that such application or design and installation documents are in compliance with all
7 applicable laws, rules and regulations.
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9 **[104.2.1.1 Disqualification for false certification.]** 2. The department shall adopt a
10 written policy setting forth procedures by which professionally certified fire alarm
11 system devices or equipment will be audited by the department to ensure the accuracy of
12 such professional certifications.
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14 3. The [commissioner] department may adopt rules setting forth the penalty for submission
15 of false or fraudulent documents certifying compliance with the requirements of this code
16 and the rules. Penalties may include disqualification from submission of professionally
17 certified applications[, as set forth in FC104.2.1].
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19 4. Nothing contained herein shall be deemed to prohibit the submission of design and
20 installation documents [by registered design professionals] for department review and
21 approval in lieu of professional certification.
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23 **104.3 Right of entry.** The commissioner and his or her authorized representatives, in the discharge
24 of their duties, shall have the right to enter upon and inspect, at all reasonable times, any building,
25 structure, facility, premises, marine vessel, watercraft, vehicle or any part thereof, for the purpose
26 of determining compliance with the requirements this code and other applicable laws, rules and
27 regulations enforced by the department. If access is not obtained, the commissioner shall have
28 recourse to remedies provided by law to secure entry.
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30 **104.4 Identification.** When entering property pursuant to FC104.3, officers and employees of the
31 department shall identify themselves by exhibiting the badge or other official identification of the
32 department; and other authorized representatives of the commissioner shall identify themselves by
33 producing and exhibiting their authority in writing signed by the commissioner.
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35 **104.5 Notices and orders.** Notices, orders and violations may be issued by or in the name of the
36 commissioner in accordance with Title 15 of the New York City Administrative Code to enforce
37 the provisions of this code or the rules.
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39 **104.5.1 Seizure of contraband material.** The commissioner may order the seizure,
40 destruction or other arrangement for disposal thereof of any device, equipment or other article,
41 the manufacture, storage, handling, use, transportation or sale of which is prohibited by this
42 code or the rules, or which is manufactured, stored, handled, used, transported or sold in
43 violation thereof.
44

45 **104.6 Official records.** The department shall keep official records of applications received,
46 approvals, inspections, administrative decisions, permits and certificates issued, modifications
47 approved, fees collected, and notices, orders and violations, and such other records as the

1 commissioner may prescribe. Such official records shall be retained for the period required for
2 retention of public records.

3
4 **104.7 Approved devices and equipment.** All devices, equipment or other articles approved by
5 the commissioner shall be designed, constructed, installed and used in accordance with such
6 approval. Devices, equipment and other articles required by the provisions of this code to be of a
7 type for which a certificate of approval has been issued shall be designed, constructed, installed
8 and used in accordance with such certificate approval conditions, FC112 and the rules.

9
10 **104.7.1 Device, equipment and system reuse.** Devices, equipment and systems shall not be
11 reused or reinstalled unless they have been reconditioned, tested and placed in good and proper
12 working condition. Devices, equipment and systems that are unsafe to operate or use shall not
13 be operated or used.

14
15 **104.7.2 Technical assistance.** To determine the acceptability of technologies, processes,
16 products, facilities, materials and uses attending the design, operation or use of a building,
17 structure, facility or other premises subject to inspection by the commissioner, the
18 commissioner may require the owner to provide, at the owner's expense, a technical opinion
19 and report prepared by a registered design professional or other individual or organization
20 whose qualifications are acceptable to the commissioner. Such individual or organization shall
21 evaluate the safety of the design, operation or use of the building, structure, facility or other
22 premises and the facilities, operations and conditions situated or conducted thereon, as
23 applicable.

24
25 **104.8 Modifications.** When the circumstances, conditions, limitations or surroundings of any
26 business, occupation, trade, industry or premises to which this code or the rules apply are unusual,
27 or such as to render it impracticable to enforce all the provisions applicable thereto, the
28 commissioner may waive or modify such provisions to such extent, for such period of time, as the
29 commissioner may deem necessary consistent with public safety.

30
31 **104.8.1 Application for modification.** Any owner or other person subject to a provision of
32 this code or the rules may request the modification of such provision in accordance with this
33 section.

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35 **104.8.1.1 Submission.** Any person seeking a modification shall submit a written request
36 to the commissioner stating the grounds thereof supported by relevant evidence and citation
37 to this code or any other law, rule or regulation or other legal authority. Any additional
38 information or other supplemental submission requested by the commissioner shall be filed
39 with the department within 20 calendar days of the date of the request, or within such other
40 time as may be prescribed by the commissioner.

41
42 **104.8.1.2 Determination.** The commissioner shall render a written determination denying
43 the request, or granting such modification as the commissioner determines is necessary and
44 appropriate upon such terms and conditions as the commissioner may prescribe.

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46 **104.8.1.3 Stay of enforcement.** The filing of such request for a modification shall not stay
47 the enforcement of the provision. The person filing such modification may request a stay

1 of enforcement of such provision. Such request shall be in writing and shall be subject to
2 the same requirements as a modification. The commissioner shall expeditiously render a
3 written determination of such request for a stay, giving due consideration to the interests
4 of public safety, the costs of compliance, and the apparent merits of the request.
5

6 **104.8.2 Board of standards and appeals variances.** Notwithstanding any other provision of
7 law, rule or regulation, no application for a variance shall be granted by the board of standards
8 and appeals in approving changes in bulk storage in excess of the standards set forth in this
9 code or the rules, as it may apply to the storage of liquefied natural gas, synthetic or substitute
10 natural gas or [naptha] naphtha in the liquid or gaseous state.
11

12 **104.9 Alternative devices, equipment and systems.** The provisions of this code and the rules are
13 not intended to prevent the design, installation or use of any device, equipment or system not
14 specifically prescribed or prohibited by this code or the rules, provided that any such alternative
15 has been approved by the commissioner. The commissioner may approve such an alternative
16 device, equipment or system where the commissioner finds that the proposed design, installation
17 or use is satisfactory and complies with the intent of the provisions of this code or the rules, and
18 that the device, equipment or system offered is, for the purpose intended, at least the equivalent of
19 that prescribed in this code or the rules in quality, strength, effectiveness, fire resistance, durability
20 and safety.
21

22 **104.10 Fire investigations.** The commissioner may investigate the cause, origin and
23 circumstances of any fire, explosion or other life safety hazard.
24

25 **104.11 Authority at fires and other emergencies.** The firefighting personnel in charge at the
26 scene of a fire or other emergency involving the protection of life or property, or any part thereof,
27 shall have the authority to direct such operation as necessary to extinguish or control any fire,
28 perform any rescue operation, investigate the existence of suspected or reported fires, gas leaks or
29 other hazardous conditions or situations, or take any other action necessary in the reasonable
30 performance of duty. In the exercise of such power, firefighting personnel may prohibit any person,
31 vehicle, marine vessel, watercraft or object from approaching the scene and may remove, or cause
32 to be removed or kept away from the scene, any vehicle, marine vessel, watercraft or object which
33 could impede or interfere with the operations of the department and, in the judgment of firefighting
34 personnel, any person not actually and usefully employed in the extinguishing of such fire or in
35 the preservation of property in the vicinity thereof.
36

37 **104.11.1 Barricades.** The firefighting personnel in charge at the scene of a fire or other
38 emergency may place ropes, guards, barricades or other obstructions across any street, alley,
39 place or private property in the vicinity of such operation so as to prevent accidents or
40 interference with the lawful efforts of the department to manage and control the situation.
41

42 **104.11.2 Obstructing representatives of the department.** It shall be unlawful to obstruct,
43 interfere with or otherwise hamper any representative of the department in conducting any
44 inspection, issuing any notice, order or violation, or otherwise enforcing the provisions of this
45 code, or any other law, rule or regulation enforced by the department, or otherwise executing
46 the performance of his or her lawful duties.
47

1 **104.11.3 Systems and devices.** No person shall render a life safety device, equipment or
2 system inoperative during an emergency except as directed by the firefighting personnel in
3 charge of the scene of a fire or other emergency.
4

5 **104.11.4 Authority to disconnect utility service.** The department shall have the authority to
6 disconnect or authorize disconnection of water, natural gas, electricity or other utility service
7 in or on a building, structure or premises when necessary to safely or effectively conduct
8 firefighting or other emergency operations or to abate a condition presenting an imminent
9 danger to fire or life safety. If utility service has not been restored when the department leaves
10 the premises and there is no representative of the owner at the premises, the department shall
11 notify the utility within a reasonable time thereafter.
12

13 **104.12 Cooperation of other departments.** Upon request of the commissioner, it shall be the
14 duty of all departments to cooperate with the department at all times and to furnish the department
15 with such information, reports and assistance as the commissioner may require.
16

17 **SECTION FC 105**
18 **PERMITS AND OTHER APPROVALS**
19

20 **105.1 General.** Permits and other approvals shall be required as set forth in FC105.
21

22 **105.1.1 Permits required.** It shall be unlawful to manufacture, store, handle, use, sell or
23 transport a hazardous material or combustible material, or to conduct an operation or to
24 maintain a facility for which a permit is required pursuant to the provisions of this code,
25 without such permit. Permits required by this code shall be obtained from the commissioner.
26 Permit and other applicable fees shall be paid prior to issuance of the permit. [Issued permits
27 shall be kept on the premises designated therein at all times and shall be readily available for
28 inspection by any representative of the department.]
29

30 **105.1.2 Types of permits.** There shall be [three] two types of permits as follows:
31

- 32 1. **Site-specific permit.** Such permit authorizes the permit holder to manufacture, store,
33 handle, use or sell hazardous materials or combustible materials, or conduct an operation
34 or maintain a facility at a specific premises or location, for which a permit is required by
35 FC105.6.
36
- 37 2. **Citywide permit.** Such permit authorizes the permit holder to store, handle, use, or sell
38 hazardous materials, or conduct an operation on a citywide basis, for which a permit is
39 required by FC105.6. A citywide permit is valid to temporarily store, handle, use or sell
40 hazardous materials or to conduct an operation at one or more locations subject to the
41 following restrictions:
42

- 43 2.1. The duration of such activity at any individual location does not exceed 30 calendar
44 days and all hazardous materials associated with such activity are removed from
45 the location at the end of the workday. Periods of activity in excess of 30 calendar
46 days at any one location shall require a site-specific permit.
47

1 2.2. The quantity of hazardous materials being temporarily stored and used does not
2 exceed 5 gallons (19 L) of gasoline, or 250 gallons (946 L) of any other flammable
3 liquid, and 300 gallons (1136 L) of any combustible liquid. Storage or use of
4 hazardous materials in quantities exceeding these amounts requires a site-specific
5 permit for each location at which such storage or use occurs.

6 [3. **Transportation permit.** Such permit authorizes the permit holder to transport, pick
7 up and deliver hazardous materials.]
8

9 2.3. Any vehicle used to transport a hazardous material and/or equipment for an
10 operation requiring a citywide permit is subject to inspection by the department.
11

12
13 **105.1.3 Permits for the same premises or location.** When more than one permit is required
14 for the same premises or other location or portion thereof, the commissioner may consolidate
15 such permits into a single permit; provided that each type of hazardous material, operation or
16 facility is listed in the permit, and provided further that the total fees payable for such single
17 permit shall be determined by adding the fees for the permits consolidated into the single
18 permit.
19

20 **105.1.4 [Approval of design and installation documents.** The department shall approve
21 design and installation documents required by this code or the rules by marking such
22 documents and/or by issuing a separate written approval.] Reserved.
23

24 **105.1.5 Insurance.** The commissioner may require applicants for permits or other approvals
25 to obtain and furnish proof of general liability insurance, in such amounts and in accordance
26 with such requirements as may be set forth in this code or the rules, otherwise required by law,
27 or required as a condition of the permit or other approval. The permit or other approval shall
28 expire by operation of law if any such required insurance lapses, expires or is cancelled during
29 the term of the permit or other approval.
30

31 **105.2 Permit application.** Application for a permit required by this code shall be made to the
32 commissioner in such form and detail as the commissioner may prescribe. Applications for permits
33 shall be accompanied by design and installation documents and/or such other information or
34 documentation as may be prescribed by this code, the rules or the department. Applications for
35 permits relating to the storage, handling, use or transportation of high explosives shall be
36 accompanied by proof of United States citizenship.
37

38 **105.2.1** Reserved.
39

40 **105.2.2 Inspection of premises and installations.** Before a permit or other approval is issued,
41 the commissioner may inspect the building, structure, facility, premises, marine vessel,
42 watercraft or vehicle to confirm the facts set forth in the application, determine compliance
43 with the requirements of this code, the rules and other applicable laws, rules or regulations
44 enforced by the commissioner, or to evaluate whether any restrictions should be imposed as a
45 condition of the permit or other approval. The department may require the applicant to arrange
46 any such inspection, and require the applicant to attend such inspection with his or her design
47 professionals, contractor or other appropriate representatives. When a department inspection

1 is required upon completion of an installation or other work or requested by the department,
2 the applicant shall notify the department upon completion of such work and request such
3 inspection, arrange for the presence of the appropriate representatives at such inspection,
4 correct any deficiencies identified during such inspection, and keep the installation or other
5 work accessible for department inspection until department approval is obtained.
6

7 **105.2.3 Time limitation on application.** An application for a permit or other approval shall
8 be deemed to have been abandoned 180 calendar days after the date of filing, unless such
9 application has been diligently prosecuted or a permit or other approval shall have been issued;
10 except that the commissioner may grant one or more extensions of time for additional periods
11 not exceeding 90 calendar days each if there is reasonable cause.
12

13 **105.2.4 Action on application.** Completed permit applications for the manufacture, storage,
14 handling, use, transportation or sale of flammable or combustible liquids, combustible
15 materials or hazardous materials or an operation or facility that comply with the requirements
16 of this code and other applicable laws, rules and regulations shall be approved by the
17 commissioner no later than 40 calendar days after the submission thereof, except that on or
18 before the fortieth day, the commissioner may, for good cause, extend such time for an
19 additional 40 calendar days. Permit applications that do not comply with the requirements of
20 this code and other applicable laws, rules and regulations shall be denied or preliminarily
21 denied no later than 40 calendar days from the submission thereof and written notice of such
22 denial or preliminary denial, stating the grounds therefor, shall be promptly given to the
23 applicant. When a permit application has been denied or preliminarily denied and is thereafter
24 revised and resubmitted to meet the stated grounds for denial, the revised completed
25 application shall be approved or denied or preliminarily denied in accordance with the
26 foregoing procedures and time periods.
27

28 **105.3 Authority granted by permit or other approval.** A permit or other approval shall
29 constitute permission to manufacture, store, handle, use, sell or transport hazardous materials or
30 combustible materials, conduct an operation, or maintain a facility, as applicable, in accordance
31 with this code and the rules where a permit is required by FC105.6. Such permission shall not be
32 construed as authority to violate, cancel or set aside any of the provisions of this code, the rules or
33 other applicable laws, rules or regulations.
34

35 **105.3.1 Permit issuance and renewal.** Every permit or renewal thereof granted by the
36 commissioner shall be for a period specified therein, not to exceed 2 years, or as set forth in
37 FC105.6, and shall expire at the end of such period unless the commissioner approves its
38 renewal. Permits are not transferable and any change in occupancy, operation, tenancy or
39 ownership shall require that a new permit be issued.
40

41 **105.3.2 through and including 105.3.4** Reserved.
42

43 **105.3.5 Posting the permit.** Permits shall be posted in a conspicuous location on the premises
44 designated therein at all times and shall be readily available for inspection by any
45 representative of the department.
46

1 **105.3.6 Compliance with the requirements of the code.** The issuance or granting of a permit
2 shall not be construed to be a permit for, or an approval of, any violation of any of the
3 provisions of this code or of other law, rule or regulation. Permits purporting to authorize any
4 such violation shall not be valid. The department's approval of design and installation
5 documents or other submission, in connection with or independent of a permit application,
6 shall not prevent the department from requiring the correction of errors in such documents or
7 other submission. Any addition to, or alteration of, approved design and installation documents
8 shall be approved in advance by the department.

9
10 **105.3.7** Reserved.

11
12 **105.3.8 Hazardous industries.** Except as otherwise provided in this code, no person shall
13 engage in a hazardous industry, trade, occupation, activity or operation requiring the
14 manufacture, storage, handling, sale, use or transportation [of hazardous] of hazardous
15 materials or combustible materials without a permit, issued upon such conditions as the
16 commissioner deems necessary in the interest of public safety.

17
18 **105.3.9 Compliance with the requirements of the construction codes and Electrical Code.**
19 The commissioner may require that the applicant for a permit or renewal thereof demonstrate,
20 by submission of a certificate of occupancy or other authorization or approval issued by the
21 Department of Buildings, that the building, structure or premises or portion thereof used for
22 the manufacture, storage, handling or use of flammable or combustible liquids, combustible
23 materials or hazardous materials, and all operations or facilities subject to this code, are
24 designed, constructed and occupied in accordance with the certificate of occupancy, the
25 construction codes and the Electrical Code.

26
27 **105.3.9.1 Department of Buildings required approval.** No permit shall be issued when
28 work requires the approval of the Commissioner of Buildings in connection with a material,
29 operation or facility unless proof is submitted to the department that such work has been
30 approved by the Commissioner of Buildings.

31
32 **105.4 Design and installation documents.** Design and installation documents required to be
33 submitted to the department pursuant to the provisions of this code, the rules or the construction
34 codes, including but not limited to those set forth below, or as directed by the commissioner to
35 demonstrate or document that a device, equipment, system, operation or facility regulated by this
36 code is designed and installed in accordance with this code, shall be submitted in accordance with
37 this section. Such submissions shall be reviewed by the department for compliance with the
38 requirements of this code, the rules and other applicable laws, rules and regulations enforced by
39 the department. The time limitations for approval of design and installation documents and for
40 deeming such submissions abandoned shall be as set forth in FC 105.2.3 and 105.2.4.

41
42 [1.] Aerosol products storage facilities:

43 [1.1.] 1. General purpose warehouses ([FC2804] FC5104).

44 [1.2.] 2. Aerosol warehouses ([FC2804] FC5104).

45 [1.3.] 3. Liquid storage rooms ([FC2804] FC5104).

46 [1.4.] 4. Liquid warehouses ([FC2804] FC5104).

47 [1.5.] 5. Outdoor storage ([FC2805] FC5105).

1 [1.6.] 6. Retail display ([FC2806] FC5106).

2
3 [2.] Aircraft fueling systems ([FC1106] FC2006).

4
5 [3.] Ammonia diffusion systems for refrigerating systems using ammonia refrigerant (FC606).

6
7 Automated Parking Garage (FC611).

8
9 Auxiliary radio communication (ARC) systems, fire department in-building (FC510).

10
11 [4.] Cellulose nitrate film storage facilities (FC306).

12
13 [5.] Combustible fibers storage facilities:

14 [5.1.] 1. Loose fiber storage ([FC2904] FC3704).

15 [5.2.] 2. Baled fiber storage ([FC2905] FC3705).

16
17 [6.] Combustible material storage (FC315).

18
19 [7.] Commercial cooking system fire extinguishing systems (FC904).

20
21 [8.] Corrosive materials systems and facilities:

22 [8.1.] 1. Storage ([FC3104] FC5404).

23 [8.2.] 2. Handling and use ([FC3105] FC5405).

24
25 [9.] Cryogenic fluids systems and facilities:

26 [9.1.] 1. Storage (FC [3203] 5503 and [3204] 5504).

27 [9.2.] 2. Handling and use (FC [3203] 5503 and [3205] 5505).

28 [9.3.] 3. Liquefied natural gas facilities ([FC3206] FC5506).

29
30 Distilleries (FC 4004 and 4005).

31
32 [10.] Dry cleaning systems using Class II and III solvents ([FC1207] FC2107).

33
34 Emergency alarms (FC908):

35 1. Flammable alcohol vapor (FC4003).

36 2. Gaseous hydrogen (FC5808).

37 3. Hazardous materials (FC 5004 and 5005).

38 4. Lighter-than-air motor fuels (FC 2308, 2309 and 2311).

39 5. Medical gases (FC5306).

40 6. Flammable gases distribution piping operating above 15 psig (FC Table 908.1).

41 7. Ozone gas (FC6005).

42 8. Refrigerants (FC606).

43 9. Toxic/highly toxic materials (FC6004).

44
45 Energy storage systems, stationary (FC608.6).

46
47 [11.] Explosion control systems for certain hazardous materials and special uses (FC911).

1
2 [12.] Explosion (dust) protection systems for combustible metals, metal powders, metal dusts
3 and sulfur ([FC1304] FC2204).

4
5 [13.] Explosives ([FC3304] FC5604).

6
7 [14.] Facilities in which a fumigant or insecticidal fogger are designed to be used in a stationary
8 installation ([FC1703] FC2603).

9
10 [15.] Fire alarm systems and fire command centers (FC907 and [Section] Sections 403, 907
11 and 911 of the Building Code).

12
13 [16.] Fire apparatus access roads and security gates installed across such roads (FC503).

14
15 [17.] Fire department in-building auxiliary radio communication systems (FC511).]

16
17 Fire extinguishing systems (sprinkler systems listed separately):

18 1. Aerosol (FC904).

19 2. Carbon dioxide (FC904).

20 3. Clean agent (FC904).

21 4. Dry chemical (FC904).

22 5. Foam (FC904).

23 6. Halon (modification of lawfully existing installations) (FC904).

24 7. Water mist (FC904).

25 8. Wet chemical (FC904).

26
27 [18.] Fixed guideway transit and passenger rail systems (FC321):

28 [18.1.] 1. Emergency ventilation systems.

29 [18.2.] 2. Emergency voice communication systems.

30 [18.3.] 3. Means of egress.

31 [18.4.] 4. Standpipe systems and other fire protection systems.

32
33 [19.] Flammable and combustible [liquids] liquid systems and facilities:

34 [19. 1.] 1. Piping, equipment, tanks, plants, terminals, fuel-dispensing facilities and similar
35 facilities where flammable and combustible liquids are manufactured, stored, handled
36 or used, including dispensing ([FC3404] FC5704).

37 [19.2.] 2. Group M occupancy wholesale and retail sales uses ([FC3404] FC5704).

38 [19.3.] 3. Liquid storage rooms ([FC3404] FC5704).

39 [19.4.] 4. Liquid storage warehouses ([FC3404] FC5704).

40 [19.5.] 5. Outdoor storage ([FC3404] FC5704).

41 [19.6.] 6. Bulk plants and terminals ([FC3406] FC5706).

42
43 [20.] Flammable [gases] gas systems and facilities:

44 [20.1.] 1. Storage ([FC3504] FC5804).

45 [20.2.] 2. Handling and use ([FC3505] FC5805).

46 [20.3.] 3. CNG storage in portable containers ([FC3508] FC5811).

47 [20.4.] 4. Methane gas recovery from landfills ([FC3509] FC5809).

1 [20.5.] 5. Compressing of a flammable gas, including piped natural gas, to a pressure
2 exceeding 6 psig (41.4 kPa) (FC Chapter [35] 58).

3 [20. 6. Detection and alarm systems (FC 908.9 and 2211.7.2).] 6. Hydrogen fuel gas rooms
4 (FC5808).

5
6 [21.] Flammable [solids] solid systems and facilities:

7 [21.1.] 1. Storage ([FC3604] FC5904).

8 [21.2.] 2. Handling and use ([FC3605] FC5905).

9
10 [22.] Flammable/combustible spraying, dipping or powder-coating systems and facilities:

11 [22.1.] 1. Spray booths (spray finishing) ([FC1504] FC2404).

12 [22.2.] 2. Spray rooms (spray finishing) ([FC1504] FC2404).

13 [22.3.] 3. Dip tanks ([FC1505] FC2405).

14 [22.4.] 4. Spray booths (powder coating) ([FC1506] FC2406).

15 [22.5.] 5. Spray rooms (powder coating) ([FC1506] FC2406).

16 [22.6.] 6. Limited spraying space ([FC1504] FC2404).

17
18 [23.] Flaring systems for refrigerating systems using flammable or toxic or highly toxic
19 refrigerants (FC606).

20
21 [24.] Hazardous materials systems and facilities (FC [2703] 5003, [2704] 5004 and [2705]
22 5005) (applicable to compressed gases, corrosive materials, cryogenic fluids, explosives,
23 flammable and combustible liquids, flammable gases, flammable solids, highly toxic and
24 toxic materials, LPG, organic peroxides, oxidizers, pyrophoric materials, unstable
25 (reactive) materials and water-reactive solids and liquids):

26 [24. 1.] 1. Tanks ([FC2703] FC5003).

27 [24. 2.] 2. Piping, tubing, valves and fittings ([FC2703] FC5003).

28 [24. 3.] 3. Highly toxic and toxic compressed gas rooms ([FC2703] FC5003).

29
30 [25.] Highly toxic and toxic materials systems and facilities:

31 [25.1.] 1. Storage, handling and use of highly toxic and toxic solids and liquids ([FC3703]
32 FC6003).

33 [25.2.] 2. Storage, handling and use of highly toxic and toxic compressed gases ([FC3704]
34 FC6004).

35 [25.3.] 3. Ozone gas generators ([FC3705] FC6005).

36 [25.4. Detection and alarm systems (FC 908.3 and 3704.2).]

37
38 [26.] High-piled combustible storage areas ([FC2301] FC3201).

39
40 [27.] Industrial furnaces ([FC2101] FC3001).

41
42 [28.] LPG ([FC3801] FC6101).

43
44 [29.] Marina fire protection systems ([FC319] FC3605).

45
46 [30.] Medical gases:

47 [30.1.] 1. Storage and piping systems ([FC3006] FC5306).

1 [30.2. Monitoring and alarm systems (FC3006.4.)
2

3 [31.] Motor fuel dispensing facilities and repair garages ([FC2201] FC2301):

4 [31.1.] 1. Fleet motor fuel-dispensing facilities.

5 [31.2.] 2. Full-service motor fuel-dispensing facilities.

6 [31.3.] 3. Self-service motor fuel-dispensing facilities.

7 4. Repair garages for vehicles fueled by lighter-than-air motor fuels.
8

9 [32.] Natural gas distribution piping systems designed for or operated at 15 psig (103 kPa
10 gauge) or greater (Fuel Gas Code).

11 [33.] Nonflammable compressed gases systems and facilities ([FC3003] FC5303).
12

13 [34. Non-water fire extinguishing systems:

14 34.1. Wet chemical systems (FC904).

15 34.2. Dry chemical systems (FC904).

16 34.3. Foam systems (FC904).

17 34.4. Carbon dioxide systems (FC904).

18 34.5. Halon systems (modification of lawfully existing installations) (FC904).

19 34.6. Clean agent systems (FC904).

20 34.7. Aerosol systems (FC904).
21

22
23 35.] Organic coating manufacturing process facilities ([FC2005] FC2905).
24

25 [36.] Organic peroxides storage and facilities:

26 [36.1.] 1. Storage ([FC3904] FC6204).

27 [36.2.] 2. Handling and use ([FC3905] FC6205).
28

29 [37.] Oxidizer systems and facilities:

30 [37.1.] 1. Storage ([FC4004] FC6304).

31 [37.2.] 2. Handling and use ([FC4005] FC6305).
32

33 [38.] Oxygen-fuel gas systems (FC [2601] 3501 and [2609] 3509).
34

35 [39.] Private fire hydrant systems ([FC508]FC507).
36

37 [40.] Pyrophoric materials systems and facilities:

38 [40.1.] 1. Storage ([FC4104] FC6404).

39 [40.2.] 2. Handling and use ([FC4105] FC6405).

40 [40.3.] 3. Storage, handling and use of silane gas (FC [4104] 6404 and [4105] 6405).
41

42 [41] Pyroxylin plastics systems and facilities ([FC4204] FC6504).
43

44 Roof access (altered roofs) (FC 504.4 and 504.5)
45

46 [42.] Semiconductor fabrication facilities:

47 [42.1.] 1. Facilities ([FC1803] FC2703).

1 [42.2.] 2. Fabrication areas ([FC1803] FC2703).
2 [42.3.] 3. Hazardous production material (HPM) rooms ([FC1803] FC2703).
3

4 [43.] Sprinkler systems where the design requirements are specified in this code (FC [2209]
5 2309, [2306] 3206, [2307] 3207, [2308] 3208, [2309] 3209, [2310] 3210, [2804] 5104,
6 [2806] 5106 and [3404] 5704).
7

8 [44.] Treatment systems for refrigerating systems using toxic or highly toxic refrigerants
9 (FC606).
10

11 [45.] Unstable (reactive) materials systems and facilities:

12 [45.1.] 1. Storage ([FC4304] FC6604).

13 [45.2.] 2. Handling and use ([FC4305] FC6605).
14

15 [46.] Vehicle tunnels and bridges (FC322):

16 [46.1.] 1. Emergency ventilation systems.

17 [46.2.] 2. Emergency voice communication systems.

18 [46.3.] 3. Means of egress.

19 [46.4.] 4. Standpipe systems and other fire protection systems.
20

21 [47.] Water-mist fire extinguishing systems (FC904).
22

23 48. Water-reactive solids and liquids systems and facilities:

24 48.1.] 1. Storage ([FC4404] FC6704).

25 [48.2.] 2. Handling and use ([FC4405] FC6705).
26

27 [49.] Yard hydrant systems (FC [508.2.3] 507.2.3 and [3406.4.10.5] 5706.4.10.5).
28

29 **105.4.1 Submissions.** Design and installation documents shall be submitted in such number
30 and in such form and detail as may be prescribed by the commissioner. The design and
31 installation documents shall be prepared by a registered design professional. The commissioner
32 may require that such submissions be made in an approved electronic format or medium or
33 online application.
34

35 **Exception:** Design and installation documents for pre-engineered fire extinguishing
36 systems for commercial cooking systems may be prepared by a licensed master fire
37 suppression piping contractor.
38

39 **105.4.2 Information on design and installation documents.** Design and installation
40 documents shall be drawn to scale. Design and installation documents shall indicate the
41 location, nature and extent of the work proposed and demonstrate compliance with the
42 requirements of this code, the rules and other applicable laws, rules and regulations.
43

44 **105.4.3 Approved documents required.** When department review of design and installation
45 documents is required by this code or other laws, rules or regulations, it shall be unlawful to
46 construct or alter any facility, or install, alter or remove any device, equipment or system,
47 without first having obtained department approval of the design and installation documents.

1
2 **105.4.4 Approved documents.** The department shall approve, or deny, or preliminarily deny
3 design and installation documents in accordance with the procedures and time periods set forth
4 in FC105.2.4. Department approval of design and installation documents may be made subject
5 to the requirements of the Building Code and other applicable laws, rules and regulations, and
6 shall be documented and effective as set forth in this section.
7

8 **105.4.4.1 Terms of approval.** The department may make its approval of design and
9 installation documents subject to such terms and conditions as the department may
10 prescribe by rule or specify as part of the approval. Department approval of design and
11 installation documents for fire alarm systems, fire extinguishing systems, and/or other
12 devices, equipment, systems or facilities that do not require a Department of Buildings
13 work permit, may incorporate by reference terms and conditions of the construction codes
14 relating to work permits and licensing, including those in Articles 105 and 106 of Chapter
15 1 and Article 410 of Chapter 4 of Title 28 of the Administrative Code.
16

17 **105.4.4.2 Method of approval.** Upon approval of design and installation documents, the
18 department shall mark such approval upon such documents and/or issue a letter of
19 [approval] acceptance or other form of written authorization.
20

21 **105.4.4.3 Limitations of approval.** Department approval of design and installation
22 documents is limited to the laws, rules and regulations enforced by the department and for
23 which approval has been sought. Department approval shall not relieve the applicant of the
24 responsibility of compliance with the requirements of this code, the rules and any other
25 applicable laws, rules or regulations.
26

27 **105.4.4.4 Authorization to perform work.** Department approval of design and
28 installation documents authorizes performance of the work encompassed by the approval,
29 subject to all other applicable laws, rules or regulations, including, when applicable, the
30 requirement to obtain a work permit from the Department of Buildings, provided, however,
31 that where department approval of design and installation documents is for devices,
32 equipment, systems or facilities that do not require a Department of Buildings work permit,
33 commencement of the work may be made contingent on department issuance of a project
34 authorization following submission of contractor licensing information and such other
35 information and documentation as may be required in accordance with FC105.4.4.1.
36

37 **105.4.5 Inspection and testing.** The commissioner may require that, upon completion, any
38 installation for which approved design and installation documents are required by this code or
39 the rules be inspected and/or subjected to acceptance testing in the presence of a department
40 representative.
41

42 **105.4.6 Corrected documents.** Where field conditions necessitate any change from the
43 approved design and installation documents, corrected design and installation documents or
44 other documentation acceptable to the department shall be submitted.
45

46 **105.4.7 Retention of design and installation documents.** One set of approved design and
47 installation documents shall be retained by the commissioner. [One set of approved] Approved

1 design and installation documents, with the department stamp and/or other indicia of approval,
2 shall be returned to the applicant, and shall be kept on the site of the building or structure or at
3 the work site at all times and readily available for inspection by any representative of the
4 department until the [required permit is posted on the premises as required by FC105.3.5, or
5 where no permit is required, until the work performed under such approved design and
6 installation documents has been] installation or other work has been inspected [and] and/or
7 approved by the department.
8

9 **105.5 Revocation.** The commissioner may revoke a permit issued under the provisions of this
10 code when:

- 11 1. the permit is used for a location or establishment other than that for which it was issued.
- 12 2. the permit is used for a purpose or operation other than that listed in the permit.
- 13 3. conditions and limitations set forth in the permit have been violated.
- 14 4. there has been a false statement or misrepresentation material to the issuance of the permit.
- 15 5. the party engaging in the manufacture, storage, handling, use, sale or transportation of
16 hazardous materials or combustible materials, or conducting an operation or maintaining a
17 facility is different from the party to whom the permit was issued.
- 18 6. the permit holder fails, refuses or neglects to timely comply with the commissioner's orders
19 or notices of violation duly served in accordance with this code, or other law, rule or
20 regulation enforced by the department.
- 21 7. the permit was issued in error or in violation of this code or other applicable law, rule or
22 regulation.
- 23 8. circumstances or conditions material to the issuance of the permit applied for have changed.
- 24 9. other good cause exists.

25 **105.6 Required permits.** The commissioner shall issue the following permits for the manufacture,
26 storage, handling, use, transportation and sale of the following materials, the conduct of the
27 following operations, and the design, installation, operation and maintenance of the following
28 facilities in accordance with this code and the construction codes, including the Building Code:
29

30 **Aerosol products.** A permit is required to store, handle or use an aggregate quantity of Level
31 1, 2 or 3 aerosol products in excess of 100 pounds (45.4 kg) net weight.
32

33 **Alcohol-based hand rubs.** The storage, handling and use of alcohol-based hand rubs is subject
34 to the following permit requirements:

- 35 1. A permit is required to store, handle or use flammable or combustible alcohol-based
36 hand rubs on a premises, for use on the premises, in quantities exceeding 275 gallons
37

1 (1041 L), when stored, handled or used in a portable container designed for consumer
2 use, with a capacity not exceeding 68 fluid ounces (2.01 L), that does not require handling
3 of the contents, including disposable wall-mounted and table-top dispensers and wall-
4 mounted dispensers using sealed refills.

5
6 2. A flammable liquids permit or combustible liquids permit, as applicable, is required to
7 store, handle or use flammable or combustible alcohol-based hand rubs in any tank,
8 intermediate bulk container or stationary installation; portable container with a capacity
9 exceeding 68 fluid ounces (2.01 L); or portable container of any size that requires
10 handling of the contents prior to use for hand sanitizing purposes, including any pouring,
11 pumping or other transfer of the contents to a dispenser.

12
13 **Amusement buildings.** A permit is required to [maintain or] establish and operate a special
14 amusement building.

15
16 **Asphalt melter.** A permit is required to store, handle or use an asphalt melter.

17
18 **Automotive salvage and wrecking facilities.** A permit is required to establish and operate an
19 automotive salvage and wrecking facility.

20
21 **Auxiliary radio communication (ARC) systems.** A permit is required to establish and
22 operate a fire department in-building auxiliary radio communication system.

23
24 **Aviation operations.** A permit is required for the following aviation operations:

- 25
26 1. To operate or maintain an aircraft-fueling vehicle.
27
28 2. To operate or maintain an aircraft-fueling system.
29
30 3. To conduct a helicopter landing at other than an approved heliport, helistop or airport.
31
32 4. To conduct a helicopter lift operation.
33
34 5. To conduct a hot air balloon operation.

35
36 **Cellulose nitrate film.** A permit is required to store, handle or use cellulose nitrate film in the
37 following quantities:

- 38
39 1. Any quantity in a Group A occupancy.
40
41 2. Quantities of 10 pounds (4.54 kg) or more in other than a Group A occupancy.

42
43 **Coke-fueled salamanders.** A permit is required to store, handle or use coke-fueled
44 salamanders at a construction site.

45
46 **Combustible dust-producing operations.** A permit is required to [maintain or operate a grain
47 elevator, flour starch mill, feed mill, or a plant pulverizing aluminum, coal, cocoa, magnesium,

1 spices or sugar, or other combustible dust as defined in FC Chapter 2] establish and operate
2 any facility that generates combustible dust, including grain handling, milling and storage,
3 powder coating, printing, and woodworking operations.

4
5 **Combustible fibers.** A permit is required to store or handle combustible fibers in quantities
6 exceeding 100 cubic feet (2.8 m³).

7
8 **Exception:** A permit is not required for agricultural storage.

9
10 **Combustible liquids.** See “Flammable and combustible liquids.”

11
12 **Combustible material storage.** A permit is required to store in any building, structure,
13 premises or facility more than 2,000 cubic feet (56.6 m³) gross volume of combustible empty
14 packing cases, boxes, barrels or similar containers, rubber (excluding tires), cork or similar
15 combustible material, including combustible waste, or more than 1,000 pounds (454 kg) of
16 flammable plastic foam products, regardless of volume.

17
18 **Exceptions:**

- 19
20 1. A permit is not required for such storage in buildings or structures protected
21 throughout by a sprinkler system.
22
23 2. A permit is not required if the storage is kept exclusively in a dedicated area of a
24 building or structure which is protected throughout by a sprinkler system and
25 separated from the rest of the building or structure by 2-hour fire-resistance-rated
26 construction.

27
28 **Commercial [cooking systems] kitchen.** A permit is required to [maintain or] establish and
29 operate a commercial [cooking system] kitchen. A separate permit shall be required for each
30 kitchen or other separate cooking area that is a commercial kitchen.

31
32 **Compressed gases.** A permit is required to store, handle or use compressed gases in quantities
33 exceeding those set forth in FC Table 105.6(1).

34
35 **Exceptions:** A permit is not required for the:

- 36
37 1. storage and use of compressed gases in the fuel tank of a motor vehicle, aircraft,
38 marine vessel or watercraft for motive power.
39
40 2. handling and use of medical-grade gaseous oxygen by trained and knowledgeable
41 medical personnel engaged in providing licensed health care at patient locations
42 citywide, outside of health care facilities, on a citywide response basis. This
43 exception does not apply to any premises at which such gaseous oxygen is being
44 stored.
45
46 3. handling of medical-grade gaseous oxygen by trained and knowledgeable medical
47 personnel at any premises at which such oxygen is stored for use in the provision of

licensed health care at patient locations citywide, outside of health care facilities, on a citywide response basis, but which is not used at such premises. This exception includes making connections for purposes of ascertaining the contents of the container and attaching ancillary equipment, but does not include filling, refilling or hydrostatic testing of the container.

**FC TABLE 105.6(1)
PERMIT QUANTITIES FOR COMPRESSED GASES**

TYPE OF GAS	QUANTITY (SCF)
Corrosive	400
Flammable, <u>except at construction sites</u>	400
<u>Liquefied petroleum gas at construction sites</u>	<u>170 (20 lb)</u>
<u>Acetylene at construction sites</u>	<u>100</u>
Highly toxic	Any Quantity
Nonflammable and nonoxidizing, except carbon dioxide	3,000
<u>Carbon dioxide, low-pressure carbon dioxide beverage dispensing systems</u>	<u>3500</u>
Carbon dioxide, <u>all other</u>	4,500
Oxidizing	504
Pyrophoric	Any Quantity
Toxic	Any Quantity
Unstable (reactive)	Any Quantity
Water reactive	Any Quantity

For SI: 1 cubic foot = 0.02832 m³.

Compressing gases. A permit is required to compress:

1. a flammable gas, including piped natural gas, to a pressure exceeding 6 psig (41.4 [Kpa] kPa).
2. a nonflammable, corrosive or oxidizing gas, including air, to a pressure exceeding 100 psig (689.5 [Kpa] kPa).

Exception: Outdoor air compressing at other than a fair or festival.

Cryogenic fluids. A permit is required to manufacture, store, handle or use, including dispensing, cryogenic fluids in quantities exceeding those set forth in FC Table 105.6(2).

Exceptions: A permit is not required for the:

1. storage and use of cryogenic fluids in the fuel tank of a motor vehicle, aircraft, marine vessel or watercraft for motive power or for refrigerating the cargo.
2. storage, handling or use of liquid oxygen home care containers and liquid oxygen ambulatory containers in compliance with the requirements of [FC4006] FC6306 in residential dwelling units and residential health care dwelling units and sleeping rooms in Group I-1, I-4 and R occupancies.
3. handling and use of medical-grade liquid oxygen by trained and knowledgeable medical personnel engaged in providing licensed health care at patient locations

1 citywide, outside of health care facilities, on a citywide response basis. This
2 exception does not apply to any premises at which such liquid oxygen is being stored.

- 3
4 4. handling of medical-grade liquid oxygen at any premises at which such oxygen is
5 stored by trained and knowledgeable medical personnel for use in the provision of
6 licensed health care at patient locations citywide, outside of health care facilities, on
7 a citywide response basis, but which is not used at such premises. This exception
8 includes making connections for purposes of ascertaining the contents of the
9 container and attaching ancillary equipment, but does not include filling, refilling or
10 hydrostatic testing of the container.

11
12 **FC TABLE 105.6(2)**
13 **PERMIT QUANTITIES FOR CRYOGENIC FLUIDS**

TYPE OF CRYOGENIC FLUID	INDOORS (gallons)	OUTDOORS (gallons)
Flammable	More than 1	10
Nonflammable	60	100
Oxidizing (includes oxygen)	10	50
Physical or health hazard not indicated above	Any Quantity	Any Quantity

14 For SI: 1 gallon = 3.785 L.

15
16 **Distilleries.** A permit is required to establish and operate a distillery.

17
18 **Dry cleaning facilities.** A permit is required to [maintain or] establish and operate dry cleaning
19 equipment that utilizes a Class II or Class III solvent.

20
21 **Energy storage systems, stationary.** A permit is required to install and operate a stationary
22 energy storage system.

23
24 **Exceptions:** A permit is not required for:

25
26 1. indoor systems in Group R-3 occupancies, including an energy storage system
27 installed in a Group R-3 dwelling or in an attached or detached garage serving
28 such a dwelling, or mounted on an exterior wall of such a dwelling or garage.

29
30 2. outdoor systems with an aggregate rated energy capacity of 20 kWh or less.

31
32 **Explosives.** A permit is required to store, handle, use or sell explosives as follows:

- 33
34 1. Store, sell or offer for sale any quantity of black powder and smokeless powder.
35
36 2. Store, sell or offer for sale any quantity of blasting caps.
37
38 3. Store, sell or offer for sale two hundred or more shells of small arms ammunition.
39
40 4. Store, handle, use, sell or offer for sale any quantity of explosives, other than those
41 specified in Items 1, 2 and 3 above.
42

1 **[Fire department in-building auxiliary radio communication systems.** A permit is required
2 to maintain or operate a fire department in-building auxiliary radio communication system.]

3
4 **Fireworks.** A permit is required for each display or other event involving the handling,
5 discharge or other use, or storage for use, of fireworks.

6
7 **Flammable and combustible liquids.** A permit is required:

- 8
9 1. to store, handle or use Class I liquids, other than paints, varnishes, lacquers, gasoline and
10 other petroleum-based Class I liquids, in quantities exceeding 5 gallons (19 L), except
11 that a permit is not required for the storage or use of such liquids in the fuel tank of a
12 motor vehicle, aircraft, marine vessel, or watercraft.
- 13
14 2. to store, handle or use amounts of gasoline and other petroleum-based Class I liquids
15 other than paints, varnishes and lacquers, in quantities exceeding 2½ gallons (9.5 L),
16 except that a permit is not required for the storage or use of such liquids in the fuel tank
17 of a motor vehicle, aircraft, marine vessel, or watercraft.
- 18
19 3. to store, handle or use Class II or Class III liquids with a flash point of 300°F (149°C)
20 or less, other than paints, varnishes and lacquers, in quantities exceeding 10 gallons
21 (38 L), except that a permit is not required for the:
22
 - 23 3.1. storage or use of such liquids in the fuel tank of a motor vehicle, aircraft, marine
24 vessel, or watercraft.
 - 25
26 3.2. storage of fuel oil in stationary storage tanks in Group R-3 occupancies for use in
27 stationary fuel oil burning equipment.
- 28
29 4. to store, handle or use Class I, Class II or Class III liquids having a flash point of 300°F
30 (149°C) or less that are commonly used for painting, varnishing, staining or other similar
31 purposes, including paint, varnish and lacquer, in quantities exceeding 20 gallons (76 L).
- 32
33 5. to store, handle or use petroleum-based Class III liquids with a flash point exceeding
34 300°F (149°C), in quantities exceeding 70 gallons (266L), except that a permit is not
35 required for the storage and use of such liquids in the fuel tank of a motor vehicle, aircraft,
36 marine vessel or watercraft for motive power.
- 37
38 6. to operate a bulk plant or terminal or bulk transfer facility where flammable and
39 combustible liquids are blended, produced, processed, transported, stored, dispensed or
40 used.
- 41
42 7. to manufacture flammable or combustible liquids.
- 43
44 8. to store and/or use fuel oil stored on a barge, marine vessel or watercraft moored to or
45 anchored at privately owned waterfront property.
- 46

1 9. to store and use fuel oil in quantities exceeding 10 gallons (38 L) on mobile heating and
 2 power generating trailers.
 3

4 10. to store and use gasoline in quantities exceeding 2½ gallons (9.5 L) in a single item of
 5 portable fueled equipment lawfully stored in accordance with FC313 or an aggregate of
 6 10 gallons (38 L) in all such portable fueled equipment stored at a premises.
 7

8 **Fleet Fueling.** The transfer of Class II and III liquids directly from a cargo tank through
 9 approved dispensing equipment into the fuel tank of a motor vehicle at an approved off-street
 10 location where fleet vehicles are parked.
 11

12 **Floor finishing.** A permit is required to conduct floor finishing or surfacing operations over
 13 an area exceeding 350 square feet (33 m²) using Class I or Class II liquids.
 14

15 **Fruit and crop ripening.** A permit is required to [maintain or] establish and operate a fruit-,
 16 or crop-ripening facility or conduct a fruit-ripening process using ethylene gas.
 17

18 **Fumigation and insecticidal fogging.** A permit is required to [maintain or] establish and
 19 operate a facility in which a fumigant or insecticidal fogger is used in a stationary installation.
 20

21 **Hazardous materials.** A permit is required to store, handle or use hazardous materials in
 22 quantities exceeding those set forth in FC Table 105.6(3).
 23
 24
 25

**FC TABLE 105.6(3)
 PERMIT QUANTITIES FOR HAZARDOUS MATERIALS**

TYPE OF MATERIAL	QUANTITY
Combustible liquids	See FC105.6 for flammable and combustible liquids
Corrosive materials	
Gases	See FC Table 105.6(1)
Liquids	55 gallons
Solids	1000 pounds
Explosive materials	See FC105.6 for explosive materials
Flammable materials	
Gases	See FC Table 105.6(1)
Liquids	See FC105.6 for flammable and combustible liquids
Solids	See FC Table 105.6(4)
Highly toxic materials	
Gases	See FC Table 105.6(1)
Liquids	Any quantity
Solids	Any quantity
Oxidizing materials	
Gases	See FC Table 105.6(1)
Liquids	
Class 4	Any quantity
Class 3	1 gallon
Class 2	10 gallons
Class 1	55 gallons
Solids	
Class 4	Any quantity
Class 3	10 pounds
Class 2	100 pounds
Class 1	500 pounds
Organic peroxides	
Liquids	
Class I	Any quantity

Class II Class III Class IV Class V Solids Class I Class II Class III Class IV Class V	Any quantity 1 gallon 2 gallons No Permit Required Any quantity Any quantity 10 pounds 20 pounds No Permit Required
Pyrophoric materials Gases Liquids Solids	See FC Table 105.6(1) Any quantity Any quantity
Toxic materials Gases Liquids Solids	See FC Table 105.6(1) 10 gallons 100 pounds
Unstable (reactive) materials Gases Liquids Class 4 Class 3 Class 2 Class 1 Solids Class 4 Class 3 Class 2 Class 1	See FC Table 105.6(1) Any quantity Any quantity 5 gallons 10 gallons Any quantity Any quantity 50 pounds 100 pounds
Water-reactive Materials Gases Liquids Class 3 Class 2 Class 1 Solids Class 3 Class 2 Class 1	See FC Table 105.6(1) Any quantity 5 gallons 55 gallons Any quantity 50 pounds 500 pounds

For SI: 1 gallon = 3.785 L, 1 pound = 0.454 kg.

**FC TABLE 105.6(4)
PERMIT QUANTITIES FOR FLAMMABLE SOLIDS**

FORMS OF FLAMMABLE SOLID	INDOORS (pounds)	OUTDOORS (pounds)
Pigs, ingots, billets, heavy castings	100	1,000
Light castings, light metallic products	100	125
Scraps, shavings, powders, dusts	1	100
Other flammable solids	1	100

For SI: 1 pound = 0.454 kg.

Hazardous production material (HPM) facilities. A permit is required to store, handle or use hazardous production materials.

High-piled storage. A permit is required to use an area exceeding 500 square feet (46 m²) in a building or structure or part thereof as a high-piled storage area.

1 **Hot work operations.** A permit is required to conduct hot work [using oxygen and a
2 flammable gas.], including the following types of hot work:

3
4 1. use of a flammable gas with oxygen.

5
6 2. use of flammable gas without oxygen at a construction site where a Department of
7 Buildings work permit is required.

8
9 3. use of electric arc equipment at a construction site where a Department of Buildings
10 work permit is required.

11
12 4. use of any open flame in a torch-applied roof system.

13
14 5. public demonstration of hot work, other than in an accredited educational institution or
15 program.

16
17 **Hydrogen fuel gas room.** A permit is required to establish and operate a hydrogen fuel gas
18 room for the generation, storage, handling and use of gaseous hydrogen.

19
20 **Industrial furnaces.** A permit is required to [maintain or] install and operate an industrial
21 furnace regulated by FC Chapter [21] 30.

22
23 **Liquefied petroleum gas (LPG).** A permit is required to store, handle or use LPG in quantities
24 exceeding those set forth in FC Table 105.6(1).

25
26 **Exceptions:** A permit is not required for:

27
28 1. stationary LPG installations in Group R-3 occupancies.

29
30 2. the storage and use of LPG in the fuel tank of a motor vehicle, aircraft, marine vessel
31 or watercraft for motive power.

32
33 **Lumber yards.** A permit is required to store lumber exceeding 100,000 board feet (8,333 ft³)
34 (236 m³).

35
36 **Methane recovery.** A permit is required for the recovery of methane from landfills and related
37 processing.

38
39 **Motor fuel-dispensing facilities.** A permit is required to [maintain or] establish and operate
40 the following types of motor fuel-dispensing facilities:

41
42 1. Fleet motor fuel-dispensing facilities.

43
44 2. Full-service motor fuel-dispensing facilities.

45
46 3. Self-service motor fuel-dispensing facilities.

1 **Natural gas liquefaction facility.** A permit is required to [maintain or] establish and operate
2 a natural gas liquefaction facility.

3
4 **Non-production chemical laboratory units.** A permit is required to store, handle or use
5 hazardous materials in a laboratory unit in quantities exceeding 1 gallon (3.8 L) of flammable
6 liquid, 1 gallon (3.8 L) of combustible liquid or 75 SCF (2.12 m³) of flammable gas.

7
8 **Non-tobacco hookah establishments.** A permit is required to [maintain or] establish and
9 operate a non-tobacco hookah establishment pursuant to Chapter 5 of Title 17 of the
10 Administrative Code and FC310.7.

11
12 **Open flames.** A permit is required to use open flames:

- 13 1. in any public assembly occupancy.
- 14 2. in any other place of public gathering.
- 15 3. in a covered mall building.

16
17
18
19
20 **Organic coatings.** A permit is required to conduct an organic-coating manufacturing operation
21 producing more than 1 gallon (4 L) of an organic coating in one day.

22
23 **Places of assembly.** A permit is required to [maintain or] establish and operate a place of
24 assembly. The term of such permit shall be for a period not to exceed 1 year.

25
26 **Portable fueled space heaters.** A permit is required to store, handle or use portable fueled
27 space heaters that are fueled:

- 28 1. by a combustible liquid.
- 29 2. by compressed natural gas (CNG).
- 30 3. by liquefied petroleum gas (LPG).
- 31 4. by piped natural gas, except in Group R-3 occupancies.

32
33
34
35
36
37 **Pyrotechnic material.** A permit is required to store, handle or sell, including storage for sale,
38 any quantity of pyrotechnic materials, articles and devices, other than pyrotechnic materials,
39 articles and devices used solely for a purpose other than to create a special effect.

40
41 **Pyroxylin plastics.** A permit is required to store, handle and/or use pyroxylin plastics as
42 follows:

- 43 1. To store, handle and/or use raw pyroxylin plastic in quantities exceeding 25 pounds
44 (11 kg).
 - 45 2. To use any quantity of raw pyroxylin plastic for the assembly or manufacture of articles.
- 46
47

1
2 **Refrigerating system.** A permit is required to [maintain or] install and operate a refrigerating
3 system that uses a group A1, A2, A3, B1, B2 or B3 refrigerant or that is mounted on or
4 suspended from a roof or ceiling.

5
6 **Exceptions:**

- 7
8 1. A refrigerating system of less than five horsepower that uses a group A1 refrigerant
9 and that is not mounted on or suspended from a roof or ceiling.
10
11 2. A refrigerating system installed in the residence portion of any building, installed in
12 motor vehicles, aircraft, marine vessels, watercraft or tank cars, or employing water
13 or air as a refrigerant.
14

15 **Repair garages.** A permit is required to [maintain or] establish and operate a repair garage.

16
17 **Special effects.** A permit is required for [:

- 18
19 1. the discharge or other use for any purpose of any material, article or device of an
20 explosive, flammable or combustible nature used to create a special effect, including
21 fireworks meeting the definition of fireworks, 1.4G, and pyrotechnic materials, articles
22 or devices.
23
24 2. the storage for use in a special effects display or other event of any material, article or
25 device of an explosive, flammable or combustible nature, including fireworks meeting
26 the definition of fireworks, 1.4G, and pyrotechnic materials, articles or devices.] the
27 conduct of a special effects display, and all related storage, handling, use and transportation
28 of pyrotechnic special effects materials and/or non-pyrotechnic special effects materials.
29

30 **Spraying or dipping.** A permit is required to conduct a spraying or dipping operation utilizing
31 flammable or combustible liquids or the application of powder coatings regulated by FC
32 Chapter [15] 24.
33

34 **Sulfur.** A permit is required to store, handle or use sulfur in quantities exceeding 200 pounds
35 (90.8 kg).
36

37 **Tar kettles.** A permit is required to store, handle or use a tar kettle.
38

39 **Tire-rebuilding plants.** A permit is required to [maintain or] establish and operate a tire-
40 rebuilding plant.
41

42 **Tires, scrap tires and tire byproducts.** A permit is required to store tires, scrap tires and tire
43 byproducts, except tires mounted on vehicles, in quantities exceeding:
44

- 45 1. twenty-five hundred cubic feet (71 m³) of total volume of scrap tires or one thousand
46 tires, whichever is less, either outdoors, or in buildings of noncombustible construction
47 that are protected throughout by a sprinkler system.

- 1
2 2. two hundred fifty cubic feet (7.1 m³) of total volume of scrap tires or one hundred tires,
3 whichever is less, in buildings of combustible construction, or in buildings of
4 noncombustible construction that are not protected throughout by a sprinkler system.
5

6 **Transportation of hazardous materials.** A permit is required to transport hazardous materials
7 [in or on a]:
8

- 9 1. in or on a marine vessel or watercraft transporting upon the navigable waters within the
10 city, any quantity of explosives for delivery at a wharf, pier, bulkhead, or other structure
11 over or contiguous to such navigable waters, or to a marine vessel or watercraft lying
12 thereto, in excess of the quantity required for the vessel or craft's own use.
13
14 2. in connection with a business or operation requiring a permit or certificate of fitness
15 under this code, including any New York City-based business or operation engaged in
16 the transportation or delivery of hazardous materials, in or on a:
17

18 2.1. motor vehicle transporting a flammable liquid in a quantity exceeding
19 1,000 pounds (454 kg) aggregate gross weight, except vehicles transporting paint
20 products prominently labeled as such in accordance with applicable laws, rules and
21 regulations.
22

23 [3.] 2.2. motor vehicle transporting a combustible liquid in a quantity exceeding
24 1,000 pounds (454 kg) aggregate gross weight, except vehicles transporting paint
25 products prominently labeled as such in accordance with applicable laws, rules and
26 regulations.
27

28 [4.] 2.3. motor vehicle transporting a compressed gas in any quantity exceeding the
29 limits set forth in FC Table 105.6(1) or 105.6(2).
30

31 [5.] 2.4. motor vehicle transporting any quantity of explosives, except small arms
32 ammunition.
33

34 **Exceptions:** A permit is not required for:
35

36 1. the transportation of hazardous materials for transshipment when transported in a
37 motor vehicle operated in compliance with the route and time requirements of
38 [FC2707.11] FC5007.11 and the rules.
39

40 2. the storage and use of hazardous materials in the fuel tank of a motor vehicle, marine
41 vessel or watercraft for motive power.
42

43 3. hazardous materials on motor vehicles, marine vessels or watercraft used for
44 refrigerating the cargo.
45

46 4. the transportation by motor vehicle of medical-grade gaseous or liquid oxygen by
47 trained and knowledgeable medical personnel engaged in providing licensed health

1 care at patient locations citywide, outside of health care facilities, on a citywide
2 response basis.

3
4 **SECTION FC 106**
5 **INSPECTIONS**
6

7 **106.1 Inspection authority.** The commissioner may enter and examine any building, structure,
8 facility, premises, marine vessel, watercraft or vehicle in accordance with FC104.3, including any
9 such place, boat or vehicle that has been issued a permit or other approval, for the purpose of
10 enforcing this code or any other law, rule or regulation enforced by the commissioner.

11
12 **106.2 Reserved.**

13
14 **106.3 Concealed work.** Whenever any installation subject to inspection, testing and/or approval
15 in accordance with this code, the construction codes or any other law, rule or regulation prior to
16 use is covered or concealed without having first been inspected, tested and/or approved, the
17 commissioner may require that such work be exposed for inspection.

18
19 **106.4 Sharing results of inspections.** The commissioner, in coordination with the Commissioner
20 of Buildings and the Commissioner of Environmental Protection, shall establish a procedure to
21 share information regarding violations in accordance with Section 28-103.7.1 of the New York
22 City Administrative Code.

23
24 **SECTION FC 107**
25 **MAINTENANCE**
26

27 **107.1 Maintenance required.** Whenever any device, equipment, system, operation, installation,
28 fire apparatus access road, or facility regulated by this code or the rules is installed or established,
29 including any signage or other condition or ancillary equipment necessary for its proper operation
30 or maintenance, whether or not required for compliance with the requirements of this code or the
31 rules, such device, equipment, system, operation, installation or facility shall thereafter be
32 continuously maintained in good working order, in accordance with this code, the rules, the
33 construction codes, [and the] permit or other approval conditions and approved design and
34 installation documents, manufacturer's instructions, and any other law, rule or regulation enforced
35 by the commissioner. Periodic inspection, testing or other actions required to ensure proper
36 operation and maintenance shall be conducted in accordance with such laws, rules, regulations,
37 approvals and instructions. When any inspection, test or other circumstance discloses a
38 non-compliant condition, the necessary repairs or other corrective actions shall be taken to render
39 such condition compliant with all applicable requirements and restore such device, equipment,
40 system, operation, installation, fire apparatus access road or facility to good working order. All
41 signs and other items required to be posted, and required markings, shall be maintained in a secure
42 and legible condition and not obstructed from view.

43
44 **107.2 [Testing and operation.** Devices, equipment and systems requiring periodic inspection,
45 testing or operation to ensure maintenance shall be inspected, tested or operated as set forth in this
46 code the rules.
47

1 **107.2.1 Test and inspection records.** Required test and inspection records shall be available
2 at all times for inspection by any representative of the department or such records as the
3 commissioner designates shall be filed with the department.
4

5 **107.2.2 Reinspection and testing.** Where any work, installation or test required to be
6 witnessed by a representative of the department does not pass an initial inspection or test, the
7 necessary corrections shall be made so as to achieve compliance with the requirements of this
8 code or other law, rule or regulation enforced by the commissioner. The non-complying
9 condition shall then be corrected and arrangements made for reinspection and/or retesting.]

10 **Reserved.**
11

12 **107.3 Supervision.** Maintenance and testing shall be under the supervision of a competent person
13 who shall ensure that such maintenance and testing are conducted at specified intervals in
14 accordance with this code and the rules. When required by specific provisions of this code or the
15 rules, such person shall be certified by the department or the Department of Buildings.
16

17 **107.4 Tampering with or rendering equipment inoperable.** It shall be unlawful for any person
18 to deface, obscure, remove or otherwise tamper with or render inoperable or inaccessible any fire
19 protection system, fire hydrant, fire detection and alarm system, portable fire extinguisher or other
20 fire appliance and related appurtenances, except as necessary during emergencies, maintenance,
21 repairs, alterations, drills, prescribed testing or as otherwise authorized by the commissioner.
22

23 **Exception:** Non-emergency use of fire hydrants approved by the Department of
24 Environmental Protection.
25

26 **107.4.1 Temporary covering of fire protection devices.** Coverings placed on or over fire
27 protection devices to protect them from damage during construction operations shall be
28 removed immediately upon the completion of each work shift.
29

30 **107.4.2 Other tampering.** Locks, gates, doors, barricades, chains, enclosures, signs, tags or
31 seals required by this code, the rules, permit or order of the commissioner shall not be removed,
32 defaced, obscured, unlocked and/or otherwise rendered illegible or inoperable.
33

34 **107.5 Owner/occupant responsibility.** The owner shall be responsible at all times for the safe
35 maintenance of a building, structure and premises in accordance with this code, and shall conduct
36 any and all inspections or tests necessary for such maintenance. Correction and abatement of
37 violations of this code and the rules shall be the responsibility of the owner. If an occupant creates,
38 or allows to be created, hazardous conditions in violation of this code or the rules, the occupant
39 shall also be responsible for the abatement of such hazardous conditions.
40

41 **107.6 Overcrowding.** It shall be unlawful to cause overcrowding, maintain an indoor or outdoor
42 space in an overcrowded condition, or allow an indoor or outdoor area or space to become
43 overcrowded. The commissioner may order remedial actions necessary to abate the overcrowding
44 condition and prevent future recurrence of such condition, including suspending or terminating the
45 event or other gathering, vacating the premises, enforcing the lawful use and maximum occupancy
46 of the premises and/or requiring the provision of fire guards.
47

1 **107.7 Recordkeeping.** A written record of the inspections, tests, servicing, fire watch and other
2 operations and maintenance required by this code, the rules, the referenced standards and any other
3 required recordkeeping referenced therein, shall be maintained on the premises or other approved
4 location for a minimum of 3 years, unless a different period of time is specified in such code, rules
5 or referenced standards. The commissioner may prescribe the form and format of such
6 recordkeeping. Such records shall be made available for inspection by any department
7 representative, and a copy of such records shall be provided to the department upon request,
8 without charge. The department additionally may require that certain records be filed with the
9 department[. Electronic filings may be made in lieu of paper filings, when approved] in such
10 manner as the department may prescribe, including online electronic submission, other electronic
11 format or paper filing.

12
13 **SECTION FC 108**
14 **RESERVED**

15
16 **SECTION FC 109**
17 **VIOLATIONS**

18
19 **109.1 Violations.** The provisions of this code and the rules shall be enforced in accordance with
20 this chapter, Title 15 of the New York City Administrative Code and the rules.

21
22 **109.2 Penalties.** Penalties for violations of this code and the rules shall be in accordance with this
23 chapter, Title 15 of the New York City Administrative Code and the rules.

24
25 **109.2.1 Transportation of extremely hazardous materials.** Except for transportation subject
26 to [FC2707.4] FC5007 and in addition to any other penalties provided by law, rule or
27 regulation, a person who transports explosives, fireworks, chlorine, or any hazardous material
28 in violation of this code or the rules shall be guilty of a misdemeanor and upon conviction
29 thereof shall be punished by a fine of not less than one thousand dollars and not more than ten
30 thousand dollars, or imprisonment for not more than 6 months or both, for each offense.

31
32 **109.2.2 Failure to provide fire protection systems.** In addition to any other penalties
33 provided by law, rule or regulation, any person who shall violate, or refuse, or neglect to
34 comply with any provision of law requiring a sprinkler system, fire alarm system or emergency
35 lighting in a Group A occupancy shall upon conviction thereof be punished by a fine of not
36 less than five hundred dollars nor more than ten thousand dollars for the first violation, not less
37 than one thousand dollars nor more than ten thousand dollars for the second violation, not less
38 than fifteen hundred dollars nor more than ten thousand dollars for the third violation, and not
39 less than two thousand dollars nor more than ten thousand dollars for the fourth violation, and
40 every subsequent violation, or, for any such violation by imprisonment for not more than 6
41 months, or by both such fine and imprisonment.

42
43 **109.2.3 Criminal liability.** In the event that any person is burned by the explosion of any
44 material the sale of which is prohibited by this code, or which has not been approved as herein
45 provided, and death ensues therefrom, in addition to any other penalties provided by law, rule
46 or regulation, the person found guilty of selling the material shall be deemed guilty of a felony,
47 and, upon conviction, shall be punished by a fine of not less than one thousand dollars, nor

1 more than five thousand dollars, or by imprisonment for a term not less than 1 year nor more
2 than 5 years; and in case of a bodily injury the person injured may maintain an action for
3 damages against the person violating the provisions of this code.
4

5 **109.2.4 Civil penalty for use of fireworks without a permit.** [Notwithstanding]
6 Notwithstanding any other provision of law, and in addition to any criminal penalties that may
7 apply, any person who violates FC105.6 by discharging or otherwise using fireworks without a
8 permit shall be liable for a civil penalty of seven hundred fifty dollars, which may be recoverable
9 in a proceeding before the New York City Environmental Control Board. For the purposes of
10 subdivision e of Section 15-230 of the Administrative Code, such violation shall be deemed to be
11 hazardous.
12

13 **SECTION FC 110**
14 **RESERVED**

15 **SECTION FC 111**
16 **ORDER TO DISCONTINUE WORK**

17
18
19 **111.1 Order.** Whenever the commissioner finds any work regulated by this code or the rules being
20 performed in a manner contrary to the provisions of such code or the rules, any design and
21 installation document approved by the department, or any condition of a permit, or otherwise being
22 performed in an unsafe manner, the commissioner may issue an order to discontinue work. For
23 purposes of this section, the term “work” shall include any of the following regulated by this code
24 or the rules: the manufacturing, storage, handling, use or transportation of any material, and any
25 device, equipment or system in connection therewith; the conduct of any operation; and the
26 operation of any facility.
27

28 **111.2 Issuance.** An order to discontinue work shall be in writing and shall be issued to the owner
29 or other person authorizing, supervising or engaging in the work. Upon issuance of an order to
30 discontinue work, the cited work shall immediately cease. The order to discontinue work shall
31 state the reason for the order, and the conditions under which the cited work may resume.
32

33 **111.3 Emergencies.** Where an emergency exists, the commissioner shall not be required to give
34 written notice prior to ordering the work discontinued.
35

36 **SECTION FC 112**
37 **CERTIFICATE OF APPROVAL**

38
39 **112.1 Approval of articles, equipment and devices.** Where required by this code or the rules,
40 the manufacturer of any article, equipment or device installed in any facility or used in connection
41 with any material or operation shall obtain a certificate of approval for the design, installation,
42 operation and/or maintenance of such article, equipment or device. Certificates of approval are
43 required for:
44

45 1. Auxiliary radio communication (ARC) systems, fire department in-building:

46 1.1. Base stations.
47

- 1
2 1.2. Radio consoles.
3
4 2. Bars, grills, grates or similar devices placed over emergency escape and rescue openings,
5 and openings onto fire escapes.
6
7 3. Commercial cooking exhaust systems:
8
9 3.1. Ductless hoods.
10
11 3.2. Emission control devices.
12
13 3.3. Prefabricated hoods.
14
15 3.4. Grease filters.
16
17 4. Distillery stills.
18
19 5. Energy storage systems, stationary:
20
21 5.1. Storage battery unit, including pre-engineered and pre-packaged systems.
22
23 5.2. Mobile systems.
24
25 6. Fire protection devices, equipment and systems:
26
27 6.1. Fire alarm control units, and medical gas, toxic, highly toxic and flammable gas
28 detection system control panels.
29
30 6.2. Fire department connections, standpipe system hose outlets and pressure reducing
31 valves.
32
33 6.3. Pre-engineered non-water fire extinguishing systems, including foam fire
34 extinguishing systems installed in connection with commercial cooking systems.
35
36 7. Flame-retardant chemicals and treatment.
37
38 8. High and/or low explosive products, devices, and firing systems in connection with blasting.
39
40 9. Metal hydride hydrogen storage systems.
41
42 10. Piped natural gas pressure boosters.
43
44 11. Pre-manufactured spray rooms and pre-manufactured spray booths that circulate heated
45 air.
46

1 **112.2 Conditions of approval.** The [commissioner] department may set forth in the certificate of
2 approval conditions on the approved purpose or use of such article, equipment or device, or type,
3 class or kind thereof, as may be necessary in the interest of public safety. The [commissioner]
4 department may include under a single certificate of approval more than one type, class or kind of
5 article, equipment or device of a similar design or common characteristic.
6

7 **112.3 Markings.** Each article, equipment or device, or type, class or kind thereof, for which a
8 certificate of approval has been issued shall have the number of such certificate plainly stamped
9 or otherwise affixed upon it.
10

11 **112.4 List of acceptable laboratories, articles and devices.** A current list of all testing services
12 and laboratories acceptable to the [commissioner] department for the purpose of testing articles,
13 equipment and devices, and a current list of all acceptable articles, equipment and devices shall be
14 maintained by the department and made available for public inspection.
15

16 **112.5 Application.** Applications for a new or renewal certificate of approval required by the
17 provisions of this code or the rules shall be made to the [commissioner] department, in such form
18 and detail as the [commissioner] department may prescribe, including such information and
19 documentation as the [commissioner] department may require. An application for a certificate of
20 approval shall include complete drawings of and specifications for the article, equipment or device
21 for which approval is sought and, unless the [commissioner] department determines that it is
22 impracticable, the article, equipment or device itself shall be attached to or submitted with the
23 application. The [commissioner] department may require that the article, equipment or device be
24 examined, tested or demonstrated at the applicant's expense in a manner prescribed by the
25 [commissioner] department, including examination and testing by a testing laboratory acceptable
26 to the [commissioner] department. In those instances where a testing or performance standard is
27 not prescribed by this code or the rules, the article, equipment or device or type, class or kind of
28 article, equipment or device shall have been examined and tested in a manner acceptable to the
29 [commissioner] department.
30

31 **112.6 Issuance.** The [commissioner] department may grant an application for a certificate of
32 approval upon a determination that the application article, equipment or device is designed for the
33 purpose for which it is to be used and can be safely operated in accordance with this code, the rules
34 and other applicable laws, rules and regulations.
35

36 **112.6.1 Term of certificate.** Every certificate or renewal thereof granted by the commissioner
37 shall be for a period as specified therein, not to exceed 3 years, and shall expire at the end of
38 such period unless the [commissioner] department approves its renewal.
39

40 **112.6.2 Time for submission of renewal applications.** Applicants may apply for renewal
41 during the period from 60 calendar days prior to a certificate's expiration date to not more than
42 1 year after such date. The commissioner shall not renew certificates that have been expired
43 for more than 1 year. Applicants holding such certificates must apply for an original certificate
44 and comply with all the original certificate requirements.
45

46 **112.6.3 Renewal.** Certificate renewals shall be at the discretion of the [commissioner]
47 department in the interest of public safety. The department may reevaluate the design and

1 safety of the article, equipment or device in light of changes in applicable laws, rules or
2 regulations, new technology, and safety concerns arising from the use of the article, equipment
3 or device.
4

5 **112.7 Expired certificates.** It shall be unlawful to install articles, equipment or devices authorized
6 by a certificate after the term of such certificate has expired.
7

8 **112.8 Certificate revocation and suspension.** The [commissioner] department may, at any time,
9 revoke or suspend a certificate for good cause. The certificate holder shall be afforded notice and
10 an opportunity to be heard prior to any such suspension or revocation except that, in the
11 circumstance of an imminent threat to public safety, such notice and opportunity to be heard may
12 be given promptly after such revocation or suspension.
13

14 **112.9 Maintenance on premises.** A copy of the certificate of approval shall be maintained at the
15 premises for review by persons installing, operating or maintaining the approved article,
16 equipment or device, and for inspection by any representative of the department.
17

18 **SECTION FC 113**
19 **CERTIFICATES OF FITNESS AND QUALIFICATION**
20

21 **113.1 Supervision required.** The commissioner may require that a material, operation or facility
22 subject to the provisions of this code, the rules, or other laws, rules and regulations enforced by
23 the department, be manufactured, stored, handled, used, maintained, inspected and tested,
24 transported, conducted by, or operated under the supervision of, a person holding a certificate
25 pursuant to this section. The commissioner may require such supervision to be personal
26 supervision or general supervision of the material, operation or facility. Where a reference in this
27 code is made to a certificate of fitness without identifying the type of certificate, such reference
28 shall be to the certificate of fitness designated by the commissioner as appropriate to conduct or
29 supervise the material, operation or facility.
30

31 **113.1.1 Work location.** Except as otherwise provided in this code or the rules, the
32 commissioner may issue certificates for one or more designated work locations.
33

34 **113.2 Duties.** In addition to any other responsibilities specified in this code or the rules, a
35 certificate holder shall be responsible for:
36

- 37 1. the safe manufacturing, storage, handling, use, operation, maintenance, inspection, testing,
38 repair and/or supervision of the material, operation or facility, and emergency preparedness,
39 for which the certificate is required, in accordance with this code, the rules, and any other
40 applicable laws, rules and regulations.
41
- 42 2. notifying the department of any fire, explosion, reportable leak or other release of hazardous
43 material, or other emergency related to the duties of his or her certificate.
44
- 45 3. keeping such certificate upon his or her person or otherwise readily available on the premises
46 for inspection by any representative of the department, at all times while conducting or

1 supervising the material, operation, facility or emergency preparedness for which the
2 certificate is required.

3
4 **113.3 Applications.** Applications for new or renewal certificates required by the provisions of this
5 code or the rules shall be made to the commissioner, in such form and detail as the commissioner
6 may prescribe, including such information and documentation as the commissioner may require.

7
8 **113.4 Minimum qualifications.** Applicants for certificates shall comply with the following
9 minimum requirements:

- 10
11 1. Be at least 18 years of age, or such age above the age of 18 as may be required by law, rule
12 or regulation.
- 13
14 2. Have a reasonable understanding of the English language and be able to answer satisfactorily
15 such questions as may be asked of such applicant upon his or her examination.
- 16
17 3. Present such evidence of his or her character, habits and past employment, as may be
18 satisfactory to the commissioner.
- 19
20 4. Present such evidence of his or her qualifications as set forth in the rules or the department's
21 notice of examination for such certificate.
- 22
23 5. Pass an examination, administered by the department or other entity that tests the applicant's
24 knowledge of the code, law, rules and regulations governing the regulated material, operation
25 or facility, and the precautions and other actions necessary to ensure the proper and safe
26 performance of his or her duties as a certificate holder.
- 27
28 6. When applying for a certificate of fitness relating to storage, handling and use of explosives,
29 present proof of United States citizenship.

30
31 **113.5 Investigation.** Applicants are subject to an investigation by the department in connection
32 with their application and their qualifications and fitness for the certificate.

33
34 **113.6 Fingerprinting.** Applicants for a certificate of fitness for the storage, use and handling of
35 explosives, fireworks, pyrotechnics and special effects shall be fingerprinted and a criminal
36 background check conducted for the purposes authorized by law. The commissioner may require
37 such fingerprinting and criminal background check for other certificates.

38
39 **113.7 Issuance.** The commissioner may grant an application for a certificate upon a determination
40 that the applicant possesses the qualifications and fitness required for such certificate, as set forth
41 in the code and the rules.

42
43 **113.7.1 Term of certificate.** Every certificate or renewal thereof granted by the commissioner
44 shall be for a period as specified therein, not to exceed 3 years, and shall expire at the end of
45 such period unless the commissioner approves its renewal.

1 **113.7.2 Time for submission of renewal applications.** Applicants may apply for renewal
2 during the period from 60 calendar days prior to a certificate's expiration date to not more than
3 1 year after such date. The commissioner shall not renew certificates that have been expired
4 for more than 1 year. Persons holding such certificates must apply for an original certificate
5 and comply with all of the original certificate requirements.
6

7 **113.7.3 Renewal.** Certificate renewals shall be at the discretion of the commissioner in the
8 interest of public safety based on a review of the certificate holder's qualifications and fitness.
9 The department may review the certificate holder's qualifications and fitness and may require
10 a certificate holder to complete a department-approved continuing education program and/or
11 provide other proof of the holder's continuing qualifications and fitness.
12

13 **113.8 Expired certificates.** It shall be unlawful to perform or provide such supervision for a
14 material, operation or facility authorized by a certificate after the term of such certificate has
15 expired.
16

17 **113.9 Certificate revocation and suspension.** The commissioner may, at any time, revoke or
18 suspend a certificate for misconduct, or other good cause. The certificate holder shall be afforded
19 notice and an opportunity to be heard prior to any such suspension or revocation except that, in the
20 circumstance of an imminent threat to public safety, such notice and opportunity to be heard may
21 be given promptly after such revocation or suspension.
22

23 **SECTION FC 114** 24 **CERTIFICATES OF LICENSE** 25

26 **114.1 Supervision required.** The commissioner may require that the installation, alteration,
27 testing and repair of liquid motor fuel storage and dispensing equipment and systems, and
28 flammable or combustible liquid storage systems, be conducted by a person holding a certificate
29 of license or by an employee of such certificate holder working under his or her direct supervision.
30

31 **114.2 Duties.** In addition to any other responsibilities specified in this code or the rules, a
32 certificate of license holder shall be responsible for:
33

- 34 1. the proper and safe installation, alteration, testing and repair of liquid motor fuel storage and
35 dispensing equipment and systems, and flammable or combustible liquid storage systems in
36 accordance with this code, the rules, and any other applicable laws, rules and regulations.
37
- 38 2. verifying that all required approvals from the department have been obtained prior to
39 installing, altering, testing or repairing liquid motor fuel storage and dispensing equipment,
40 and flammable or combustible liquid storage systems.
41
- 42 3. notifying the department of any fire, explosion, reportable leak or other release of hazardous
43 material, or other emergency related to the duties of his or her certificate.
44

45 **114.3 Applications.** Applications for new or renewal certificates required by the provisions of this
46 code or the rules shall be made to the commissioner, in such form and detail as the commissioner
47 may prescribe, including such information and documentation as the commissioner may require.

1
2 **114.4 Minimum qualifications.** Applicants for certificates shall comply with the following
3 minimum requirements:

- 4
5 1. Be at least 18 years of age.
- 6
7 2. Have a reasonable understanding of the English language and be able to answer satisfactorily
8 such questions as may be asked of such applicant upon his or her examination.
- 9
10 3. Present such evidence of his or her character and past employment, as may be satisfactory
11 to the commissioner.
- 12
13 4. Present such evidence of his or her qualifications set forth in the rules or the department's
14 notice of examination for such certificate.
- 15
16 5. Pass an examination, administered by the department or other entity, that tests the applicant's
17 knowledge of the code, law, rules and regulations governing the installation, alteration,
18 testing and repair of liquid motor fuel storage and dispensing equipment and systems and
19 flammable and combustible liquid storage systems the precautions and other actions
20 necessary to ensure the proper and safe performance of his or her duties as a certificate
21 holder.

22
23 **114.5 Investigation.** Applicants and their principals are subject to an investigation by the
24 department in connection with their application and their qualifications and fitness for the
25 certificate.

26
27 **114.6 Fingerprinting.** The commissioner may require the fingerprinting and criminal background
28 check of applicants for a certificate for purposes authorized by law.

29
30 **114.7 Issuance.** The commissioner may grant an application for a certificate of license upon a
31 determination that the applicant possesses the qualifications and fitness required for such
32 certificate, as set forth in the code and the rules.

33
34 **114.7.1 Term of certificate.** Every certificate or renewal thereof granted by the commissioner
35 shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of
36 such period unless the commissioner approves its renewal.

37
38 **114.7.2 Time for submission of renewal applications.** Applicants may apply for renewal
39 during the period from 60 calendar days prior to a certificate's expiration date to not more than
40 1 year after such date. The commissioner shall not renew certificates that have been expired
41 for more than 1 year. Persons holding such certificates must apply for an original certificate
42 and comply with all of the original certificate requirements.

43
44 **114.7.3 Renewal.** Certificate renewals shall be at the discretion of the commissioner in the
45 interest of public safety based on a review of the certificate holder's qualifications and fitness.
46 The department may review the certificate holder's qualifications and fitness and may require

1 a certificate holder to complete a department-approved continuing education program and/or
2 provide other proof of the holder's continuing qualifications and fitness.

3
4 **114.8 Expired certificates.** It shall be unlawful to engage in the business authorized by a
5 certificate after the term of such certificate has expired.

6
7 **114.9 Certificate revocation and suspension.** The commissioner may, at any time, revoke or
8 suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded
9 notice and an opportunity to be heard prior to any such suspension or revocation except that, in the
10 circumstance of an imminent threat to public safety, such notice and opportunity to be heard may
11 be given promptly after such revocation or suspension.

12
13 **114.10 Insurance.** The commissioner may require certificate holders to obtain and furnish proof
14 of general liability insurance, in such amounts and in accordance with such requirements, as may
15 be set forth in the code or the rules, otherwise required by law, or required as a condition of the
16 certificate issuance. The certificate shall expire by operation of law if any such required insurance
17 lapses, expires or is cancelled during the term of the certificate.

18
19 **SECTION FC 115**
20 **COMPANY CERTIFICATES**

21
22 **115.1 Duties.** A certificate holder shall be responsible for the safe manufacturing, storage,
23 handling, use, operation, maintenance, inspection, testing, repair and/or supervision of the activity
24 for which the certificate is required, in accordance with this code, the rules and any other applicable
25 laws, rules or regulations.

26
27 **115.2 Applications.** Applications for new or renewal certificates required by the provisions of this
28 code or the rules shall be made to the commissioner, in such form and detail as the commissioner
29 may prescribe, including such information and documentation as the commissioner may require.

30
31 **115.3 Minimum qualifications.** Applicants and their principals shall submit evidence acceptable
32 to the commissioner of such experience and qualifications as set forth in this code, the rules or the
33 department's notice of examination for such certificate.

34
35 **115.4 Investigation.** Applicants and their principals are subject to an investigation by the
36 department in connection with their application and their qualifications and fitness for the
37 certificate.

38
39 **115.5 Fingerprinting.** The commissioner may require the fingerprinting and criminal background
40 check of applicants for a certificate and their principals.

41
42 **115.6 Issuance.** The commissioner may grant an application for a company certificate upon a
43 determination that the applicant possesses all of the qualifications for such certificate, as set forth
44 in the code and the rules.

1 **115.6.1 Term of certificate.** Every certificate or renewal thereof granted by the commissioner
2 shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of
3 such period unless the commissioner approves its renewal.
4

5 **115.6.2 Time for submission of renewal applications.** Applicants may apply for renewal
6 during the period from 60 calendar days prior to a certificate’s expiration date to not more than
7 1 year after such date. The commissioner shall not renew certificates that have been expired
8 for more than 1 year. Persons holding such certificates must apply for an original certificate
9 and comply with all of the original certificate requirements.
10

11 **115.6.3 Renewal.** Certificate renewals shall be at the discretion of the commissioner in the
12 interest of public safety based on a review of the certificate holder’s qualifications and fitness.
13 The department may review the certificate holder’s qualifications and fitness and may require
14 a certificate holder to complete a department-approved continuing education program and/or
15 provide other proof of the holder’s continuing qualifications and fitness.
16

17 **115.7 Expired certificates.** It shall be unlawful to engage in the business authorized by a
18 certificate after the term of such certificate has expired.
19

20 **115.8 Certificate revocation and suspension.** The commissioner may, at any time, revoke or
21 suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded
22 notice and an opportunity to be heard prior to any such suspension or revocation except that, in the
23 circumstance of an imminent threat to public safety, such notice and opportunity to be heard may
24 be given promptly after such revocation or suspension.
25

26 **115.9 Misrepresentation as department employees.** No person may falsely represent himself or
27 herself to be a member or agent of the department.
28

29 **115.10 Insurance.** The commissioner may require certificate holders to obtain and furnish proof
30 of general liability insurance, in such amounts and in accordance with such requirements, as may
31 be set forth in the code or the rules, otherwise required by law, or required as a condition of the
32 certificate issuance. The certificate shall expire by operation of law if any such required insurance
33 lapses, expires or is cancelled during the term of the certificate.
34

35 **SECTION FC 116**
36 **EXPEDITOR REGISTRATION CERTIFICATES**
37

38 **116.1 Registration.** No person may submit, file, request, negotiate or otherwise seek approval of
39 applications for issuance of permits, or other approvals, including approval of design and
40 installation documents, without first having obtained an expeditor registration certificate in
41 accordance with this section and the rules. It shall be unlawful to hold oneself out to the public or
42 otherwise represent that one is “registered with the fire department,” “registered” or make any
43 similar representation in such a manner as to convey the impression that such person is registered
44 with the department unless such person is registered in accordance with this section.
45

46 **Exceptions:** The following persons are exempt from the provisions of this section:
47

- 1 1. Any person or entity making application on his, her or its own behalf. If the applicant is
2 a partnership or corporation, the general partners and principal officers thereof shall be
3 included within this exception. Principal officers of a corporation shall include the
4 president, vice presidents, secretary and treasurer.
5
- 6 2. The occupants of a premises that is the subject of the application, if authorized by the
7 owner to file the application.
8
- 9 3. Registered architects licensed by the New York State Department of Education.
10
- 11 4. Professional engineers licensed by the New York State Department of Education.
12
- 13 5. Attorneys admitted to practice in New York State.
14
- 15 6. Plumbers when such application relates to work performed under their license.
16
- 17 7. Master fire suppression piping contractors licensed by the Commissioner of Buildings,
18 when such application relates to work performed under their license.
19
- 20 8. Master electricians licensed by the Commissioner of Buildings, when such application
21 relates to work performed under their license.
22
- 23 9. Certificate of license holders, when such application relates to work performed under
24 their license.
25
- 26 10. FLS director and FEP coordinator certificate of fitness holders when the application
27 relates to the emergency preparedness plan of the building for which they are registered.
28
- 29 11. Managing agents registered with the New York City Department of Housing
30 Preservation and Development or the New York State Secretary of State.
31
- 32 12. Construction site fire safety managers when the application relates to fire safety at a
33 construction site for which such certificate holder provides supervision.
34
- 35 13. Persons holding a certificate of fitness for professional certification of fire alarm and
36 emergency alarm installations and testing.
37

38 **116.2 Applications.** Applications for new or renewal expeditor registration certificates required
39 by FC116.1 shall be made to the commissioner, in such form and detail as the commissioner may
40 prescribe, including such information and documentation as the commissioner may require.
41

42 **116.3 Investigation.** Applicants are subject to an investigation by the department in connection
43 with their application and their qualifications and fitness for the certificate.
44

45 **116.4 Fingerprinting.** The commissioner may require fingerprinting and a criminal background
46 check for a certificate for purposes authorized by law.
47

1 **116.5 Issuance.** The commissioner may grant an application for a certificate upon a determination
2 that the applicant possesses all of the qualifications for such certificate, as set forth in the code and
3 the rules, qualifying the applicant to appear before the department to submit, file, request, negotiate
4 or otherwise seek approval of applications for issuance of permits, or other approvals.
5

6 **116.5.1 Term of certificate.** Every certificate or renewal thereof granted by the commissioner
7 shall be for a period as specified therein, not to exceed 2 years, and shall expire at the end of
8 such period unless the commissioner approves its renewal.
9

10 **116.5.2 Time for submission of renewal applications.** Applicants may apply for renewal
11 during the period from 60 calendar days prior to a certificate's expiration date to not more than
12 1 year after such date. The commissioner shall not renew certificates that have been expired
13 for more than 1 year. Persons holding such certificates must apply for an original certificate
14 and comply with all of the original certificate requirements.
15

16 **116.5.3 Renewal.** Certificate renewals shall be at the discretion of the commissioner in the
17 interest of public safety based on a review of the certificate holder's qualifications and fitness.
18

19 **116.6 Expired certificates.** It shall be unlawful to engage in the business authorized by a
20 certificate when the term of such certificate has expired.
21

22 **116.7 Certificate revocation and suspension.** The commissioner may, at any time, revoke or
23 suspend a certificate for misconduct or other good cause. The certificate holder shall be afforded
24 notice and an opportunity to be heard prior to any such suspension or revocation except that, in the
25 circumstance of an imminent threat to public safety, such notice and opportunity to be heard may
26 be given promptly after such revocation or suspension.
27

28 **SECTION FC 117** 29 **FEES**

30
31 **117.1 Fees.** Fees shall be as set forth in FC Appendix A.
32

33 **117.2 Fee exemptions.** Exemptions from department fees shall be in accordance with FC 117.2.1
34 through 117.2.3.
35

36 **117.2.1 Permit, inspection and performance test fee exemption.** The provisions of this code
37 as to the payment of fees for permits, inspections or witnessing of required system performance
38 tests shall not apply to premises used and owned or operated by a religious or educational
39 institution, corporation or association organized and operated exclusively for religious or
40 educational purposes that is qualified as an exempt organization pursuant to United States
41 Internal Revenue Code Section 501(c)(3), provided that no part of the net earnings enures to
42 the benefit of any private shareholder or individual; and provided further, that this exemption
43 shall apply only to such portions of the premises used by such religious or educational
44 institution, corporation or association predominantly as one of the following:
45

- 46 1. A house of worship, or dwelling units for members of the clergy of such religious
47 institution, corporation or association situated on or adjacent to the same premises as

1 such house of worship. For purposes of this section, "house of worship" shall mean that
2 part of a premises classified in Occupancy Group A-3 that is used by members of a
3 religious institution, corporation or association principally as a meeting place for divine
4 worship or other religious observances, and "member of the clergy" shall mean a
5 clergyman or minister, as defined in the religious corporations law, who officiates at or
6 presides over such religious observances for such religious institution, corporation or
7 association, and who does not derive his or her principal income from any other
8 occupation or profession.
9

- 10 2. A school accredited by the state of New York providing kindergarten through twelfth
11 grade education.
12

13 **117.2.2 Individual certificate fee exemption.** Employees of the city who submit evidence
14 satisfactory to the commissioner that they require such certificate as a condition of their
15 continued employment with the city shall be exempt from payment of any application, written
16 examination, practical examination and renewal fees. This fee exemption shall not include any
17 required late renewal or fingerprinting fees. Certificate holders converting their certificate from
18 fee-exempt to non-fee-exempt status shall be required to pay all applicable original application,
19 written examination and practical examination fees previously waived.
20

21 **117.2.3 Company certificate fee exemption.** Agencies of the city that require certificates to
22 conduct the business of their agency shall be exempt from payment of certificate fees.
23

24 **117.3 Penalties and fees for late renewal.** Failure to timely render payment of fees for any
25 certificate, permit or other approval issued by the commissioner, or service provided by the
26 department, shall be sufficient grounds for denial of a certificate, permit or other approval or
27 service, or renewal thereof. Fees for late renewal shall be in accordance with FC 117.3.1 through
28 117.3.2.2.
29

30 **117.3.1 Late renewal of certificates.** In addition to the payment of the renewal fee, any
31 applicant renewing a certificate more than 90 calendar days but less than 1 year after its
32 expiration date shall be subject to a late filing charge of 50 percent of the renewal fee or twenty-
33 five dollars, whichever is greater.
34

35 **117.3.2 Late renewal of permits.** Fees for late permit renewal shall be in accordance with FC
36 117.3.2.1 and 117.3.2.2, except the commissioner may waive the payment of late filing fees or
37 prior annual fees, or both, upon a determination that the late renewal was caused by
38 circumstances beyond the control of the applicant.
39

40 **117.3.2.1 Renewal within one year.** In addition to the payment of the renewal fee, any
41 applicant renewing a permit more than 90 calendar days but less than 1 year after its
42 expiration date shall be subject to a late filing charge of 50 percent of the renewal fee.
43

44 **117.3.2.2 Renewal after one year.** In addition to the payment of the renewal fee, any
45 applicant renewing a permit later than 1 year after its expiration date shall be subject to a
46 late filing charge of 100 percent of the renewal fee. Such applicant shall be liable also for

1 all the annual fees which should have been paid from the date on which the permit expired
2 to the date on which such permit was renewed.
3

4 **117.3.3 Late payment of fees for services.** All fees for services rendered by the department,
5 including inspections and witnessing of tests, shall be paid within 30 calendar days of receipt
6 of the bill therefor. Any disputes regarding such bill shall be submitted in writing within 20
7 calendar days of the date of receipt thereof. Failure to timely remit payment shall subject the
8 owner or other person receiving such service to be additionally liable to the department for
9 interest on the compensation due and owing to the department. Such interest shall be computed
10 for the period from the date of the bill to the date of payment, based on the amount of the bill
11 and the rate of interest set forth in Section 5004 of the New York Civil Practice Law and Rules.
12

13 **117.4 Liens on property for permit and inspection fees.** Liens on property for permit and
14 inspection fees shall be as follows:
15

- 16 1. Any unpaid fee for an inspection performed by the department pursuant to law or rule, any
17 unpaid fee for the issuance or renewal pursuant to this code of a permit to manufacture, store,
18 handle, use or sell hazardous materials or combustible materials, or conduct an operation or
19 maintain a facility on land or in a building specified therein, and any unpaid penalties
20 imposed for late payment of any such renewal fees shall constitute a lien upon the land and
21 buildings upon or in respect to which such inspection was performed, or upon the land and
22 buildings specified in such permit, as hereinafter provided.
23
- 24 2. There shall be filed in the office of the department a record of all fees for inspections
25 performed by or on behalf of the department, all fees for permits to manufacture, store,
26 handle, use or sell hazardous materials or combustible materials, or conduct an operation or
27 maintain a facility on land or in a building issued or renewed by the department, and all
28 penalties for late payment of any such renewal fees imposed by the department. Such records
29 shall be kept on a building by building basis and shall be accessible to the public during
30 normal business hours. An entry of a fee on the records of the department shall constitute
31 notice to all parties.
32
- 33 3. All such unpaid fees shall constitute a lien upon the land and building upon or in respect to
34 which such inspection was performed, or upon the land and buildings specified in such
35 permit, when the amount thereof shall have been definitely computed as a statement of
36 account by the department, and the department shall cause to be filed in the office of the city
37 collector an entry of the account stated in the book in which such charges against the premises
38 are to be entered. Such lien shall have a priority over all other liens and encumbrances except
39 for the lien of taxes and assessments. However, no lien created pursuant to this section shall
40 be enforced against a subsequent purchaser in good faith or mortgagee in good faith unless
41 such transaction occurred after the date of entry of a fee on the records of the department
42 pursuant to FC117.4(2).
43
- 44 4. A notice thereof, stating the amount due and the nature of the charge, shall be mailed by the
45 city collector, within 5 business days after such entry, to the last known address of the person
46 whose name appears on the records in the office of the city collector as being the owner or

1 agent or as a person designated by the owner to receive tax bills or, where no name appears,
2 to the premises, addressed to either the owner or the agent.
3

4 5. If such charge is not paid within 30 calendar days from the date of entry, it shall be the duty
5 of the city collector to receive interest thereon at a rate of 15 percent per annum, to be
6 calculated to the date of payment from the date of entry.
7

8 6. Such charges and the interest thereon shall continue to be, until paid, a lien on the premises.
9 Such lien shall be a tax lien within the meaning of Sections 11-319 and 11-401 of the New
10 York City Administrative Code and may be sold, enforced or foreclosed in the manner
11 provided in Chapters 1, 3 and 4 of Title 11 of the New York City Administrative Code or
12 may be satisfied in accordance with Section 1354 of the New York State Real Property
13 Actions and Proceedings Law.
14

15 7. Such notice mailed by the city collector pursuant to this section shall have stamped or printed
16 thereon a reference to this section of this code.
17

18 8. In any proceedings to enforce or discharge a lien created pursuant to this section, the validity
19 of the lien shall not be subject to challenge based on the lawfulness of the inspection, or the
20 propriety and accuracy of the fee for which a lien is claimed, except as provided in this
21 section.
22

23 9. No such challenge may be made except by the owner of the property, or a mortgagee or
24 lienor whose mortgage or lien would, but for the provisions of this section, have priority over
25 the department's lien.
26

27 **117.5 Disposition of revenues.** All fees, fines and forfeitures and all proceeds of suits for
28 penalties, which may be paid or collected pursuant to this code, shall be paid into the general fund
29 of the city established pursuant to Section 109 of the New York City Charter.
30

31 **CHAPTER 2** 32 **DEFINITIONS** 33

34 **SECTION FC 201** 35 **GENERAL** 36

37
38 **201.1 Scope.** Unless otherwise expressly stated, the following terms shall, for the purposes of this
39 code, have the meanings set forth in this chapter.
40

41 **201.2 Interchangeability.** Words stated in the present tense include the future; words stated in the
42 masculine gender include the feminine and neuter; the singular number includes the plural and the
43 plural the singular.
44

45 **201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in
46 the construction codes or Electrical Code, such terms shall have the meanings ascribed to them as

1 in those codes. Any reference to any of the construction codes shall be deemed to include any
2 related or other applicable provisions of any of the construction codes.

3
4 **201.4 Terms not defined.** Where terms are not defined through the methods authorized by this
5 section, such terms shall have the ordinarily accepted meanings as the context implies.

6
7 **SECTION FC 202**
8 **DEFINITIONS**
9

10 **AEROSOL.** [See FC2802.1.] A product that is dispensed from a container by a propellant,
11 classified as follows:

12
13 **Level 1.** [See FC2802.1.] Aerosol products with a total chemical heat of combustion that is
14 greater than 0 and less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

15
16 **Level 2.** [See FC2802.1.] Aerosol products with a total chemical heat of combustion that is
17 greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

18
19 **Level 3.** [See FC2802.1.] Aerosol products with a total chemical heat of combustion that is
20 greater than 13,000 Btu/lb (30 kJ/g).

21
22 **AEROSOL CONTAINER.** [See FC2802.1.] A metal can, or a glass or plastic bottle designed to
23 dispense an aerosol.

24
25 **AEROSOL WAREHOUSE.** [See FC2802.1.] A Group H or S occupancy used exclusively for
26 the nonretail storage and transshipment of aerosol products.

27
28 **AIR OVERPRESSURE.** Blast-induced air pressure greater than the surrounding atmospheric
29 pressure; measured and reported in pounds per square inch (psi).

30
31 **[AIRBLAST.** See FC3302.1.]

32
33 **AIRCRAFT LANDING SITE.** [See FC1102.1.] An area of land or water or a structural surface
34 that is designed or used for the landing or takeoff of aircraft, other than helicopters, and any
35 appurtenant areas, but which is not designed or used for fueling, defueling, maintenance, repairs
36 or storage of such aircraft.

37
38 **AIRCRAFT OPERATION AREA.** [See FC1102.1.] Any area used or intended for use for the
39 parking, taxiing, takeoff, landing or other aviation-related operations.

40
41 **AIR-INFLATED STRUCTURE.** [See FC2402.1.] A structure whose structural elements are
42 inflated and maintained by elevated air pressure and are not occupiable spaces.

43
44 **AIRPORT.** [See FC1102.1.] An area of land or structural surface that is designed or used for the
45 landing and takeoff of aircraft with an overall length greater than 39 feet (11 887 mm) and an
46 overall exterior fuselage width greater than 6.6 feet (2012 mm), and any appurtenant areas that are
47 designed or used for aviation facilities and operations.

1
2 **AIR-SUPPORTED STRUCTURE.** [See FC2402.1.] A structure, the shape of which is attained
3 and maintained by elevated air pressure, and the occupancy of which is within the area of elevated
4 pressure.
5
6 **ALARM NOTIFICATION APPLIANCE.** [See FC902.1.] A fire alarm system component, such
7 as a bell, horn, speaker, light, text display or vibration device that issues an audible, tactile, and/or
8 visual alert.
9
10 **ALARM SIGNAL.** [See FC902.1.] A signal indicating an emergency requiring immediate action,
11 such as a signal indicative of fire.
12
13 **ALCOHOL-BASED HAND RUB.** [See FC3402.1.] An alcohol-containing preparation designed
14 for application to the hands for anti microbacterial or other medicinal purpose that contains ethanol
15 or isopropanol.
16
17 **ALCOHOL-BLENDED MOTOR FUEL.** [See FC2202.1.] Gasoline blended with ethanol or
18 other alcohol with an alcohol concentration greater than 15 percent by volume.
19
20 **ALCOHOL PROCESSING.** See Distillery Operations.
21
22 **ALCOHOL PROCESS TANK.** See Distillery Equipment.
23
24 **ALCOHOL STORAGE AREA.** Any area outside of the distilled spirits processing area in which
25 raw alcohol, distilled spirits and/or alcohol that is a Class II or Class III combustible liquid is
26 stored.
27
28 **ALCOHOL STORAGE EQUIPMENT.** See Distillery Equipment.
29
30 **ALTERATION.** Any addition to, or modification of, an existing installation or facility, other than
31 any repair made in the ordinary course of maintenance.
32
33 **AMMONIUM NITRATE.** [See FC3302.1.] A chemical compound represented by the formula
34 NH₄NO₃.
35
36 **ANNUNCIATOR.** [See FC902.1.] A unit containing one or more indicator lamps, alphanumeric
37 displays, or other equivalent means in which each indication provides status information about a
38 circuit, condition or location.
39
40 **APPLICATION.** An application submitted to the commissioner for a permit, certificate or other
41 approval or determination issued or made by the commissioner pursuant to this code or other law,
42 rule or regulation, including documents and oral representations submitted in connection with such
43 application.
44
45 **APPROVED.** Acceptable to the commissioner.
46

1 **APPROVED TESTING LABORATORY.** A nationally recognized testing laboratory or other
2 approved agency or organization that conducts scientific testing of any material, operation or
3 facility regulated by this code (including any article, equipment or device) to assess its
4 performance based on a national, industry or other approved standard, including an approved
5 testing agency designated by the Department of Buildings.

6
7 **ARRAY.** [See FC2302.1.] Each separate high-piled storage configuration, taking into
8 consideration the type of packaging, flue spaces, height of storage and compactness of storage.

9
10 **ARRAY, CLOSED.** [See FC2302.1.] A storage configuration having a 6-inch (152-mm) or
11 smaller width vertical flue space that restricts air movement through the stored commodity.

12
13 **ASPHALT MELTER.** [See FC302.1.] An approved device designed to heat asphalt, typically for
14 waterproofing operations, that, utilizing a flammable gas or a combustible liquid, generates an
15 enclosed flame that indirectly heats a vessel containing the asphalt.

16
17 **ASSEMBLY AREA.** [See FC402.1.] A designated area outside of a building to which building
18 occupants are directed to report upon implementation of a partial or full evacuation in accordance
19 with a comprehensive fire safety and emergency action plan or a fire and emergency preparedness
20 plan.

21
22 **[ASSISTANT BLASTER.** See FC3302.1.]

23
24 **AUTOMATED CONTAINER EXCHANGE SYSTEM.** A self-service storage rack system
25 designed to individually house and vent LPG containers, or, when approved by the department,
26 other compressed gas containers, with each container in a separate compartment. Automated
27 container exchange systems are typically associated with a vending system that accepts payment
28 and allows a customer to remove a full container with the option to insert an empty container in
29 its place.

30
31 **AUTOMATED RACK STORAGE.** [See FC2302.1.] A method of stocking racks and retrieving
32 stored products or pallets of products from racks, whereby the movement of products and pallets
33 of products is controlled by computer or other automated means.

34
35 **AUTOMATIC.** [See FC902.1.] As applied to fire protection devices, any device, equipment or
36 system that initiates emergency system function as a result of a predetermined temperature rise,
37 rate of temperature rise, or combustion products, without the necessity for human intervention.

38
39 **AUTOMOTIVE SALVAGE AND WRECKING FACILITY.** [See FC302.1.] Any premises
40 used for the dismantling and/or wrecking of motor vehicles in connection with the sale of auto
41 parts or scrap metal.

42
43 **AVIATION FACILITY.** [See FC1102.1.] Any premises upon which an aircraft landing site,
44 airport, heliport, helistop, seaplane base or other aviation-related operation is located or conducted.

45
46 **BALED COTTON.** [See FC2902.1.] A natural seed fiber wrapped in and secured with industry-
47 accepted materials, typically consisting of burlap, woven polypropylene, polyethylene or cotton or

1 sheet polyethylene, secured with wire or bands. The term baled cotton includes lint removed
2 from the cottonseed (linters) and residual materials from the ginning process (motes).

3
4 **BALED COTTON, DENSELY PACKED.** [See FC2902.1.] Baled cotton with a packing density
5 of at least 22 pounds per cubic foot (360 kg/m³). A bale of densely-packed baled cotton typically
6 measures 55 inches (1397 mm) in length, 21 inches (533 mm) in width, and 27.6 to 35.4 inches
7 (701 to 899 mm) in height.

8
9 **BARREL.** See Distillery Equipment.

10
11 **BARRICADE.** [See FC3302.1.] A structure or other artificial or natural barrier constructed in
12 connection with the storage, handling and use of explosives that is designed to withstand the rapid
13 release of energy in an explosion and provides a shield from the impact of the explosion. A straight
14 line from the top of any sidewall of a building containing explosives to the eave line of any
15 magazine or other building or to a point 12 feet (3658 mm) above the center of a railway or
16 highway shall pass through such barrier.

17
18 **Artificial Barricade.** [See FC3302.1.] An artificial mound or revetment, including a barrier
19 constructed of sandbags, with a minimum thickness of 3 feet (914 mm).

20
21 **Natural Barricade.** [See FC3302.1.] Terrain or other natural features of the ground.

22
23 **BARRICADED.** [See FC3302.1.] Protected by a barricade.

24
25 **[BATTERY TYPES.** See FC602.1.

26
27 **Lithium-ion battery.** See FC602.1.

28
29 **Lithium metal polymer battery.** See FC602.1.

30
31 **Nickel cadmium (Ni-Cd) battery.** See FC602.1.

32
33 **Nonrecombinant battery.** See FC602.1.

34
35 **Recombinant battery.** See FC602.1.

36
37 **Stationary storage battery.** See FC602.1.

38
39 **Valve-regulated lead acid (VRLA) battery.** See FC602.1.

40
41 **Vented (Flooded) lead acid battery.** See FC602.1.]

42
43 **BEVERAGE ALCOHOL.** For purposes of FC Chapter 40, ethanol produced for human
44 consumption, regardless of the raw material or process used in its production, including any
45 alcohol-water mixture.

1 **Distilled Spirits.** A beverage for human consumption that is produced by distillation of alcohol
2 in a still and that is a Class I flammable liquid (typically, at least 16 percent alcohol). For
3 purposes of FC Chapter 40, distilled spirits include all alcohol in a distillery that has been
4 distilled, including process alcohol and finished goods, regardless of whether such distilling is
5 undertaken for the purpose of rectifying, purifying, refining and/or other purpose.
6

7 **Finished Goods.** Distilled spirits bottled or otherwise packaged for retail or wholesale use.
8 Finished goods do not include distilled spirits stored in a barrel for aging.
9

10 **Process Alcohol.** Any beverage alcohol that is a Class I flammable liquid (typically, an
11 alcohol-water mixture with an alcohol content of at least 16 percent), that has been distilled
12 but not yet packaged as finished goods. Process alcohol is typically stored at a distillery in
13 alcohol process tanks and other alcohol processing equipment.
14

15 **Raw Alcohol.** Any beverage alcohol that is a Class I flammable liquid and that is stored,
16 handled or used prior to distilling it at a distillery. Raw alcohol is typically transported in
17 intermediate bulk containers.
18

19 **BIN BOX.** [See FC2302.1.] A five-sided container with the open side facing an aisle. Bin boxes
20 are self-supporting or supported by a structure designed so that little or no horizontal or vertical
21 space exists around the boxes.
22

23 **BINARY EXPLOSIVE.** A pre-packaged product consisting of two separate components, that,
24 when combined, constitute an explosive subject to the regulatory requirements of the United States
25 Department of Treasury, Bureau of Alcohol, Tobacco, Firearms and Explosives, as set forth in 27
26 CFR Part 555.
27

28 **BIODIESEL.** A diesel motor fuel blend containing motor fuel produced from organic materials,
29 such as vegetable oil and animal fats, that are converted to motor fuel through the process of
30 transesterification.
31

32 **BLAST AREA.** [See FC3302.1.] The blast site and surrounding area within the influence of flying
33 rock, missiles and concussion.
34

35 **BLAST MONITORING CERTIFICATE.** A written statement issued by the department to a
36 company authorizing such company to conduct blast monitoring associated with blasting
37 operations.
38

39 **BLAST MONITORING SPECIALIST.** A person holding a certificate of fitness for blast
40 monitoring, who is responsible for monitoring the impacts of blast vibrations and air overpressure
41 generated by blasting operations.
42

43 **BLAST SITE.** [See FC3302.1.] The area in which explosives are being or have been loaded and
44 which includes all holes loaded or to be loaded for the same blast and a minimum distance of
45 50 feet (15 240 mm) in all directions from the perimeter of such area.
46

1 **BLASTER.** [See FC3302.1.] A person holding a certificate of fitness for blasting operations, who
2 is in charge of and responsible for a blasting operation.

3
4 **BLASTER, APPRENTICE.** A person holding a certificate of fitness for blasting apprentice who
5 is qualified to supervise explosives storage and handling and blasting operations, sometimes
6 referred to as a powder carrier, and who assists the blaster in performing such duties.

7
8 **BLASTING AGENT.** [See FC3302.1.] A mixture consisting of fuel and an oxidizer that is used
9 for blasting and classified by United States Department of Transportation regulations as Division
10 1.5, provided that the finished product, as mixed for use or shipment, cannot be detonated by means
11 of a No. 8 test detonator when unconfined.

12
13 **BLASTING CONTRACTOR CERTIFICATE.** [See FC3302.1.] A written statement issued by
14 the department to a company authorizing such company to conduct blasting operations, and to be
15 responsible for all storage, handling, use and transportation of explosives in connection therewith.

16
17 **BLASTING CREW.** [See FC3302.1.] Members of a work force trained and knowledgeable in
18 the safe storage, handling and use of explosives, including apprentice blasters, loaders and the
19 magazine keepers.

20
21 **BLASTING OPERATION.** [See FC3302.1.] The use of explosives in conjunction with
22 construction or demolition projects or other lawful purposes approved by the commissioner.

23
24 **BLASTING SEISMOGRAPH.** An instrument that measures and records the intensity,
25 frequency, and duration of blast-induced ground vibration and air overpressure.

26
27 **BOILING POINT.** [See FC2702.1.] The temperature at which the vapor pressure of a liquid
28 equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of
29 mercury. Where a boiling point is unavailable for the material in question, or for mixtures which
30 do not have a constant boiling point, for the purposes of this classification, the 20-percent
31 evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the
32 boiling point of the liquid.

33
34 **BOTTLING.** See Distillery Operations.

35
36 **BRITISH THERMAL UNIT (BTU).** The heat necessary to raise the temperature of 1 pound
37 (0.454 kg) of water by 1°F (0.5565°C).

38
39 **BUILDING.** An enclosed structure designed or occupied to house any use or occupancy.

40
41 **BUILDING CODE.** The [2008] New York City Building Code in effect on and after July 1, 2008,
42 and as amended thereafter.

43
44 **BUILDING OCCUPANTS.** [See FC402.1.] All persons in the building, including employees,
45 building staff and visitors.

1 **BULK NITROUS OXIDE SYSTEM.** [See FC4002.1.] A system comprised of stationary or
2 portable nitrous oxide storage containers, pressure regulators, safety devices, vaporizers,
3 manifolds, interconnecting piping and/or other devices or equipment, up to the point where nitrous
4 oxide at service pressure first enters the supply line, that has a storage capacity of more than 28,000
5 SCF (793 m³) of nitrous oxide in liquid or gaseous state, including unconnected reserves in or at
6 the same building, structure or premises.

7
8 **BULK OXYGEN SYSTEM.** [See FC4002.1.] A system comprised of stationary or portable
9 oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds,
10 interconnecting piping and/or other devices or equipment, up to the point where oxygen at service
11 pressure first enters the supply line, that has a storage capacity of more than 20,000 SCF (566 m³)
12 of oxygen in liquid or gaseous state, including unconnected reserves in or at the same building,
13 structure or premises.

14
15 **BULK PLANT OR TERMINAL.** [See FC3402.1.] Any premises upon which flammable or
16 combustible liquids are received from marine vessel, watercraft, pipeline, tank car or cargo tank
17 and are stored or blended in bulk for the purpose of distributing such liquids by marine vessel,
18 watercraft, pipeline, tank car, cargo tank or container.

19
20 **BULK TRANSFER.** [See FC3402.1.] The loading or unloading of flammable or combustible
21 liquids from or between marine vessels, watercraft, pipelines, tank cars, cargo tanks or storage
22 tanks.

23
24 **BULLET RESISTANT.** [See FC3302.1.] Constructed so as to resist penetration of a bullet of
25 150-grain M2 ball ammunition having a nominal muzzle velocity of 2,700 feet per second (fps)
26 (824 mps) when fired from a 30-caliber rifle at a distance of 100 feet (30 480 mm), measured
27 perpendicular to the target.

28
29 **CARGO TANK.** [See FC2702.1.] A vehicle other than a railroad tank car, marine vessel, or
30 watercraft with a tank mounted thereon or built as an integral part thereof, used for the
31 transportation of flammable or combustible liquids, LPG or other hazardous materials, including
32 self-propelled vehicles and full trailers and semi-trailers, with or without motive power, and
33 carrying part or all of the load.

34
35 **CARTON.** A cardboard or fiberboard box enclosing a product.

36
37 **CEILING LIMIT.** [See FC2702.1.] The maximum concentration of an airborne contaminant to
38 which one may be exposed shall be as established by the regulations of the United States
39 Department of Labor, as set forth in 29 CFR Part 1910.1000, or if not listed therein, the ceiling
40 Recommended Exposure Limit (REL-C) concentrations published by the U.S. National Institute
41 for Occupational Safety and Health (NIOSH), the Threshold Limit Value — Ceiling (TLV-C)
42 concentrations published by the American Conference of Governmental Industrial Hygienists
43 (ACGIH), the ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides
44 published by the American Industrial Hygiene Association (AIHA), or other approved standard.

45
46 **CENTRAL STATION.** [See FC902.1.] A facility that receives alarm signals from a protected
47 premises and retransmits or otherwise reports such alarm signals to the department.

1
2 **CERTIFICATE OF APPROVAL.** A written statement issued by the commissioner, certifying
3 that an article, device or equipment, or type, class or kind thereof, has been examined, tested and
4 approved for a specific purpose or use in conformity with the requirements of the construction
5 codes, this code or the rules.

6
7 **CERTIFICATE OF FITNESS.** A written statement issued by the commissioner certifying that
8 the person to whom it is issued has passed an examination as to his or her qualifications or is
9 otherwise deemed qualified to perform one or more of the following duties, for which such
10 certificate is required by this code or the rules: supervise a facility; conduct or supervise an
11 operation; supervise the storage, handling and/or use of a material; or conduct or supervise
12 emergency planning and preparedness activities.

13
14 **CERTIFICATE OF LICENSE.** A written statement issued by the commissioner authorizing the
15 operation of a business to install, alter, test or repair liquid motor fuel storage and dispensing
16 equipment and systems or flammable or combustible liquid storage systems, for which such
17 certificate is required by this code or the rules.

18
19 **CERTIFICATE OF OPERATION.** [See FC902.1.] A written statement issued by the
20 commissioner approving the operation of a central station, for which such certificate is required
21 by this code or the rules, or the construction codes.

22
23 **CERTIFICATE OF QUALIFICATION.** [See FC602.1.] A written statement issued by the
24 commissioner certifying that the person to whom it is issued has passed an examination as to his
25 or her qualifications to direct, control and supervise the operation of a refrigerating system, for
26 which such certificate is required by this code or the rules.

27
28 **CERTIFIED ATTENDANT.** [See FC2202.1.] A person holding a certificate of fitness for the
29 supervision of a full-service motor fuel-dispensing facility or self-service motor fuel-dispensing
30 facility.

31
32 **CHEMICAL.** [See FC2702.1.] An element, chemical compound or mixture of elements or
33 compounds or both.

34
35 **CHEMICAL NAME.** [See FC2702.1.] The scientific designation of a chemical in accordance
36 with the nomenclature system developed by the International Union of Pure and Applied
37 Chemistry, the Chemical Abstracts Service rules of nomenclature, or a name that will clearly
38 identify a chemical for the purpose of conducting an evaluation.

39
40 **CHEMICAL STORAGE BUILDING.** A detached prefabricated structure designed and installed
41 and listed for indoor storage of hazardous materials, that is constructed with a fire resistance rating
42 of not less than one hour, which vents to the outdoors, and which is equipped with applicable fire
43 protection systems and spill containment.

44
45 **CITYWIDE STANDARD KEY.** [See FC502.1.] A key of special or controlled design, also
46 known as a “2642” key, approved by the commissioner which serves to operate elevator

1 emergency recall and emergency in-service operation service switches and other devices or locks
2 as required by the construction codes, including the Building Code, this code or the rules.

3
4 **CLEAN AGENT.** [See FC902.1.] Electrically nonconducting, volatile, or gaseous fire
5 extinguishant that does not leave a residue upon evaporation.

6
7 **CLOSED CONTAINER.** [See FC2702.1.] A container sealed by means of a lid or other device
8 capable of preventing the escape of liquid, vapor or dusts in the ordinary course of storage,
9 handling or use.

10
11 **CLOSED SYSTEM.** The use of any compressed gas, and the use of a solid or liquid hazardous
12 material in equipment or a vessel or system that remains closed during normal operation, such that
13 vapors emitted during the operation of such equipment, vessel, or system are not liberated outside
14 of the equipment, vessel or system and the gas or hazardous material is not exposed to the
15 atmosphere during such operation. Examples of closed systems include hazardous materials
16 conveyed through a piping system into closed equipment or a closed vessel or system.

17
18 **CNG.** [See FC2202.1.] Compressed natural gas.

19
20 **[CNG MOTOR FUEL SYSTEM.** See FC2202.1.]

21
22 **COKE.** [See FC302.1.] A solid carbonaceous material manufactured from the distillation of
23 bituminous coal, petroleum or coal tar, with a thermal heating value of not more than 13,200
24 British thermal units per hour (3869 W), a volatile composition of not more than 0.5 percent, an
25 NFPA Standard 704 fire hazard rating of not more than 1, and an NFPA Standard 704 reactivity
26 rating of 0.

27
28 **COKE-FUELED SALAMANDER.** [See FC302.1.] A metal vessel, typically cylindrical in
29 shape, used to burn coke in the open air for the purpose of maintaining an open fire for
30 construction-related curing and drying. A coke-fueled salamander does not utilize a combustible
31 liquid or flammable gas and does not generate a flame in a sustained or controlled manner and
32 therefore is not an open flame device or portable space heater as those terms are used in this code.

33
34 **COMBUSTIBLE DUST.** [See FC1302.1.] Finely divided solid material that is 420 microns or
35 less in diameter, will pass through a U.S. standard No. 40 sieve and, when dispersed in air in
36 sufficient concentrations, can be ignited by a flame, spark or other source of ignition.

37
38 **COMBUSTIBLE FIBERS.** [See FC2902.1.] Readily ignitable and free-burning materials in a
39 fibrous or shredded form, such as cocoa fiber, cotton, excelsior, hay, hemp, henequen, istle, jute,
40 kapok, oakum, sisal, Spanish moss, straw, tow, wastepaper, or other natural or synthetic fibers that
41 possess similar qualities, but excluding densely packed baled cotton.

42
43 **COMBUSTIBLE GAS DETECTOR.** A device designed to sample the atmosphere and detect
44 the presence of ignitable flammable or explosive vapors or gases, expressed as a volume percent
45 in air.

1 **COMBUSTIBLE LIQUID.** [See FC3402.1.] For purposes of transportation, a combustible
2 liquid, as defined in the regulations of the United States Department of Transportation, as set forth
3 in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or
4 cryogenic fluid, having a closed cup flash point at or above 100°F (38°C), classified as follows:

5
6 **Class II.** Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F
7 (60°C).

8
9 **Class IIIA.** Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F
10 (93°C).

11
12 **Class IIIB.** Liquids having closed cup flash points at or above 200°F (93°C).

13
14 **COMBUSTIBLE WASTE.** Any substance, item or other organic or inorganic matter that
15 presents a fire hazard and is a byproduct or residue of the construction, use or occupancy of any
16 premises, or any activity conducted thereon, that has no economic value in connection with such
17 use or occupancy. A combustible waste that has economic value in connection with the use and
18 occupancy of such premises shall be deemed to be a combustible material.

19
20 **COMMERCIAL COOKING APPLIANCES.** [See FC602.1.] Appliances used in a commercial
21 food service establishment for heating or cooking food and which produce grease vapors, steam,
22 fumes, smoke or odors that are required to be removed through a local exhaust ventilation system.
23 Such appliances shall include deep fat fryers; upright broilers; griddles; broilers; steam-jacketed
24 kettles; hot-top ranges; under-fired broilers (charbroilers); ovens; barbecues; rotisseries; and
25 similar appliances. For the purpose of this definition, a commercial food service establishment
26 shall include any building or structure used for the preparation and serving of food, other than
27 commercial cooking appliances in carts or other mobile stands operated by street vendors.

28
29 **COMMERCIAL COOKING EXHAUST SYSTEM SERVICING COMPANY**
30 **CERTIFICATE.** [See FC902.1.] A certificate issued by the commissioner to a person engaged in
31 the business of inspecting and cleaning commercial cooking equipment exhaust systems, which
32 authorizes such person to inspect and clean commercial cooking equipment exhaust systems, for
33 which such certificate is required by this code or the rules.

34
35 **COMMERCIAL COOKING SYSTEM.** [See FC902.1.] A commercial cooking system consists
36 of one or more commercial cooking appliances; one or more Type I hoods and/or downdraft hoods
37 that exhaust the heat, smoke and grease-laden vapors generated by the appliances; and the fire
38 extinguishing system that protects the appliances. Commercial cooking systems include grease
39 removal devices and exhaust ducts (except for ductless hoods) and, when required, emission
40 control devices.

41
42 **COMMERCIAL KITCHEN.** A commercial food service establishment, as defined by
43 Section 81.03(s) of the New York City Health Code, in which one or more commercial cooking
44 appliances has been installed for which the Mechanical Code requires a Type I hood and a fire
45 extinguishing system.

1 **COMMISSIONER.** Fire Commissioner of the City of New York or his or her duly authorized
2 representative.

3
4 **COMMODITY.** [See FC2302.1.] Items in high-piled combustible storage, including products and
5 product packaging.

6
7 **COMPRESSED GAS.** [See FC3002.1.] A material, or mixture of materials, that is a gas at 68°F
8 (20°C) or less at 14.7 psia (101 kPa) of pressure; and has a boiling point of 68°F (20°C) or less at
9 14.7 psia (101 kPa) that is either liquefied, nonliquefied or in solution at that temperature and
10 pressure, except that gases which have no other health- or physical-hazard properties are not
11 considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F
12 (20°C). Compressed gases shall be classified as follows:

13
14 **Compressed gases in solution.** [See FC3002.1.] Nonliquefied gases that are dissolved in a
15 solvent.

16
17 **Compressed gas mixtures.** [See FC3002.1.] A mixture of two or more compressed gases
18 contained in a single packaging, the hazard properties of which are represented by the
19 properties of the mixture as a whole.

20
21 **Liquefied compressed gases.** [See FC3002.1.] Gases that, in a packaging under the charged
22 pressure, are partially liquid at a temperature of 68°F (20°C).

23
24 **Nonliquefied compressed gases.** [See FC3002.1.] Gases, other than those in solution, that are
25 in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F
26 (20°C).

27
28 **COMPRESSED GAS CONTAINER.** [See FC3002.1.] A pressure container designed to hold
29 compressed gases at pressures greater than one atmosphere at 68°F (20°C).

30
31 **COMPRESSED GAS SYSTEM.** [See FC3002.1.] An assembly of components, such as
32 containers, reactors, pumps, compressors and connecting piping and tubing, designed to contain,
33 distribute or transport compressed gases.

34
35 **COMPUTATIONAL FLUID DYNAMICS ANALYSIS.** [See FC302.1.] A simulation and
36 analysis of air flow, including temperature gradients, and for a fire, the products of combustion,
37 over time and distance.

38
39 **CONIFER.** [See FC802.1.] Any tree, plant or shrub containing pitch, including hemlock, balsam,
40 pine and fir.

41
42 **CONSTRUCTION CODES.** The [2008] New York City construction codes, consisting of the
43 New York City Building, Fuel Gas, Mechanical and Plumbing Codes, and General Administrative
44 Provisions, in effect on and after July 1, 2008, and as amended thereafter.

45
46 **CONSTRUCTION SITE.** [See FC1402.1.] Any location at which a building, structure, premises
47 or facility is undergoing construction, alteration or demolition.

1
2 **CONTAINER.** [See FC2702.1.] For solid and liquid hazardous materials, a vessel of 60 gallons
3 (227 L) or less in capacity used for storage or transportation. For compressed gases, a cylinder,
4 pressure vessel or tank designed for pressures greater than one atmosphere at 68°F (20°C). Pipes,
5 pipng systems, engines and engine fuel tanks associated with solid or liquid hazardous materials
6 or compressed gases, shall not be deemed to be containers if in active use.
7

8 **CONTAINMENT SYSTEM.** [See FC3702.1.] A gas-tight recovery system comprised of devices
9 or equipment which, when placed over or around the portion of the compressed gas container that
10 is leaking, stops or controls the escape of gas from the container.
11

12 **CONTAINMENT VESSEL.** [See FC3702.1.] A gas-tight vessel which, when installed or placed
13 over or around a leaking compressed gas container, confines the container and the gas leaking
14 therefrom.
15

16 **CONTINUOUS GAS DETECTION SYSTEM.** [See FC1802.1.] A gas detection system where
17 the analytical instrument is maintained in continuous operation and sampling is performed without
18 interruption on a cyclical basis at intervals not to exceed 30 minutes.
19

20 **CONTROL AREA.** [See FC2702.1.] Spaces within a building wherein quantities of hazardous
21 materials not exceeding the maximum allowable quantities per control area are stored, handled or
22 used, including any dispensing.
23

24 **COOKING OIL.** Any plant, animal or synthetic fat used in cooking. Cooking oil is typically
25 liquid at room temperature, although some cooking oils that contain saturated fat are solid. For
26 purposes of this code, cooking oil will be deemed to be a Class IIIB combustibile liquid unless
27 otherwise demonstrated by approved documentation.
28

29 **CORROSIVE MATERIAL.** [See FC3102.1.] A material that causes full thickness destruction of
30 human skin at the site of contact within a specified period of time when tested by methods set forth
31 in DOTn regulations 49 CFR Sections 173.136 and 173.137, or a liquid that has a severe corrosion
32 rate on steel or aluminum based on the criteria set forth in DOTn regulation 49 CFR Section
33 173.137(c)(2).
34

35 **COVERED MALL.** [See FC402.1.] A Group M building housing separate mercantile tenant
36 spaces and/or other similar occupancies and a common pedestrian area (which may include atrium
37 spaces) that provides access to the main public entrances to such tenant spaces and/or occupancies.
38 A covered mall does not include an exterior perimeter building or tenant space (commonly referred
39 to as an anchor store or anchor building) with direct pedestrian access to the covered mall, provided
40 that such building or tenant space has a lawful means of egress independent of the covered mall.
41

42 **CRYOGENIC CONTAINER.** [See FC3202.1.] A pressure container, low-pressure container or
43 atmospheric container of any size designed or used for the transportation, handling or storage of a
44 cryogenic fluid, and which utilizes venting, insulation, refrigeration or a combination thereof to
45 maintain the pressure within design parameters for such container and to keep the contents in a
46 liquid state.
47

1 **CRYOGENIC FLUID.** [See FC3202.1.] A fluid having a boiling point lower than -130°F
2 (-89.9°C) at 14.7 pounds per square inch absolute (psia) (an absolute pressure of 101.3 kPa).

3
4 **[DANGER ZONE.** See FC3302.1.]

5
6 **DECORATION.** [See FC802.1.] Any item that is used for acoustical, aesthetic or artistic
7 enhancement of an interior space, including artwork, banners, curtains, draperies, decorative
8 greens, fabrics, hangings, and streamers, but not including acoustical materials regulated by the
9 Building Code as an interior finish.

10
11 **DEDICATED USE BUILDING.** A building housing a stationary energy storage system that
12 allows human entry (walk-in) but is not designed or used for human occupancy.

13
14 **DEFLAGRABLE WOOD DUST.** Wood particulate that will propagate a flame front when
15 suspended in air, thus presenting a fire or explosion hazard, or the process-specific oxidizing
16 medium over a range of concentrations, regardless of particle size or shape; wood particulate with
17 a mass median particle size of 500 micros or smaller (i.e., material that will pass through a U.S.
18 No. 35 Standard Sieve), having a moisture content of less than 25 percent (wet basis).

19
20 **DEFLAGRATION.** [See FC2702.1.] An exothermic reaction, such as the extremely rapid
21 oxidation of a flammable dust or vapor in air, in which the reaction progresses through the
22 unburned material at a rate less than the velocity of sound. A deflagration can have an explosive
23 effect.

24
25 **DEPARTMENT.** The Fire Department of the City of New York.

26
27 **DEPARTMENT OF BUILDINGS.** New York City Department of Buildings.

28
29 **DEPARTMENT OF ENVIRONMENTAL PROTECTION.** New York City Department of
30 Environmental Protection.

31
32 **DESIGN AND INSTALLATION DOCUMENTS.** Plans and specifications, or other written,
33 graphic and pictorial documents or submissions, setting forth the location, design, arrangement
34 and physical characteristics of the device, equipment, system, operation or facility for which
35 approval by the commissioner is sought.

36
37 **DESIGN PRESSURE.** [See FC2702.1.] The maximum gauge pressure that a pressure vessel,
38 device, component or system is designed to withstand safely under the temperature and conditions
39 of use.

40
41 **DETACHED BUILDING.** [See FC2702.1.] A separate single-story building, without a basement
42 or crawl space, used for the storage, handling or use of hazardous materials and located an
43 approved distance from other buildings or structures.

44
45 **DETEARING.** [See FC1502.1.] A process for rapidly removing excess wet coating material from
46 a dipped or coated object or material by passing it through an electrostatic field.

1 **DETONATING CORD.** [See FC3302.1.] A flexible cord containing a center core of high
2 explosive designed to initiate other explosives when activated.

3
4 **DETONATION.** [See FC3302.1.] An exothermic reaction with explosive effect that utilizes
5 shock compression as the principal heating mechanism and generates a shock wave in the material
6 that establishes and maintains a reaction that progresses through the material at a rate greater than
7 the velocity of sound.

8
9 **DETONATOR.** [See FC3302.1.] A device containing any initiating or primary explosive used for
10 initiating detonation that contains no more than 154.32 grains (10 grams) of total explosives by
11 weight, excluding ignition or delay charges. The term includes electric blasting caps of
12 instantaneous and delay types, blasting caps for use with safety fuses, detonating cord delay
13 connectors, and noninstantaneous and delay blasting caps which use detonating cord, shock tube
14 or any other replacement for electric leg wires.

15
16 **DIP TANK.** [See FC1502.1.] A tank, vat or other container of flammable or combustible liquid
17 in which articles or materials are immersed for the purpose of coating, finishing, treating and
18 similar processes.

19
20 **DISCHARGE AREA.** [See FC1102.1.] For purposes of aviation operations, any portion of a
21 premises or other location to which an external load is to be delivered by helicopter.

22
23 **DISCHARGE SITE.** [See FC3302.1.] The immediate area surrounding the mortars or other
24 devices discharging fireworks for purposes of an outdoor fireworks display.

25
26 **DISPENSING.** [See FC2702.1.] The pouring or transferring by other means of any material from
27 a container, tank or similar vessel, which would release dusts, fumes, mists, vapors or gases to the
28 atmosphere, unless such release is prevented by a device, equipment or system designed for that
29 purpose.

30
31 **DISPENSING DEVICE, OVERHEAD TYPE.** [See FC2202.1.] A dispensing device mounted
32 above a dispensing area, typically within a canopy structure, and characterized by the use of an
33 overhead hose reel.

34
35 **DISPLAY SITE.** [See FC3302.1.] The area in which an outdoor fireworks display is conducted,
36 including the discharge site, the fallout area, and the required separation distance from the
37 discharge site to spectator viewing areas, but excluding spectator viewing areas.

38
39 **DISTILLED SPIRITS.** See Beverage Alcohol.

40
41 **DISTILLED SPIRITS PROCESSING AREA.** Any area of a distillery in which distilling,
42 alcohol processing and bottling operations are being conducted.

43
44 **DISTILLERY.** Any building or premises designed or used for the manufacturing of distilled
45 spirits, and related storage, handling and use of alcohol. A distillery is characterized by the
46 installation of a still to produce distilled spirits and the conduct of other distillery operations on its
47 premises. A warehouse or liquid storage warehouse used solely for the storage of distilled spirits

1 is not a distillery, provided that such warehouse operation is not conducted in a building containing
2 a distillery, but in a separate building with no openings into the distillery.

3
4 **Small Distillery.** A small distillery is a distillery with one or more stills with an aggregate
5 capacity of not more than 250 gallons (946 L) and an individual still capacity of not more than
6 125 gallons (473 L), and a total quantity of raw alcohol and distilled spirits stored on the
7 premises of not more than 1,500 gallons (5678 L). Department approval shall be required for
8 any storage, handling and use of grain on the premises for alcohol production, including the
9 quantity of grain and any milling thereof.

10
11 **Medium Distillery.** A medium distillery is a distillery with one or more stills with an aggregate
12 capacity of not more than 1,500 gallons (5678 L) and an individual still capacity of not more
13 than 750 gallons (2839 L), and a total quantity of raw alcohol and distilled spirits stored on the
14 premises of not more than 6,000 gallons (22 710 L).

15
16 **Large Distillery.** A large distillery is a distillery with one or more stills with an aggregate
17 capacity of not more than 8,000 gallons (30 280 L) and an individual still capacity of not more
18 than 2,000 gallons (7570 L), and a total quantity of raw alcohol and distilled spirits stored on
19 the premises of not more than 20,000 gallons (75 700 L).

20
21 **DISTILLERY EQUIPMENT.** All devices, equipment and systems designed for the
22 manufacturing, storage and handling of raw alcohol or distilled spirits. It does not include such
23 building systems, commercial cooking systems and other kitchen equipment, and other devices,
24 equipment and systems when they are installed or used outside of the distilled spirits processing
25 or storage area.

26
27 **Alcohol Process Tank.** A flammable liquid storage tank designed or used in a distillery for
28 beverage alcohol processing.

29
30 **Closed Alcohol Process Tank.** An alcohol process tank that is designed to receive and
31 transfer its contents through piping or other means in a manner that does not allow the
32 escape of liquid or vapor under normal operating conditions.

33
34 **Open Alcohol Process Tank.** An alcohol process tank that is designed or used to receive
35 and/or transfer its contents in a manner that exposes the alcohol to the atmosphere and/or
36 allows vapors to be released during alcohol processing under normal operating conditions.

37
38 **Alcohol Storage Equipment.** Any tank or portable container used for the storage of raw
39 alcohol or process alcohol, including intermediate bulk containers and barrels, and storage of
40 finished goods.

41
42 **Alcohol Storage Tank.** Except as otherwise provided with respect to intermediate bulk
43 containers, any vessel having a liquid capacity exceeding 60 gallons (227 L) and designed
44 for stationary installation.

45
46 **Barrel.** A portable wood container, also commonly referred to as a cask, that is typically
47 constructed of wooden staves and heads held together by metal hoops. In a distillery,

1 barrels are used to store process alcohol for a period of months or longer. The barrel
2 typically allows alcohol vapors to escape. For purposes of FC Chapter 40, barrel does not
3 include wax-lined and other barrels designed and used for packaging of finished goods
4 rather than for aging of distilled spirits.

5
6 **Intermediate Bulk Container.** A Department of Transportation-approved portable
7 container, constructed of metal and/or plastic, designed for the shipment of alcohol
8 (excluding finished goods), with a maximum capacity of 660 gallons (2498 L).
9 Intermediate bulk containers stored, handled or used in a distillery shall be deemed to be a
10 portable container even if their capacity exceeds 60 gallons (227 L), provided, however,
11 that an intermediate bulk container of any capacity that is part of a stationary installation
12 in a distillery or otherwise fixed in place shall be deemed to be a storage tank.

13
14 **Still.** Any apparatus designed to produce distilled spirits by separating and condensing alcohol
15 vapors from an alcohol-water mixture to produce a higher proof alcohol. Stills typically consist
16 of a distillation pot, one or more columns, and a condenser, but some stills, such as column
17 stills, are designed to operate without a distillation pot. Where reference is made in this code
18 to the capacity of a still (reflecting the size of the distillation pot), such reference shall be
19 deemed to include the equivalent production capacity, as determined by the department, of a
20 column still or other still without a distillation pot.

21
22 **DISTILLERY OPERATIONS.** Distillery operations include any and all operations conducted in
23 a distillery that involve the manufacturing, storage, handling or use of distilled spirits. Distillery
24 operations typically include storage and handling of raw alcohol; distilling; storage and handling
25 of process alcohol; bottling; and storage, handling and (in a distillery serving area) use of finished
26 goods. In distilleries that produce alcohol from grains or other raw materials, distillery operations
27 may also include storage, handling and use of such raw materials and combustible liquids and
28 combustible waste with an alcohol content of less than 16 percent.

29
30 **Alcohol Processing.** The processing of distilled spirits following distillation up to the point of
31 bottling, including blending, gauging, agitating, filtering, flavoring, traditional and alternative
32 aging (including barrel storage), and barrel filling and emptying.

33
34 **Bottling.** Filling and packaging of bottles and other containers with distilled spirits for retail
35 or wholesale use.

36
37 **Distilling.** The production of distilled spirits or other processing of alcohol in a still.

38
39 **DISTILLERY SERVING AREA.** Any area on the premises of a distillery designed or used to
40 accommodate the public, including any tasting area for the on-premises consumption of distilled
41 spirits or other area for serving of food and/or drink and/or conduct of classes, tours and other
42 events.

43
44 **DISTILLERY WASTE PRODUCTS.** Any flammable or combustible liquid, solid or other
45 material that is a by-product or residue of, or otherwise generated in connection with the distillation
46 process or other alcohol processing that will not be used in the finished goods.

1 **DISTILLING.** See Distillery Operations.
2
3 **DOMESTIC COOKING HOOD.** A hood serving a domestic cooking appliance as part of a
4 domestic cooking system.
5
6 **DOMESTIC COOKING SYSTEM.** A system typically installed in residential and institutional
7 occupancies that consists of one or more domestic cooking appliances designed and installed in
8 accordance with the construction codes, including related exhaust and fire extinguishing systems.
9
10 **DOTn.** United States Department of Transportation.
11
12 **DOTy.** United States Department of Treasury.
13
14 **DRAFT CURTAIN.** [See FC2302.1.] A structure arranged to limit the spread of smoke and heat
15 along the underside of the ceiling or roof.
16
17 **DRY CLEANING.** [See FC1202.1.] The process of removing dirt and stains or otherwise
18 cleaning apparel, textiles, rugs and other items with nonaqueous liquid solvents.
19
20 **DRY CLEANING FACILITY.** [See FC1202.1.] A facility in which dry cleaning and associated
21 operations are conducted, including the office, receiving area and storage rooms.
22
23 **DRY CLEANING ROOM.** [See FC1202.1.] An occupiable space within a building used for dry
24 cleaning, the installation, storage and/or use of dry cleaning equipment and/or the storage of dry
25 cleaning solvents.
26
27 **DRY CLEANING SYSTEM.** [See FC1202.1.] Equipment used to perform dry cleaning,
28 including immersion or agitation in solvent of the items to be cleaned, and the extraction of solvent
29 from such items.
30
31 **DUCTLESS HOOD.** A Type I hood that collects the heat, smoke and grease-laden vapors
32 generated by commercial cooking appliances without an exhaust duct system. Also known as a
33 ventless hood or recirculating hood system.
34
35 **EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER.** [See FC2302.1.] A
36 sprinkler listed for early suppression fast-response performance.
37
38 **ELECTRIC BARBECUE.** [See FC302.1.] Any device designed for heating or cooking food on
39 an open grate cooking surface above exposed heating elements. An electric grill that has its heating
40 elements embedded within a solid cooking surface is not an electric barbecue.
41
42 **ELECTRICAL CODE.** The [2007] New York City Electrical Code in effect on July 1, 2008, and
43 as amended thereafter.
44
45 **ELECTROSTATIC FLUIDIZED BED.** [See FC1502.1.] A container holding powder coating
46 material that is aerated from below so as to form an air-supported expanded cloud of such material
47 which is electrically charged with a charge opposite to the charge of the object to be coated. Such

1 object is transported through the container immediately above the charged and aerated materials
2 in order to be coated.

3
4 **EMERGENCY ALARM SYSTEM.** [See FC902.1.] A system to provide indication and warning
5 of an emergency condition involving a release of hazardous materials or other hazardous material
6 incident.

7
8 **EMERGENCY CONTROL STATION.** [See FC1802.1.] An approved location on the premises
9 of a semiconductor fabrication facility staffed by trained personnel that monitor the operation of
10 equipment and systems including alert and alarm signals.

11
12 **EMERGENCY ESCAPE AND RESCUE OPENING.** [See FC1002.1.] An operable window,
13 door or other similar device that provides for a means of escape and access for rescue in the event
14 of an emergency.

15
16 **EMERGENCY SHELTER.** [See FC402.1.] The temporary use and occupancy of a premises, or
17 part thereof, including but not limited to armories, auditoriums, community centers, gymnasiums,
18 houses of worship and schools, that are not designed to be occupied for emergency housing, but
19 are authorized by the Department of Buildings to be operated and/or occupied for such purposes
20 for more than fifteen persons for more than 30 consecutive days.

21
22 **EMERGENCY SHUTOFF VALVE.** A valve designed to shut off the flow of gases or liquids.

23
24 **EMERGENCY SHUTOFF VALVE, AUTOMATIC.** A fail-safe self-closing valve designed to
25 shut off the flow of liquids or gases upon activation of the valve's control system by automatic
26 means.

27
28 **EMERGENCY SHUTOFF VALVE, MANUAL.** A manually operated valve designed to shut
29 off the flow of liquids or gases.

30
31 **ENCAPSULATION.** A method of packaging, for purpose of high-piled combustible storage, as
32 that term is defined in NFPA 13.

33
34 **ENERGY STORAGE SYSTEM, STATIONARY.** A rechargeable system for the storage of
35 electrochemical energy, designed as a stationary installation (including mobile systems) and
36 consisting of one or more interconnected storage batteries, capacitors, inverters and other electrical
37 equipment. A stationary energy storage system is typically used to provide electrical power and
38 includes associated fire protection, explosion mitigation, ventilation and/or exhaust systems.
39 Stationary energy storage systems include the following types of systems:

40
41 **Indoor System.** A stationary energy storage system installed inside a building.

42
43 **Mobile System.** A stationary energy storage system mounted on a trailer or otherwise
44 installed for mobile use.

45
46 **Outdoor System.** A stationary energy storage system installed outdoors, including mobile
47 systems and systems installed on a rooftop.

1
2 **ETHANOL.** A volatile, flammable (Class I) liquid with the chemical formula C₂H₅OH or
3 equivalent, also commonly referred to as ethyl alcohol or grain alcohol.

4
5 **EVACUATION.** [See FC402.1.] The emptying of a building or part thereof of building occupants
6 in response to a fire or non-fire emergency.

7
8 **EXCESS FLOW CONTROL.** [See FC2702.1.] A fail-safe system or other approved device,
9 equipment or system designed to shut off flow caused by a rupture in a pressurized piping system.

10
11 **EXCESS FLOW VALVE.** [See FC3702.1.] A valve inserted into a compressed gas container that
12 is designed to shut off the flow of gas in the event that its predetermined flow is exceeded.

13
14 **EXHAUSTED ENCLOSURE.** [See FC2702.1.] A device, typically consisting of a hood
15 equipped with a fan that serves to capture and exhaust fumes, mist, vapors and gases generated at
16 a workstation or other local environment. An exhausted enclosure does not include a room
17 provided with general ventilation.

18
19 **EXIT.** [See FC1002.1.] That portion of a means of egress system which is separated from other
20 interior spaces of a building or structure by fire-resistance-rated construction and opening
21 protectives as required to provide a protected path of egress travel between the exit access and the
22 exit discharge. Exits include vertical exits, exterior exit doors at the level of exit discharge, vertical
23 exit enclosures, exit passageways, exterior exit stairs, exterior exit ramps and horizontal exits, but
24 do not include access stairways, aisles, exit access doors opening to corridors or corridors. This
25 term shall include the locations on a premises at which egress may be had from an enclosed outdoor
26 space.

27
28 **EXIT ACCESS.** [See FC1002.1.] That portion of a means of egress system that leads from any
29 occupied portion of a building, structure or premises to an exit.

30
31 **EXIT DISCHARGE.** [See FC1002.1.] That portion of a means of egress system between the
32 termination of an exit and a public way.

33
34 **EXIT DISCHARGE, LEVEL OF.** [See FC1002.1.] The story at the point at which an exit
35 terminates and an exit discharge begins.

36
37 **EXPANDED PLASTIC.** [See FC2302.1.] A foam or cellular plastic material having a reduced
38 density based on the presence of numerous small cavities or cells dispersed throughout the
39 material.

40
41 **EXPLOSION.** [See FC2702.1.] An effect produced by the sudden violent expansion of gases,
42 whether or not accompanied by a shock wave or disruption, of enclosing materials, including the
43 effects of the following sources of explosion:

- 44
45
 1. Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of
46 molecules and runaway polymerization (usually detonations).

1 2. Physical changes such as pressure tank ruptures.

2
3 3. Atomic changes (nuclear fission or fusion).

4
5 **EXPLOSIVE.** [See FC3302.1.] A chemical compound, mixture or device, the primary or common
6 purpose of which is to function by explosion. The term includes, but is not limited to, dynamite,
7 black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating
8 cord, igniter cord and igniters. The term “explosive” includes any material determined to be within
9 the scope of Chapter 40 of Title 18 of the United States Codes, and any material classified as an
10 explosive by the hazardous materials regulations of the United States Department of
11 Transportation, as set forth in 49 CFR Section 173.52, except fireworks. Explosives are classified
12 in accordance with the following United States Department of Transportation classification and
13 other terms in common usage:

14
15 **United States Department of Transportation Class 1 explosives.**

16
17 **Division 1.1.** Explosives that present a mass explosion hazard.

18
19 **Division 1.2.** Explosives that present a projection hazard but not a mass explosion hazard.

20
21 **Division 1.3.** Explosives that present a fire hazard and either a minor blast hazard or a
22 minor projection hazard, or both, but not a mass explosion hazard.

23
24 **Division 1.4.** Explosives that present a minor explosion hazard. The explosive effects are
25 largely confined to the package and no projection of fragments of appreciable size or range
26 is to be expected. Such explosives are not subject to mass explosion when exposed to fire.

27
28 **Division 1.5.** Explosives that present a mass explosion hazard but which are so insensitive
29 that there is very little probability of initiation or of transition from burning to detonation
30 under normal conditions of transport.

31
32 **Division 1.6.** Explosives consisting of extremely insensitive articles that do not present a
33 mass explosion hazard, and present a negligible probability of accidental initiation or
34 propagation.

35
36 **High Explosive.** [See FC3302.1.] Explosives, including dynamite, that, when detonated, are
37 characterized by a high rate of reaction, high pressure development, and the presence of a
38 detonation wave, and that can be caused to detonate by means of a No. 8 test blasting cap,
39 when unconfined.

40
41 **Low Explosive.** [See FC3302.1.] Explosives that will burn or deflagrate when ignited, and
42 which are characterized by a rate of reaction that is less than the speed of sound, and low
43 pressure development. Examples of low explosives include black powder, igniter cords,
44 igniters, safety fuses, small arms ammunition and primers, and propellants, 1.3C.

45
46 **[Mass-detonating] Mass-Detonating Explosives.** [See FC3302.1.] Division 1.1, 1.2 and 1.5
47 explosives that, whether individually or in combination, or loaded into ammunition or

1 containers, explode virtually instantaneously when a small portion is subjected to fire,
2 concussion, impact, the impulse of an initiating agent, or the effect of a considerable discharge
3 of energy from without, with severe explosive effect, including the potential for structural
4 damage to adjacent objects, and explosive propagation to other explosives stored in proximity,
5 such that two or more quantities in proximity must be considered as one for quantity-distance
6 purposes.

7
8 [UN/DOTn Class 1 Explosives. See FC3302.1.]

9
10 **EXTERNAL LOAD.** [See FC1102.1.] Cargo transported by, but not within, the helicopter.

11
12 **EXTRA-HIGH-RACK COMBUSTIBLE STORAGE.** [See FC2302.1.] Storage on racks of
13 Class I, II, III or IV commodities that exceed 40 feet (12 192 mm) in height and storage on racks
14 of high-hazard commodities that exceed 30 feet (9144 mm) in height.

15
16 **FABRICATION AREA.** [See FC1802.1.] An area within a semiconductor fabrication facility in
17 which processes using hazardous production materials are conducted.

18
19 **FACILITY.** Any premises subject to a design or installation requirement of this code, or at, in or
20 upon which a material regulated by this code is manufactured, stored, handled, used or transported,
21 or an operation regulated by this code is conducted.

22
23 **FAIL-SAFE.** A feature of the design of a device, equipment or system that automatically
24 counteracts the effect of an anticipated possible source of failure, or prevents or mitigates a
25 hazardous condition by automatically compensating for a failure or malfunction of the device,
26 equipment or system.

27
28 **FALLOUT AREA.** [See FC3302.1.] The area over which aerial shells or other aerial fireworks
29 are fired and intended to combust, deflagrate or detonate, including the area into which debris and
30 unexploded aerial fireworks are expected to fall given the direction and strength of the wind, and
31 the angle or placement of the mortars or other devices discharging fireworks.

32
33 **FEP.** [See FC402.1.] Fire and emergency preparedness.

34
35 **FEP STAFF.** [See FC402.1.] The individuals identified in a fire and emergency preparedness plan
36 as responsible for the implementation of such plan, including but not limited to FEP coordinators.

37
38 **FINISHED GOODS.** See Beverage Alcohol.

39
40 **FINISHED PYROXYLIN PLASTIC PRODUCTS.** [See FC4202.1.] Any product to which a
41 pyroxylin plastic has been applied that does not require further manufacturing with respect to the
42 application of such pyroxylin plastic or any further application of pyroxylin plastic.

43
44 **FIRE.** A rapid, persistent chemical reaction that releases heat and light, especially the burning of
45 a combustible substance in the presence of oxygen. For purposes of this code, a flame used in any
46 lawful, properly operating device, equipment or system or other controlled setting shall not be
47 considered a fire.

1
2 **FIRE ALARM BOX, MANUAL.** [See FC902.1.] A manually operated device used to initiate an
3 alarm signal.

4
5 **FIRE ALARM SIGNAL.** [See FC902.1.] A signal initiated by a fire alarm-initiating device such
6 as a manual fire alarm box, automatic fire detector, water-flow switch, or other device whose
7 activation is indicative of the presence of a fire or fire signature.

8
9 **FIRE ALARM SYSTEM.** [See FC902.1.] Any system, including any interconnected fire alarm
10 sub-system, of components and circuits arranged to monitor and annunciate the status of fire alarm
11 or supervisory signal-initiating devices.

12
13 **FIRE APPARATUS ACCESS ROAD.** [See FC502.1.] A road that serves to provide access for
14 fire apparatus from a public street to the frontage space of one or more buildings not directly
15 fronting on a public street. A fire apparatus access road includes any road that serves such purpose
16 whether denominated as a driveway, parking lot lane or private road.

17
18 **FIRE AREA.** The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior
19 walls and/or horizontal assemblies of a building. Areas of the building not provided with
20 surrounding walls shall be included in the fire area if such areas are included within the horizontal
21 projection of the roof or floor next above.

22
23 **FIRE COMMAND CENTER.** The principal attended or unattended location where the status of
24 the detection, alarm communications and control systems is displayed, and from which the
25 system(s) can be manually controlled.

26
27 **FIRE DEPARTMENT STANDARD KEY.** [See FC502.1.] A key of special or controlled
28 design, also known as a “1620” key, for the use of department personnel and others specifically
29 authorized by the commissioner, which serves to operate all switches, locks and other devices
30 required to be operable by a citywide standard key.

31
32 **FIRE DETECTOR, AUTOMATIC.** [See FC902.1.] A device designed to detect the presence of
33 a fire signature and to initiate action.

34
35 **FIRE DOOR ASSEMBLY.** Any combination of a fire door, frame, hardware, and other
36 components that together, as an opening protective, provide a specific degree of fire protection to
37 the opening.

38
39 **FIRE DRILL.** [See FC402.1.] A training exercise by which building occupants are familiarized
40 with and/or practice the procedures for the safe, orderly and expeditious sheltering in place,
41 in-building relocation, partial or full evacuation, or any combination thereof, in the event of a fire,
42 in accordance with the emergency preparedness plan for the premises.

43
44 **FIRE EXTINGUISHING SYSTEM.** [See FC902.1.] An approved system of devices and
45 equipment that discharges an approved fire extinguishing agent onto or in the area of a fire. The
46 term includes (water-based) sprinkler systems and (water and non-water-based) alternative fire
47 extinguishing systems, as those terms are used in the Building Code. An automatic fire

1 extinguishing system incorporates a device that detects a fire and activates the system. A manual
2 fire extinguishing system does not detect a fire and requires manual activation to discharge the fire
3 extinguishing agent.

4
5 **FIRE GUARD.** A person holding a certificate of fitness for such purpose, who is trained in and
6 responsible for maintaining a fire watch.

7
8 **FIRE LANE.** [See FC502.1.] A public or private road, roadway lane, parking lot lane or other
9 surface designed to allow vehicular access, that has been specifically designated by means of signs
10 or roadway markings as a priority thoroughfare for fire apparatus.

11
12 **FIRE PARTITION.** A vertical assembly of materials designed to restrict the spread of fire.

13
14 **FIRE POINT.** [See FC3402.1.] The lowest temperature at which a liquid will ignite and achieve
15 sustained burning when exposed to a test flame in accordance with ASTM D 92.

16
17 **FIRE PROTECTION SYSTEM.** [See FC902.1.] Approved devices, equipment and systems or
18 combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control
19 or manage smoke and products of a fire or any combination thereof, including fire extinguishing
20 systems, fire alarm systems and standpipe systems.

21
22 **FIRE PUMP.** A pump used exclusively for fire protection, also commonly referred to as
23 automatic standpipe pump, foam pump, limited service pump, special service pump, sprinkler
24 booster pump or water mist system pump. A pump used solely for filling a tank is not a fire pump.

25
26 **FIRE-RETARDANT COATING.** [See FC802.1.] An approved coating that, when applied to the
27 surface of scenery in an approved manner, imparts flame resistance and reduces flame spread.

28
29 **FIRE WATCH.** A temporary measure intended to ensure continuous and systematic surveillance
30 of a building or portion thereof by one or more qualified individuals for the purposes of identifying
31 and controlling fire hazards, including detecting early signs of fire, raising an alarm of fire,
32 notifying the department, and performing such other fire safety duties as may be prescribed by the
33 commissioner.

34
35 **FIREWORKS.** [See FC3302.1.] An article or device that does not present a mass explosion
36 hazard, that is manufactured or used to produce a visible or an audible effect for entertainment or
37 other display purposes by combustion, deflagration or detonation, and that meets the definition of
38 1.4G fireworks or 1.3G fireworks as set forth herein.

39
40 **Fireworks, 1.3G.** [See FC3302.1.] Large fireworks devices classified as UN0335 by the
41 United States Department of Transportation regulations, intended for use in fireworks displays
42 and designed to produce audible or visible effects by combustion, deflagration or detonation,
43 including firecrackers containing more than 130 milligrams (2 grains) of explosive
44 composition, aerial shells containing more than 40 grams of pyrotechnic material, and other
45 display pieces which exceed the limits for classification as 1.4G fireworks.

1 **Fireworks, 1.4G.** [See FC3302.1.] Small fireworks devices, classified as UN 0336 by United
2 States Department of Transportation regulations, containing restricted amounts of pyrotechnic
3 materials designed primarily to produce visible or audible effects by combustion.

4
5 **FIREWORKS CONTRACTOR CERTIFICATE.** [See FC3302.1.] A written statement issued
6 by the commissioner to a company authorizing such company to conduct a fireworks display and
7 to be responsible for all storage, handling, use and transportation of fireworks in connection
8 therewith.

9
10 **FIREWORKS DISPLAY.** [See FC3302.1.] The discharge of fireworks for an outdoors public
11 display.

12
13 **FLAME-RESISTANT MATERIAL.** [See FC802.1.] Material that meets the flame propagation
14 performance criteria of NFPA 701, either because it is inherently flame-resistant or because it has
15 been subjected to a flame-retardant treatment.

16
17 **FLAME-RETARDANT TREATMENT.** [See FC802.1.] An approved chemical that, when
18 applied to a material in an approved manner, imparts flame resistance to a material.

19
20 **FLAME SPREAD.** [See FC802.1.] The propagation of flame over a surface.

21
22 **FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM.** [See FC3402.1.] A
23 flammable or combustible liquid storage tank and all devices, equipment and systems associated
24 with such tank, including the tank, piping, valves, fill connection, vent lines, pumps and any other
25 ancillary equipment, except liquid motor fuel storage and dispensing systems and flammable and
26 combustible liquid storage systems at a bulk plant or terminal used for bulk transfer operations.

27
28 **FLAMMABLE CRYOGENIC FLUID.** [See FC3202.1.] A cryogenic fluid that is flammable in
29 its vapor state.

30
31 **FLAMMABLE FINISHES.** [See FC1502.1.] Material coatings in which the material being
32 applied is a flammable liquid, combustible liquid, combustible powder or flammable or
33 combustible gel coating.

34
35 **FLAMMABLE GAS.** [See FC3502.1.] A material which has a boiling point and becomes a gas
36 at 68°F (20°C) or less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure which:

37
38 1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with
39 air, in accordance with testing procedures set forth in ASTM E 681; or

40
41 2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of
42 the lower explosive limit, in accordance with testing procedures set forth in ASTM E 681.

43
44 **FLAMMABLE LIQUEFIED GAS.** [See FC3502.1.] A liquefied compressed gas which, under
45 a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is a flammable
46 gas.

1 **FLAMMABLE LIQUID.** [See FC3402.1.] For purposes of transportation, a flammable liquid
2 defined in the regulations of the United States Department of Transportation, as set forth in 49
3 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic
4 fluid, having a closed cup flash point below 100°F (38°C), classified as follows:

5
6 **Class I.** A flammable liquid or liquids with the properties of a Class IA, IB and/or Class IC
7 liquid.

8
9 **Class IA.** Liquids having a flash point below 73°F (23°C) and having a boiling point below
10 100°F (38°C).

11
12 **Class IB.** Liquids having a flash point below 73°F (23°C) and having a boiling point at or
13 above 100°F (38°C).

14
15 **Class IC.** Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

16
17 **FLAMMABLE LIQUID MOTOR FUEL.** [See FC2202.1.] Gasoline or other flammable liquids
18 used as fuel in the operation of motor vehicles, motorcycles, watercraft and aircraft.

19
20 **FLAMMABLE MATERIAL.** A material capable of being readily ignited from common sources
21 of heat or at a temperature of 600°F (316°C) or less.

22
23 **FLAMMABLE SOLID.** [See FC3602.1.] A solid, other than a blasting agent or other explosive,
24 whether in elemental or alloy form, that is capable of causing fire through friction, absorption or
25 moisture, spontaneous chemical change, or heat retained from manufacturing or processing, or
26 which has an ignition temperature below 212°F (100°C) or which burns so vigorously and
27 persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable
28 solid if upon testing using the method prescribed in CPSC regulations, as set forth in 16 CFR
29 Section 1500.44, it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5
30 mm) per second along its major axis.

31
32 **FLAMMABLE VAPOR AREA.** [See FC1502.1.] The interior of any room, booth or area,
33 including spray rooms, spray booths, exhaust ducts and drying rooms, or other areas in which, as
34 a result of flammable finishing operations, the concentration of flammable constituents (vapor,
35 gas, fume, mist or dust) in air exceeds 25 percent of their lower flammable limit (LFL).

36
37 **FLAMMABLE VAPORS OR FUMES.** [See FC2702.1.] The concentration of flammable
38 constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

39
40 **FLASH POINT.** [See FC3402.1.] The minimum temperature in degrees Fahrenheit at which a
41 liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the
42 container, but will not sustain combustion. The flash point of a liquid shall be determined by
43 appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D
44 3278.

1 **FLEET FUELING.** The transferring of Class II and III liquids directly from a cargo tank through
2 approved dispensing equipment into the fuel tanks of motor vehicles at approved off-street
3 locations where fleet vehicles are parked.

4
5 **FLEET MOTOR FUEL-DISPENSING FACILITY.** [See FC2202.] A motor fuel-dispensing
6 facility wherein motor fuel is stored and/or dispensed into the fuel tank of a motor vehicle,
7 motorcycle, marine vessel or watercraft owned or operated by or on behalf of the owner of the
8 facility, and where such dispensing operations are conducted by persons employed by or on behalf
9 of the owner of the facility. There are four approved types of fleet motor fuel-dispensing facilities:

10
11 Fleet automotive hydrogen motor fuel-dispensing facility (motor vehicles)

12 Fleet automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)

13 Fleet CNG motor fuel-dispensing facility (motor vehicles, marine vessels and watercraft)

14 Fleet marine liquid motor fuel-dispensing facility (marine vessel and watercraft)

15
16 **FLOAT.** [See FC302.1.] A floating dock or structure to which marine vessels or watercraft may
17 be moored and which is typically used as means by which passengers and freight may be
18 transferred from ship to shore.

19
20 **FLOOR FINISHING OPERATION.** [See FC1502.1.] Any activity involving the surfacing or
21 finishing of a floor, including but not limited to cleaning, stripping, sealing, painting, varnishing,
22 lacquering, staining and waxing.

23
24 **FLS.** [See FC402.1.] Fire and life safety.

25
26 **FLS STAFF.** [See FC402.1.] The individuals required to implement a comprehensive fire safety
27 and emergency action plan, as identified in such plan, including but not limited to the FLS director,
28 deputy FLS director, members of the FLS brigade or other FLS staff, and any staff designated as
29 critical operations staff.

30
31 **FLUIDIZED BED.** [See FC1502.1.] A container holding powder coating material that is aerated
32 from below so as to form an air-supported expanded cloud of such material through which the
33 preheated object to be coated is immersed and transported.

34
35 **FLUE SPACE, LONGITUDINAL.** In high-piled combustible storage, the vertical space
36 between rows of storage perpendicular to the direction of loading.

37
38 **FLUE SPACE, TRANSVERSE.** In high-piled combustible storage, the horizontal space between
39 rows of storage parallel to the direction of loading.

40
41 **FREQUENCY.** The number of ground vibration or air overpressure waves generated by blasting
42 operations that pass a fixed point in a given amount of time, usually measured in Hertz (Hz) or
43 cycles per second.

44
45 **FRONTAGE SPACE.** [See FC502.1.] A street or an open space in front of and adjoining the
46 main front entrance to the building and not less than 30 feet (9144 mm) in any dimension that is
47 accessible from a public street or fire apparatus access road, provides access to the building, and

1 serves as a staging area for firefighting and other emergency operations. It shall be designed and
2 constructed to allow operation of department apparatus on the front side of the building and shall
3 be maintained free of obstructions that may interfere with its use by the department.

4
5 **FUEL GAS CODE.** The [2008] New York City Fuel Gas Code in effect on July 1, 2008, and as
6 amended thereafter.

7
8 **FULL-SERVICE MOTOR FUEL-DISPENSING FACILITY.** [See FC2202.] A motor fuel-
9 dispensing facility wherein motor fuel is dispensed into the fuel tank of motor vehicles,
10 motorcycles, marine vessels or watercraft by a certified attendant or, when under the personal
11 supervision of a certified attendant, by persons employed by or on behalf of the owner of the
12 facility. There are four approved types of full-service motor fuel-dispensing facilities:

13
14 Full-service automotive hydrogen motor fuel-dispensing facility (motor vehicles)

15 Full-service automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)

16 Full-service CNG motor fuel-dispensing facility (motor vehicles, marine vessels and
17 watercraft)

18 Full-service marine liquid motor fuel-dispensing facility (marine vessel and watercraft)

19
20 **FUME CLASS 1.** [See FC3302.1.] A classification established by the Institute of Makers of
21 Explosives. Explosives meeting the requirements of this classification will provide less than 0.16
22 cubic feet (0.00453 m³) of poisonous gases upon detonation of 0.44 pounds (200 grams) of
23 explosive.

24
25 **FUMIGANT.** [See FC1702.1.] A substance which by itself or in combination with any other
26 substance emits or liberates a gas, fume or vapor utilized for the destruction or control of insects,
27 rats or other vermin or fungi, germs or similar conditions, as distinguished from insecticides and
28 disinfectants which are essentially effective in the solid or liquid phases. Examples are methyl
29 bromide, ethylene dibromide, hydrogen cyanide, carbon disulfide and sulfuryl fluoride.

30
31 **FUMIGATION.** [See FC1702.1.] The utilization within an enclosed space of a fumigant in
32 concentrations that are hazardous or acutely toxic to humans.

33
34 **FUMIGATION AND INSECTICIDAL FOGGING OPERATION COMPANY**
35 **CERTIFICATE.** [See FC1702.1.] A certificate issued by the commissioner to a person engaged
36 in the business of fumigation and insecticidal fogging operations, which authorizes an owner or
37 principal of such business to conduct such fumigation and insecticidal fogging operations, for
38 which such certificate is required by this code or the rules.

39
40 **FURNACE.** [See FC2102.1.] A compartment, receptacle, enclosed chamber or structure that is
41 capable of being heated to a high temperature in order to heat the contents thereof. Furnaces may
42 be heated by internal or external sources, including gas burners, oil burners, electrical elements,
43 infrared lamps, induction heaters and steam radiation systems, regardless of whether denominated
44 as an oven or furnace. Furnaces shall be classified as follows:

45
46 [CLASS A. See FC2102.1.] **Class A.** A furnace that has heat utilization equipment operating
47 at or near atmospheric pressure and that presents a potential explosion or fire hazard if

1 flammable volatiles or combustible materials are processed or heated in the furnace. Such
2 flammable volatiles or combustible materials include those originating from paints, powders,
3 inks, and adhesives from finishing processes, such as dipped, coated, sprayed and impregnated
4 materials; the substrate material; wood, paper and plastic pallets, spacers or packaging
5 materials; or polymerization or other molecular rearrangements.

6
7 [CLASS B. See FC2102.1.] **Class B.** A furnace that has heat utilization equipment operating
8 at approximately atmospheric pressure wherein there are no flammable volatiles or
9 combustible materials being heated.

10
11 [CLASS C. See FC2102.1.] **Class C.** A furnace with any type of heating system and a special
12 atmosphere supply system that is potentially hazardous due to a flammable or other special
13 atmosphere being used for treatment of material in process, including integral quench furnaces
14 and molten salt bath furnaces.

15
16 [CLASS D. See FC2102.1.] **Class D.** A furnace with any type of heating system that operates
17 at temperatures from above ambient to over 5,000°F (2760°C) and at pressures normally below
18 atmospheric, including special processing atmosphere furnaces.

19
20 **FURNISHING.** [See FC802.1.] Furniture or items other than structural elements, building service
21 equipment or interior finishes that are installed or placed in a building for the human comfort or
22 other use of the occupants.

23
24 **GAS CABINET.** [See FC2702.1.] A fully enclosed, noncombustible enclosure used to provide an
25 isolated environment for compressed gas containers in storage or use, including any doors and
26 access ports for exchanging containers and accessing pressure-regulating controls.

27
28 **GAS ROOM.** [See FC2702.1.] A separately ventilated, fully enclosed room in which only
29 compressed gases and associated equipment and supplies are stored or used.

30
31 **GASEOUS HYDROGEN.** A nontoxic, gaseous hydrogen-containing mixture that is not less
32 than 95 percent hydrogen gas by volume and not more than 1 percent oxygen by volume.

33
34 **GENERAL SUPERVISION.** Except as otherwise provided in this code, supervision by the
35 holder of any department certificate who is responsible for performing the duties set forth in
36 FC113.2 but need not be personally present on the premises at all times.

37
38 **GEOPHONE.** A device that measures particle velocity. The ground vibration measurements
39 detected by a geophone are recorded by a blasting seismograph.

40
41 **GLOBAL STRAIN METHOD.** A calculation of the structure differential motion, resulting from
42 blast-induced ground vibration and/or air overpressure, encompassing the whole of the structure.
43 Global strain is used to estimate potential crack damage over the entire height of a building or
44 structure. The global strain is computed using measurements at upper and lower building corners.

45
46 **Global Shear Wall Strain.** Computation of the peak lateral time-correlated differential
47 displacement between the upper and lower structure. Global strain is calculated using

1 measurements on a vertical at the corner closest to the blast, divided by the height of the
2 building. Global shear wall strain must be ascertained to compute global tensile wall strain.

3
4 **Global Tensile Wall Strain.** Computation of the peak change in building diagonal length over
5 the original length as measured from time-correlated horizontal motions, reported in micro-
6 strains (10^{-6} inch/inch).

7
8 **Strain.** A change in length or deformation of a material or structure component as the result of
9 an applied load, numerically equal to the change in length divided by the original length,
10 reported in 10^{-6} inch/inch or micro-strains.

11
12 **GROUND VIBRATION.** Energy traveling through the earth as a result of blasting operations;
13 measured and reported in Hertz (Hz).

14
15 **HANDLING.** [See FC2702.1.] The movement of a material in its container, the removal of the
16 material from its container, or any other action or process that may affect the material, other than
17 its storage or use.

18
19 **HAZARDOUS MATERIALS.** [See FC2702.1.] Those chemicals or substances that are physical
20 hazards or health hazards as defined and classified in this code, whether the materials are in usable
21 or waste condition.

22
23 **HAZARDOUS PRODUCTION MATERIAL (HPM).** [See FC1802.1.] A solid, liquid or gas
24 associated with semiconductor manufacturing that has a degree-of-hazard rating in health,
25 flammability or instability of Class 3 or 4 as defined in NFPA 704 and which is used directly in
26 research, laboratory or production processes which have, as their end product, materials that are
27 not hazardous.

28
29 **HEALTH HAZARD.** [See FC2702.1.] A classification of a chemical for which there is
30 statistically significant evidence that acute or chronic health effects are capable of occurring in
31 exposed persons. The term “health hazard” includes chemicals that are toxic, highly toxic and
32 corrosive.

33
34 **HELICOPTER LIFT OPERATION.** [See FC1102.1.] The movement of an external load with
35 the use of a helicopter.

36
37 **HELIPORT.** [See FC1102.1.] An area of land or water or a structural surface that is designed or
38 used for the landing and takeoff of helicopters, and any appurtenant areas which are designed or
39 used for heliport facilities and operations.

40
41 **HELISTOP.** [See FC1102.1.] An area of land or water or a structural surface that is designed or
42 used for the landing or takeoff of helicopters, but which is not designed or used for fueling,
43 defueling, maintenance, repairs or storage of helicopters, including any staging or other
44 appurtenant areas.

45
46 **HI-BOY.** [See FC302.1.] A cart used to move hot roofing materials on a roof.
47

1 **HIGH-PILED COMBUSTIBLE STORAGE.** [See FC2302.1.] Storage of combustible materials
2 in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of
3 storage is greater than 12 feet (3658 mm) in height. High-piled combustible storage also includes
4 certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle
5 pallets and similar commodities, where the top of storage is greater than 6 feet (1829 mm) in
6 height.

7
8 **HIGH-PILED STORAGE AREA.** [See FC2302.1.] An area within a building, structure or
9 premises that is designed or used for high-piled combustible storage.

10
11 **HIGH-RISE BUILDING.** [See FC402.1.] Any building designed or constructed in accordance
12 with the Building Code that has one or more occupied floors more than 75 feet (22 860 mm) above
13 the lowest level of fire department vehicle apparatus access, and, with respect to any building
14 lawfully existing on July 1, 2008, any building designed or constructed in accordance with the
15 1968 Building Code, any prior Building Code, or other applicable laws, rules and regulations, that
16 is more than six stories or 75 feet (22 860 mm) in height.

17
18 **HIGH-RISE FLOOR.** [See FC402.1.] Any occupied floor in a high-rise building that is at or
19 above the height that causes such building to be classified as a high-rise building.

20
21 **HIGH-RISE MEGASTRUCTURE.** Any building or structure that has an occupied floor 800 feet
22 (243 840 mm) or more above the lowest level of fire department vehicle access.

23
24 **HIGH-VOLTAGE TRANSMISSION LINE.** [See FC302.1.] An electrical power transmission
25 line operating at or above 66 kilovolts.

26
27 **HIGHLY TOXIC MATERIAL.** [See FC3702.1.] A chemical that is lethal at the following doses
28 or concentration:

- 29
30 1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of
31 body weight when administered orally to albino rats weighing between 200 and 300 grams
32 each; or
33
34 2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of
35 body weight when administered by continuous contact for 24 hours (or less if death occurs
36 within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms
37 each; or
38
39 3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by
40 volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when
41 administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to
42 albino rats weighing between 200 and 300 grams each.

43
44 **HIGHWAY.** [See FC3302.1.] A public street.

45
46 **HOOD.** [See FC602.1.] An air-intake device used to capture by entrapment, impingement,
47 adhesion or similar means, grease and similar contaminants before they enter a duct system.

1
2 **Type I.** [See FC602.1.] A kitchen hood for collecting and removing grease vapors and smoke.

3
4 **HOT AIR BALLOON OPERATION.** [See FC1102.1.] The filling of balloons with hot air for
5 purposes of display or flight.

6
7 **HOT TAPPING.** Hot work conducted on a tank or piping while the tank or piping is in service
8 and contains a flammable or combustible liquid.

9
10 **HOT WORK.** [See FC2602.1.] Cutting, welding, thermit welding, brazing, soldering, grinding,
11 thermal spraying, thawing pipe, cadwelding, installation of torch-applied roof systems or any other
12 similar operation or activity.

13
14 **HOT WORK AREA.** [See FC2602.1.] The area exposed to sparks, hot slag, radiant heat, or
15 convective heat as a result of hot work.

16
17 **HOT WORK EQUIPMENT.** [See FC2602.1.] Electric or gas welding or cutting equipment used
18 for hot work.

19
20 **HOT WORK PROGRAM.** [See FC2602.1.] A program, implemented by a responsible person
21 designated by the owner of a building or structure in or on which hot work is being performed, to
22 oversee and issue authorizations for such hot work for the purpose of preventing fire and fire
23 spread.

24
25 **HOT WORK PROGRAM AUTHORIZATIONS.** [See FC2602.1.] Authorizations issued by
26 the responsible person under a hot work program allowing welding or other hot work to be
27 performed at the premises.

28
29 **HPM FLAMMABLE LIQUID.** [See FC1802.1.] For purposes of semiconductor fabrication
30 facilities, an HPM liquid that is defined as either a Class I flammable liquid or a Class II or Class
31 IIIA combustible liquid.

32
33 **HPM ROOM.** [See FC1802.1.] For purposes of semiconductor fabrication facilities, a room used
34 in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and which
35 is classified as a Group H-2, H-3 or H-4 occupancy.

36
37 **HYDRANT-FUELING VEHICLE.** [See FC1102.1.] A type of aircraft fueling vehicle that is
38 equipped to transfer fuel between a fuel hydrant and an aircraft.

39
40 **HYDROGEN FUEL GAS ROOM.** A separately ventilated, fully enclosed room designed for the
41 generation of gaseous hydrogen for immediate on-premises use in fuel cells or other energy
42 production process, and incidental storage of gaseous hydrogen. A hydrogen fuel gas room does
43 not include a room designed or operated for production or dispensing of hydrogen motor fuel.

44
45 **HYPERBARIC FACILITY.** A building, structure, or space used to house a hyperbaric chamber
46 and associated service equipment for medical applications and procedures at pressures above
47 normal atmospheric pressure.

1
2 **IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).** [See FC2702.1.] The
3 concentration of air-borne contaminants that poses a threat of death, immediate or delayed
4 permanent adverse health effects, or effects that could prevent escape from such an environment,
5 as established by the National Institute of Occupational Safety and Health (NIOSH) based on both
6 toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or
7 milligrams per cubic meter (mg/m³). If adequate data do not exist for precise establishment of
8 IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist,
9 appropriate regulatory agency or other source approved by the commissioner shall make such
10 determination.

11
12 **IMPAIRMENT COORDINATOR.** [See FC902.1.] The person responsible for ensuring that
13 proper safety precautions are taken when a fire protection system is out of service.

14
15 **IN-BUILDING RELOCATION.** [See FC402.1.] The controlled movement of building
16 occupants from an endangered area of a building to an in-building relocation area within the same
17 building in response to a fire or non-fire emergency.

18
19 **IN-BUILDING RELOCATION AREA.** [See FC402.1.] A designated area in a building to which
20 building occupants may be relocated in accordance with the emergency preparedness plan for the
21 premises.

22
23 **INCOMPATIBLE MATERIALS.** [See FC2702.1.] Materials that, if mixed or combined, could
24 explode, generate heat, gases or other byproducts, or react in a way hazardous to life or property.

25
26 **INERT GAS.** Argon, helium, krypton, neon, nitrogen, xenon or other gas that does not react with
27 other materials under atmospheric pressures and other conditions ordinarily encountered in
28 common use.

29
30 **INHABITED BUILDING.** [See FC3302.1.] A building regularly occupied in whole or in part as
31 a habitation for human beings, or any house of worship, school building, railroad station, store or
32 other structure where people are accustomed to assemble.

33
34 **INITIATING DEVICE.** [See FC902.1.] A system component that originates transmission of a
35 change-of-state condition, such as in a smoke detector, manual fire alarm box, or supervisory
36 switch.

37
38 **INSECTICIDAL FOGGING.** [See FC1702.1.] The utilization of insecticidal liquids passed
39 through fog-generating units where, by pressure and turbulence, and with or without addition of
40 heat, such liquids are transformed and discharged in the form of fog or mist blown into an area to
41 be treated.

42
43 **INTENSITY.** As pertaining to ground vibration, the speed of particle movement (particle
44 velocity), measured in inches per second.

45

1 **INTERIOR FINISH.** [See FC802.1.] Construction materials that form the exposed interior
2 surfaces of a building and that are part of or affixed to walls, fixed or folding partitions, ceilings,
3 and other construction elements.

4
5 **INTERMEDIATE BULK CONTAINER.** See Alcohol Storage Equipment.

6
7 **IRRITANT.** A material which is not corrosive, but which causes a reversible inflammatory effect
8 on living tissue by chemical action at the site of contact. A material shall be classified a skin irritant
9 if, when tested in accordance with the regulations of the United States Consumer Product Safety
10 Commission, as set forth in 16 CFR Section 1500.41, it results in an empirical score of 5 or more.
11 A material shall be classified as an eye irritant in accordance with the regulations of the United
12 States Consumer Product Safety Commission, as set forth in 16 CFR Section 1500.42.

13
14 **JOB SITE.** [See FC3302.1.] The construction site at which blasting operations are being
15 conducted, including the blast site and blast area.

16
17 **KEY BOX.** [See FC502.1.] A secure device with a lock operable only by a citywide standard key
18 or other approved key.

19
20 **KILOWATT HOURS (kWh).** A measurement of electrical energy.

21
22 **LABELED.** A [listed] material, device, equipment or system to which has been attached a label,
23 symbol or other identifying mark of a nationally recognized testing laboratory or other approved
24 organization, and whose labeling indicates compliance with nationally recognized standards and
25 designates suitable usage.

26
27 **LABORATORY CHEMICAL.** [See FC2702.1.] A material with a health, flammability and/or
28 instability hazard ranking of 2, 3 or 4 as defined in NFPA 704.

29
30 **LABORATORY UNIT.** [See FC2702.1.] An enclosed space of a minimum one-hour fire-rated
31 construction, designed or used as a non-production laboratory. Laboratory units may include one
32 or more separate laboratory work areas, and accessory storage rooms or spaces within or
33 contiguous with the laboratory unit, such as offices and lavatories.

34
35 **LARGE-AREA BUILDING.** [See FC402.1.] A building that is not a high-rise building, but is
36 either a Group B office building within the meaning of Section 907.2.2.2 of the Building Code that
37 has a total gross area of more than 100,000 square feet (9290 m²) or a building of an occupancy
38 type other than Group R-2 or Group R-3 that has a total gross area of more than 100,000 square
39 feet (9290 m²).

40
41 **LIMITED-SPRAYING SPACE.** [See FC1502.1.] An area in which spraying operations for
42 touch-up or spot painting of a surface area of 9 square feet (0.84m²) or less per workpiece are
43 conducted.

44
45 **LIQUEFIED NATURAL GAS (LNG).** [See FC2202.1.] A fluid in the liquid state composed
46 predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen
47 or other components normally found in natural gas.

1
2 **LIQUEFIED PETROLEUM GAS (LPG).** [See FC3802.1.] A material which is composed
3 predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane
4 (normal butane or isobutane) and butylenes. Methylacetylene-propadiene mixtures (MAPP-gas)
5 shall be deemed to be an LPG.
6

7 **LIQUID.** [See FC2702.1.] A material having a melting point that is equal to or less than 68°F
8 (20°C) and a boiling point that is greater than 68°F (20°C) at 14.7 psia (101 kPa). When not
9 otherwise identified, the term “liquid” includes both flammable and combustible liquids.
10

11 **LIQUID MOTOR FUEL.** [See FC2202.1.] Gasoline, diesel fuel or other flammable or
12 combustible liquids used as fuel in the operation of motor vehicles, motorcycles, marine vessels
13 and watercraft.
14

15 **LIQUID MOTOR FUEL STORAGE AND DISPENSING SYSTEM.** [See FC2202.1.] A
16 liquid motor fuel storage tank and all motor fuel storage and dispensing equipment associated with
17 such tank, including the tank, piping, valves, fill connection catchment basins, vent lines, pumps,
18 dispensing devices and any other ancillary equipment.
19

20 **LIQUID OXYGEN AMBULATORY CONTAINER.** [See FC4002.1.] A liquid oxygen
21 container with a capacity not exceeding 0.396 gallons (1.5 liters) that constitutes a medical device,
22 as that term is defined in Chapter 9 of Title 21 of the United States Code Section 321, that is
23 designed to be filled from a liquid oxygen home care container, and that is designed for portable
24 use to supply oxygen for medical purposes, and that is used for such purpose.
25

26 **LIQUID OXYGEN HOME CARE CONTAINER.** [See FC4002.1.] A liquid oxygen container
27 with a capacity not exceeding 15.8 gallons (60 liters) that constitutes a medical device, as that
28 term is defined in Chapter 9 of Title 21 of the United States Code Section 321, and that is designed
29 and used for medical purposes in a residential or resident health care setting in a Group I-1, I-4
30 or R occupancy.
31

32 **LIQUID STORAGE ROOM.** [See FC3402.1.] A room classified as a Group H-3 occupancy used
33 for the storage of flammable or combustible liquids in an unopened condition.
34

35 **LIQUID STORAGE WAREHOUSE.** [See FC3402.1.] A building classified as a Group H-2 or
36 H-3 occupancy used for the storage of flammable or combustible liquids in barrels and closed
37 containers.
38

39 **LIQUID-TIGHT CONSTRUCTION.** Construction designed to prevent a liquid manufactured,
40 stored, handled or used in a room or other area from escaping from such room or other area by
41 means of penetration through a surface.
42

43 **LISTED.** A material, device, equipment or system included on a list published by a nationally
44 recognized testing laboratory or other approved organization performing product evaluations that
45 maintains periodic inspection of production of such listed material, device, equipment or system,
46 and whose listing indicates compliance with nationally recognized standards and designates
47 suitable usage.

1
2 **LOADER.** [See FC3302.1.] A person holding a certificate of fitness for explosives handling, who
3 handles explosives and performs explosives loading operations.

4
5 **[LONGITUDINAL FLUE SPACE.** See FC2302.1.]

6
7 **LOW-PRESSURE CONTAINER.** [See FC3202.1.] A storage container designed to withstand
8 an internal pressure greater than ½ pound per square inch gauge (psig) (3.4 kPag) but not greater
9 than 15 psig (103.4 kPag).

10
11 **LOWER EXPLOSIVE LIMIT (LEL).** [See FC2702.1.] See “Lower flammable limit.”

12
13 **LOWER FLAMMABLE LIMIT (LFL).** [See FC2702.1.] The minimum concentration of vapor
14 in air at which propagation of flame will occur in the presence of an ignition source. The LFL is
15 sometimes referred to as LEL or lower explosive limit.

16
17 **MAGAZINE.** [See FC3302.1.] A building, structure or container approved for storage of
18 explosives.

19
20 **Indoor.** A portable structure, such as a box, bin or other container, constructed as required for
21 Type 2, 4 or 5 magazines in accordance with NFPA 495, NFPA 1124 or the regulations of the
22 Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of
23 Justice, as set forth in 27 CFR Part 555, so as to be fire resistant and theft resistant.

24
25 **Type 1.** A permanent structure, such as a building or other permanent structure constructed in
26 accordance with the requirements of NFPA 495, NFPA 1124, or the regulations of the Bureau
27 of Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as
28 set forth in 27 CFR Part 555, that is bullet-resistant, fire-resistant, theft-resistant, weather-
29 resistant and ventilated.

30
31 **Type 2.** A portable or mobile structure, such as a box, skid-magazine, trailer or semitrailer,
32 constructed in accordance with NFPA 495, NFPA 1124 or the regulations of the Bureau of
33 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
34 forth in 27 CFR Part 555, that is fire resistant, theft resistant, weather resistant and ventilated,
35 and if used outdoors, bullet resistant.

36
37 **Type 3.** A portable structure for the temporary storage of explosives, such as a “day box,”
38 constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of
39 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
40 forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-resistant.

41
42 **Type 4.** A permanent, portable or mobile structure such as a building, box, semitrailer or other
43 mobile container constructed in accordance with NFPA 495, NFPA 1124, or the regulations of
44 the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of
45 Justice, as set forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-
46 resistant.

1 **Type 5.** A permanent, portable or mobile structure such as a building, box, bin, tank,
2 semitrailer, bulk trailer, tank trailer, bulk truck, tank truck or other mobile container
3 constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of
4 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
5 forth in 27 CFR Part 555, that is theft resistant.

6
7 **MAGAZINE KEEPER.** [See FC3302.1.] A person holding a certificate of fitness for explosives
8 storage who is in charge of and responsible for the storage and handling of explosives in an
9 explosives magazine.

10
11 **MAIN ENTRANCE.** For purposes of FC505, the main entrance to a dwelling unit is the primary
12 means of entry to, and egress from, the dwelling unit. Such main entrance typically opens into an
13 area that affords unimpeded access to the rooms and corridors of the dwelling unit.

14
15 **MANUAL STOCKING METHODS.** [See FC2302.1.] For purposes of high-piled combustible
16 storage, stocking methods utilizing ladders or other nonmechanical equipment to move stock.

17
18 **MARINA.** [See FC302.1.] A facility on, in or around a body of water, protected by natural or
19 manmade features, that is used or designed to be used for the mooring, servicing or storage of
20 marine vessels or watercraft, or the provision of services to the passengers and crews of such
21 vessels or watercraft. A marina typically is comprised of one or more docks, piers, wharfs, and
22 storage and fueling facilities for watercraft.

23
24 **[MATERIAL SAFETY DATA SHEET (MSDS).** See FC2702.1.]

25
26 **MASTER FIRE SUPPRESSION PIPING CONTRACTOR.** A licensed master fire suppression
27 pipng contractor, as that term is defined by the Building Code.

28
29 **MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA.** [See FC2702.1.] The
30 maximum amount of a hazardous material allowed to be stored or used within an indoor or an
31 outdoor control area.

32
33 **MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP).** [See FC3202.1.] The
34 maximum pressure permissible at the top of a container in its operating position for a designated
35 temperature, as established by the container manufacturer.

36
37 **MEANS OF EGRESS.** [See FC1002.1.] A continuous and unobstructed path of vertical and
38 horizontal egress travel from any occupied portion of a building, structure or premises to a public
39 way. A means of egress consists of three separate and distinct parts: the exit access, the exit and
40 the exit discharge.

41
42 **MECHANICAL CODE.** The [2008] New York City Mechanical Code in effect on July 1, 2008,
43 and as amended thereafter.

44
45 **MECHANICAL STOCKING METHODS.** [See FC2302.1.] For purposes of high-piled
46 combustible storage, stocking methods utilizing motorized vehicles or hydraulic jacks to move
47 stock.

1
2 **MEGAWATT HOURS (MWh).** A measurement of electrical energy.

3
4 **MEMBRANE STRUCTURE.** [See FC2402.1.] An air-inflated, air-supported, cable or frame-
5 covered structure or tent, as defined in Chapter 31 of the Building Code.

6
7 **METAL HYDRIDE.** [See FC3502.1.] A chemical compound composed of one or more
8 hydrogen-absorbing metallic elements, and hydrogen.

9
10 **METAL HYDRIDE HYDROGEN STORAGE SYSTEM.** [See FC3502.1.] A closed system
11 designed to store and release hydrogen through the use of a metal hydride.

12
13 **MICROPHONE.** A sensor used to measure air overpressure. The air overpressure measurements
14 detected by a microphone are recorded by a blasting seismograph.

15
16 **MICROTURBINE.** [See FC3502.1.] A turbine-driven electrical generator with an electric
17 generating capacity of not more than 500 kW, fueled by piped natural gas that is compressed by
18 ancillary compressing equipment to a pressure exceeding 6 psig (41.4 kPa).

19
20 **MINIMUM SECURED RADIUS.** [See FC3302.1.] A minimum separation distance based on the
21 size of the largest fireworks shell to be used in the display.

22
23 **MIXED-OCCUPANCY BUILDING.** [See FC402.1.] A building or structure housing more than
24 one occupancy or type of occupancy required by FC Chapter 4 to prepare an emergency
25 preparedness plan.

26
27 **MORTAR.** [See FC3302.1.] A tube or similar device in which fireworks, shells or other aerial
28 fireworks are directed and discharged into the air.

29
30 **MOTOR VEHICLE.** [See FC2202.1.] A vehicle or other conveyance having more than two
31 running wheels and using liquid motor fuel or flammable gas as fuel for generating motive power,
32 except such vehicles as have a storage tank with a maximum capacity for less than 2 gallons (7.6
33 L) of liquid motor fuel or flammable gas that generates energy that is equivalent to the energy
34 generated by 2 gallons (7.6 L) of gasoline.

35
36 **MUCKING.** [See FC3302.1.] The removal, usually by heavy machinery, of debris or other broken
37 material resulting from a blast.

38
39 **MULTI-FLOOR DWELLING UNIT.** [See FC502.1.] For purposes of FC505, a dwelling unit
40 or other residential occupancy with living space on a floor other than the floor upon which the
41 entrance door to such room, unit or occupancy is located, or which is accessed by means of an
42 interior stair or passageway from an entrance door on another floor.

43
44 **MULTIPLE-STATION ALARM DEVICE.** [See FC902.1.] Two or more single-station alarm
45 devices that can be interconnected such that actuation of one causes all integral or separate audible
46 alarms to operate. It also can consist of one single-station alarm device having connections to other
47 detectors or to a manual fire alarm box.

1
2 **NATURAL DECORATIVE GREEN.** [See FC802.1.] A bough of a natural tree or part thereof,
3 and any natural vegetation that has been cut, including preserved vegetation.

4
5 **NATURAL GAS.** A mixture of hydrocarbon gases and vapors, consisting principally of methane
6 in gaseous form.

7
8 **NATURAL TREE.** [See FC802.1.] Any live tree, plant or shrub, including conifer, that is rooted
9 in soil.

10
11 **NATURAL VEGETATION.** Live plants used as a decorative or other element in the design of
12 any room or other area of a building, including common areas. Natural vegetation includes living
13 walls and other vertical gardens, and vegetation in room dividers and other large planters.

14
15 **NESTING.** [See Section 3002.1.] A method of securing flat-bottomed compressed gas containers
16 upright in a tight mass using a contiguous three-point contact system whereby all containers within
17 a group have a minimum of three points of contact with other containers, walls or bracing.

18
19 **NET EXPLOSIVE WEIGHT (net weight).** [See FC3302.1.] The weight of an explosive
20 expressed in pounds, representing the aggregate amount of explosives contained within a building
21 or structure, including a magazine, used to establish quantity-distance relationships.

22
23 **NON-FIRE EMERGENCY.** [See FC402.1.] An active shooter or other law enforcement
24 emergency; biological, chemical or radiological release; building or other structural collapse;
25 earthquake; explosion; heat wave, hurricane, storm surge, tornado or other weather emergency;
26 medical emergency; natural gas leak; nuclear incident; tidal wave; a declaration of emergency by
27 a lawful authority; or other emergency, other than fire, affecting the premises or the safety of
28 building occupants; or the threat thereof.

29
30 **NON-FIRE EMERGENCY DRILL.** [See FC402.1.] A training exercise by which building
31 occupants are familiarized with and/or practice the procedures for safe, orderly and expeditious
32 sheltering in place, in-building relocation, partial or full evacuation, or combination thereof, in the
33 event of a non-fire emergency, in accordance with the emergency preparedness plan for the
34 premises.

35
36 **NON-PRODUCTION LABORATORY.** [See FC2702.1.] A building or portion thereof wherein
37 chemicals or gases are stored, handled or used on a non-production basis for testing, research,
38 experimental, instructional or educational purposes.

39
40 **NON-PYROTECHNIC SPECIAL EFFECT.** Any material, article or device of a flammable,
41 combustible or otherwise dangerous nature, other than a pyrotechnic material, article, or device,
42 used to create a special effect, including demonstration laser products and chemicals and
43 equipment used to generate fog or haze.

44
45 **NORMAL TEMPERATURE AND PRESSURE (NTP).** [See FC2702.1.] A temperature of
46 70°F (21°C) and a pressure of 1 atmosphere (14.7 psia (101 kPa)).

1 **OCCUPANCY.** The purpose or activity for which a building or space is used or designed to be
2 used. References to occupancy classification shall be deemed to include the equivalent occupancy
3 classifications under the 1968 Building Code and all prior Building Codes or other applicable laws,
4 rules and regulations. The occupancy classifications used in this code are defined as follows:
5

6 **Group A.** An assembly occupancy, including Groups A-1, A-2, A-3, A-4 and A-5, as defined
7 in Section 303 of the Building Code.
8

9 **Group B.** A business occupancy, as defined in Section 304 of the Building Code.
10

11 **Group E.** An educational occupancy, as defined in Section 305 of the Building Code.
12

13 **Group F.** A factory and industrial occupancy, including Groups F-1 and F-2, as defined in
14 Section 306 of the Building Code.
15

16 **Group H.** A high-hazard occupancy, including H-1, H-2, H-3, H-4 and H-5, as defined in
17 Section 307 of the Building Code.
18

19 **Group I.** An institutional occupancy, including Groups I-1, I-2, I-3 and I-4, as defined in
20 Section 308 of the Building Code.
21

22 **Group M.** A mercantile occupancy, as defined in Section 309 of the Building Code.
23

24 **Group R.** A residential occupancy, including Groups R-1, R-2 and R-3, as defined in Section
25 310 of the Building Code.
26

27 **Group S.** A storage occupancy, including Groups S-1 and S-2, as defined in Section 311 of
28 the Building Code.
29

30 **Group U.** A utility and miscellaneous occupancy, as defined in Section 312 of the Building
31 Code.
32

33 **OFFICE BUILDING.** [See FC402.1.] A Group B occupancy designed and arranged to provide
34 offices and other areas for the conduct of business ordinarily conducted in offices.
35

36 **OPEN FIRES.** [See FC302.1.] The burning of materials wherein products of combustion are
37 emitted directly into the ambient air without passing through a stack or chimney from an enclosed
38 chamber. For the purpose of this definition, a chamber shall be regarded as enclosed when, during
39 the time combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide
40 combustion air and permit the escape of exhaust gas are open.
41

42 **OPEN FLAME.** [See FC302.1.] A flame that is generated by any material or device in a sustained
43 and controlled manner and that is not securely enclosed by noncombustible material, such as a
44 candle that is unenclosed or enclosed in a globe or lantern, or a gas light lantern, for decorative
45 and lighting purposes; flaming foods and beverages, and food warming. An open flame does not
46 include a flame generated in a sustained and controlled manner in the following devices, equipment
47 and systems:

1
2 1. Any fireplace, furnace, grill, hot water heater, oven, stove or other similar stationary
3 appliance and any outdoor stationary decorative gas appliance, which shall comply with the
4 construction codes and applicable provisions of this code.

5
6 2. Lighted smoking paraphernalia, which shall comply with FC310.

7
8 3. Portable fueled devices, including any torch, which shall comply with FC313.
9

10 **OPEN-FLAME DEVICE.** [See FC302.1.] A device utilizing an open flame.

11
12 **OPEN SYSTEM.** The use of a solid or liquid hazardous material in equipment or a vessel, or
13 system that remains open during normal operation, such that vapors are emitted during the
14 operation of such equipment, vessel or system and the material is exposed to the atmosphere during
15 such operation. Examples of open systems for solids and liquids include dispensing from or into
16 open beakers or containers, dip tank and plating tank operations.

17
18 **OPERATING PRESSURE.** The pressure at which a device, equipment or system operates.

19
20 **ORGANIC COATING.** [See FC2002.1.] A liquid mixture of binders such as alkyd, acrylic or
21 oil, and flammable and combustible liquids, such as hydrocarbon, ester, ketone or alcohol, which,
22 when spread in a thin film, convert to a durable protective and decorative finish.

23
24 **ORGANIC PEROXIDE.** [See FC3902.1.] An organic compound having a double oxygen or
25 peroxy (-O-O-) in its chemical structure. Organic peroxides can present an explosion hazard
26 (detonation or deflagration), can be shock sensitive, can be susceptible to decomposition into
27 various unstable compounds over an extended period of time and are classified as follows based
28 upon their hazardous properties:

29
30 **Class I.** [See FC3902.1.] Organic peroxides that are capable of deflagration but not detonation.

31
32 **Class II.** [See FC3902.1.] Organic peroxides that burn very rapidly and that pose a moderate
33 reactivity hazard.

34
35 **Class III.** [See FC3902.1.] Organic peroxides that burn rapidly and that pose a moderate
36 reactivity hazard.

37
38 **Class IV.** [See FC3902.1.] Organic peroxides that burn in the same manner as ordinary
39 combustibles and that pose a minimal reactivity hazard.

40
41 **Class V.** [See FC3902.1.] Organic peroxides that burn with less intensity than ordinary
42 combustibles or do not sustain combustion and that pose no reactivity hazard.

43
44 **Unclassified detonable.** [See FC3902.1.] Organic peroxides that are capable of detonation and
45 pose an extremely high-explosion hazard through rapid explosive decomposition.
46

1 **OUTDOOR CONTROL AREA.** [See FC2702.1.] An outdoor area that contains hazardous
2 materials in amounts not exceeding the maximum allowable quantities of FC Table 5003.1.1(3) or
3 5003.1.1(4).

4
5 **OUT-OF-SERVICE SYSTEM.** [See FC902.1.] A fire protection system that is not fully
6 functional; or whose operation is impaired or is otherwise not in good working order.

7
8 **OVERCROWDING.** A condition that exists when: (1) the number of occupants present in any
9 premises or part thereof exceeds (a) the maximum number of occupants specified for such premises
10 or part thereof by the certificate of occupancy or other authorization issued by the Department of
11 Buildings; or (b) in the absence of such certificate or authorization, the maximum number of
12 occupants established by using the applicable occupant-area allowances set forth in Section 1004.1
13 of the Building Code; or (c) with respect to a rooftop place of assembly or place of public
14 gathering, the number of occupants present in any such place exceeds one person per 10 square
15 feet (0.929 m²) of the rooftop area to be used for such purpose; or (2) the commissioner determines
16 that a threat exists to the safety of the occupants of any premises or part thereof by reason of the
17 number of persons on the premises and/or the presence of persons sitting and/or standing in
18 locations that may obstruct or impede access to means of egress, including obstructing or impeding
19 access to aisles, passages, corridors, stairways or exits.

20
21 **OWNER.** The owner of the freehold of any real property (as defined in section two of the Real
22 Property Law), or of a lesser estate therein, a mortgagee or vendee in possession, assignee of rents,
23 receiver, executor, trustee, lessee, agent, or any other person, firm or corporation, directly or
24 indirectly in control of real property. Any reference in this code to the owner of any building,
25 structure or premises shall be deemed to designate collectively any and all of the foregoing,
26 including, but not limited to, the owner of the freehold or lesser estate therein and a managing
27 agent designated by such owner pursuant to Section 27-2098 of the New York City Administrative
28 Code.

29
30 **OXIDIZER.** [See FC4002.1.] A material that readily yields oxygen or other oxidizing gas, or that
31 readily reacts to promote or initiate combustion of combustible materials and, if heated or
32 contaminated, can result in vigorous self-sustained decomposition, classified as follows:

33
34 **Class 1.** [See FC4002.1.] An oxidizer that causes a readily measurable increase in the burning
35 rate of combustible materials with which it comes in contact, but less than a moderate increase.

36
37 **Class 2.** [See FC4002.1.] An oxidizer that causes a moderate increase in the burning rate of
38 combustible materials with which it comes in contact.

39
40 **Class 3.** [See FC4002.1.] An oxidizer that causes a severe increase in the burning rate of
41 combustible materials with which it comes in contact.

42
43 **Class 4.** [See FC4002.1.] An oxidizer that can undergo an explosive reaction due to
44 contamination or exposure to thermal or physical shock and causes a severe increase in the
45 burning rate of combustible materials with which it comes in contact.

46
47 **OXIDIZING CRYOGENIC FLUID.** [See FC4002.1.] An oxidizing gas in the cryogenic state.

1
2 **OXIDIZING GAS.** [See FC4002.1.] A gas that can support and accelerate combustion of other
3 materials more than air does.

4
5 **OZONE GAS GENERATOR.** [See FC3702.1.] Equipment which produces ozone.

6
7 **PASS-THROUGH.** [See FC1802.1.] For purposes of semiconductor fabrication facilities, an
8 enclosure installed in a wall with a door on each side that allows chemicals, HPM, equipment, and
9 parts to be transferred from one side of the wall to the other.

10
11 **PEAK PARTICLE VELOCITY (PPV).** The highest amplitude of ground motion among three
12 mutually orthogonal components, measured by a triaxial geophone and reported in inches per
13 second (in/s).

14
15 **PERMISSIBLE EXPOSURE LIMIT (PEL).** [See FC2702.1.] The maximum allowed 8-hour
16 time-weighted-average concentration of an air-borne contaminant as established by the regulations
17 of the United States Department of Labor, as set forth in 29 CFR Part 1910.1000, the
18 Recommended Exposure Limit (REL) concentrations published by the U.S. National Institute for
19 Occupational Safety and Health (NIOSH), the Threshold Limit Value-Time Weighted Average
20 (TLV-TWA) concentrations published by the American Conference of Governmental Industrial
21 Hygienists (ACGIH), the Workplace Environmental Exposure Level (WEEL) Guides published
22 by the American Industrial Hygiene Association (AIHA), or other approved standard.

23
24 **PERMIT.** A written statement issued by the commissioner authorizing the manufacture, storage,
25 handling, use or transportation of a hazardous material, or other material, or to conduct an
26 operation or to maintain a facility, for which a permit is required by this code.

27
28 **PERSONAL SUPERVISION.** Except as otherwise provided in this code, supervision by the
29 holder of any department certificate who is required to be personally present on the premises, or
30 other proximate location acceptable to the department, while performing the duties for which the
31 certificate is required.

32
33 **PESTICIDE.** [See FC2702.1.] A substance or mixture of substances, including fungicides, but
34 excluding any product defined as a drug in the Federal Food, Drug and Cosmetic Act, intended for
35 the purpose of preventing, repelling or killing pests or pest infestations, or for use as a plant
36 regulator, defoliant or desiccant.

37
38 **PIER.** [See FC302.1.] A structure built over the water, typically supported by piles.

39
40 **PIPED NATURAL GAS.** Natural gas supplied by means of piping connected to a distribution
41 system operated by a public utility.

42
43 **PLACE OF ASSEMBLY.** A building or other premises, or portion thereof, used for gatherings,
44 as regulated by the Building Code.

1 **PLUMBER.** A licensed master plumber, as that term is defined by the Building Code, or a person
2 working under the direct and continuing supervision of a licensed master plumber, as authorized
3 by said code.

4
5 **PLUMBING CODE.** The [2008] New York City Plumbing Code in effect on July 1, 2008, and
6 as amended thereafter.

7
8 **PORTABLE COOKING EQUIPMENT.** [See FC902.1.] Commercial cooking equipment,
9 provided with or installed with wheels.

10
11 **PORTABLE FIRE EXTINGUISHER SALES COMPANY CERTIFICATE.** [See FC902.1.]
12 A certificate issued by the commissioner to a person engaged in the business of selling portable
13 fire extinguishers door to door to owners of buildings or business for use on their premises, which
14 authorizes such person to engage in such business and supervise such sales.

15
16 **PORTABLE FIRE EXTINGUISHER SERVICING COMPANY CERTIFICATE.** [See
17 FC902.1.] A certificate issued by the commissioner to a person engaged in the business of
18 servicing portable fire extinguishers, which authorizes such person to engage in such business and
19 supervise the provision of such servicing by certificate of fitness holders.

20
21 **PORTABLE FUELED EQUIPMENT.** [See FC302.1.] Any portable device, equipment or
22 system, whether or not flue-connected, that utilizes a flammable or combustible liquid or
23 flammable gas as a fuel, including any portable device, equipment or system that generates a flame
24 in a sustained or controlled manner that is not an open-flame device.

25
26 **PORTABLE SPACE HEATER.** [See FC302.1.] Any portable equipment designed or used for
27 space heating that utilizes a combustible liquid or flammable gas as a fuel, whether or not flue-
28 connected.

29
30 **POWERED INDUSTRIAL EQUIPMENT.** [See FC302.1.] Equipment used in commercial and
31 industrial applications, including floor scrubbers and floor buffers, powered by a lead-acid battery
32 system or other storage battery.

33
34 **POWERED INDUSTRIAL TRUCK.** [See FC302.1.] A forklift, tractor, platform lift truck or
35 motorized hand truck powered by a lead-acid battery system or other storage battery, a metal
36 hydride hydrogen storage system or an internal combustion engine. Powered industrial trucks do
37 not include farm vehicles or motor vehicles for highway use.

38
39 **POWERED MOBILITY DEVICES.** Motorized bicycles, motorized scooters and other personal
40 mobility devices powered by a lithium-ion or other storage battery. The term does not include
41 motor vehicles or motorcycles or other mobility devices that must be registered with the New York
42 State Department of Motor Vehicles.

43
44 **PREMISES.** Any real property, including buildings and structures thereon, or any part thereof.

45
46 **PRESIGNAL SYSTEM.** [See FC902.1.] A fire alarm system having a feature that allows initial
47 fire alarm signals to sound in a constantly attended central location and for which a human action

1 is subsequently required to achieve a general alarm, or a feature that allows the control equipment
2 to delay the general alarm by more than one minute after the start of the alarm processing.

3
4 **PRESSURE VESSEL.** [See FC2702.1.] A closed vessel designed to operate at pressures above
5 15 psig (103 kPa).

6
7 **PRIMARY CONTAINMENT.** The first level of containment, consisting of the inside portion of
8 that container which comes into immediate contact on its inner surface with the material being
9 contained.

10
11 **PRIMER.** [See FC3302.1.] A unit, package or cartridge of explosives, including a detonator or
12 detonator/detonating cord combination, that is used to initiate a main charge of explosives or
13 blasting agents.

14
15 **PRIVATE ROAD.** [See FC502.1.] A private driveway, lane or street, or other means of vehicular
16 access to one or more buildings, structures or premises not directly fronting on a public street. A
17 private road does not include a public street.

18
19 **[PRIVATE STREET.** See FC502.1.]

20
21 **PROCESS TRANSFER.** [See FC3402.1.] The transfer of flammable or combustible liquids
22 between cargo tanks or tank cars and containers, tanks piping and other equipment that is to be
23 used in process operations.

24
25 **PROCESSING VESSEL.** [See FC3402.1.] A tank or other container used in manufacturing or
26 other process operation that involves the use of a flammable or combustible liquid supplied from
27 other than a cargo tank, tank car or pipeline.

28
29 **PRODUCTION LOCATION.** Any location approved for the purpose of motion picture,
30 television or commercial production by the Mayor’s Office of Media and Entertainment pursuant
31 to its rules. Such approvals are commonly referred to as filming permits.

32
33 **PROOF OF COMPLIANCE.** Department-issued decals, tags or other forms of documentation,
34 individually marked and/or numbered to identify the company and person who performed certain
35 fire safety inspections, testing, cleaning servicing and/or other required or regulated activities.

36
37 **PROPELLANT.** [See FC2802.1.] The liquefied or compressed gas in an aerosol container that
38 expels the contents from an aerosol container when the valve is actuated. A propellant is considered
39 flammable if it forms a flammable mixture with air, or if a flame is self-propagating in a mixture
40 with air.

41
42 **PROTECTED EXPOSURE.** [See FC3302.1.] Any premises, building, structure, facility,
43 installation, street, railway, natural feature or other thing or place determined by the department to
44 require protection from a fireworks display by reason of its proximity to the discharge site and the
45 fallout area and the risk of resulting harm from aerial or other fireworks.

1 **PROTECTED PREMISES.** [See FC902.1.] A building, occupancy or structure located in the
2 city that is equipped with a fire alarm system that transmits an alarm signal to the department or a
3 central station that monitors such system for the purposes of reporting fire alarms to the
4 department, whether or not the installation of such system on the premises is required by law.

5
6 **PROXIMATE AUDIENCE.** [See FC3302.1.] An audience closer to pyrotechnic devices than
7 allowed by NFPA 1123.

8
9 **PYROTECHNIC.** A controlled exothermic chemical reaction timed to create the effects of heat,
10 hot gas, sound, dispersion of aerosols, emission of visible light or a combination of such effects to
11 achieve the maximum effect from the least volume of pyrotechnic composition.

12
13 **PUBLIC STREET.** [See FC502.1.] All streets, including marginal streets, record streets and
14 restricted use streets, established on the city map maintained pursuant to Section 198 of the New
15 York City Charter or dedicated for general public use and accepted for such purposes by the City
16 of New York, constructed and open for passage.

17
18 **PYROPHORIC MATERIAL.** [See FC4102.1.] A material with an autoignition temperature in
19 air, at or below a temperature of 130°F (54°C).

20
21 **PYROTECHNIC ARTICLE OR DEVICE.** [See FC3302.1.] Any article or device containing a
22 pyrotechnic material or pyrotechnic effect simulation equipment.

23
24 **PYROTECHNIC EFFECT SIMULATION.** The use of a chemical mixture that is not a
25 pyrotechnic material to initiate or maintain combustion, deflagration or detonation to produce a
26 visible or audible effect, in a manner that simulates a pyrotechnic effect.

27
28 **PYROTECHNIC EFFECT SIMULATION EQUIPMENT.** Any device, equipment or system
29 that simulates a pyrotechnic effect, including spark-generating equipment.

30
31 **PYROTECHNIC MATERIAL.** [See FC3302.1.] A chemical mixture consisting predominantly
32 of solids that, upon ignition, are capable of producing a controlled, self-sustaining, and self-
33 contained exothermic reaction, that functions without external oxygen, resulting in a visible or
34 audible effect by combustion, deflagration, or detonation.

35
36 **PYROTECHNIC SPECIAL EFFECT.** A special effect created through the use of a pyrotechnic
37 material, article, or device.

38
39 **PYROTECHNIC SPECIAL EFFECTS CONTRACTOR CERTIFICATE.** A written
40 statement issued by the department to a company authorizing such company to conduct a
41 pyrotechnic display and to be responsible for all storage, handling, use and transportation of
42 pyrotechnic materials in connection therewith.

43
44 **[PYROTECHNIC SUPPLIER CERTIFICATE.** See FC3302.1.]

45
46 **PYROXYLIN PLASTIC.** [See FC4202.1.] Any plastic substance, material or compound, other
47 than cellulose nitrate film, that has soluble cotton or similar cellulose nitrate as a base, by whatever

1 name known, in the form of blocks, sheets, tubes or other fabricated shapes, including raw
2 pyroxylin plastics and finished pyroxylin plastic products.

3
4 **RACK STORAGE.** [See FC2302.1.] For purposes of high-piled combustible storage, any storage
5 system, except shelf storage.

6
7 **RAILWAY.** [See FC3302.1.] A subway, railroad, railway or other similar means of
8 transportation.

9
10 **RAW PYROXYLIN PLASTIC.** [See FC4202.1.] Any pyroxylin plastic in the form of blocks,
11 slabs, rods tubes or other shapes, that is to be used in a manufacturing process.

12
13 **READY BOX.** [See FC3302.1.] A container with a self-closing cover that is of a material and
14 construction sufficient to protect fireworks from burning debris and from precipitation or other
15 weather conditions. A tarpaulin structure shall not be deemed sufficient for use as a ready box.

16
17 **REDUCED FLOW VALVE.** [See FC3702.1.] A valve equipped with a restricted flow orifice
18 and inserted into a compressed gas container that is designed to reduce the maximum flow from
19 the valve under full-flow conditions. The maximum flow rate from the valve is determined with
20 the valve allowed to flow to atmosphere with no other piping or fittings attached.

21
22 **REFINERY.** [See FC3402.1.] A plant in which flammable or combustible liquids are produced
23 on a commercial scale from crude petroleum, gasoline or other hydrocarbon sources.

24
25 **REFRIGERANT.** [See FC602.1.] The fluid used for heat transfer in a refrigerating system; the
26 refrigerant absorbs heat and transfers it at a higher temperature and a higher pressure, usually with
27 a change of state.

28
29 **REFRIGERATING SYSTEM.** [See FC602.1.] A combination of interconnected refrigerant-
30 containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for
31 the purpose of extracting then expelling heat.

32
33 **REGISTERED DESIGN PROFESSIONAL.** An architect registered to practice the profession
34 of architecture, or an engineer licensed to practice the profession of engineering, as set forth in the
35 laws, rules and regulations of the State of New York.

36
37 **REGULAR BUSINESS HOURS.** [See FC402.1.] Times of day and days of the week during
38 which a building or occupancy is normally occupied and business is conducted, and any time when
39 a building or occupancy required to have a comprehensive fire and emergency action plan is
40 occupied by more than five hundred persons, or more than one hundred persons above or below
41 the street level. The number of persons employed in a building or occupancy during regular
42 business hours shall be computed based on the work shift or other regular work schedule during
43 which the largest number of employees or other persons working at the premises are present at the
44 premises.

45
46 **REMOTE SOLVENT RESERVOIR.** [See FC3402.1.] A liquid solvent container enclosed
47 against evaporative losses to the atmosphere during periods when the container is not being

1 utilized, except for a solvent return opening not larger than 16 square inches (10 322 mm²), which
2 allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or
3 work area.

4
5 **REPAIR GARAGE.** [See FC2202.1.] A building, structure or portion thereof used for servicing
6 or repairing motor vehicles or motorcycles, including motor vehicles and motorcycles powered by
7 liquid motor fuel, storage batteries and/or lighter-than-air gaseous motor fuel.

8
9 **RESIDENTIAL FIRE PIT.** A freestanding vessel in which an open fire, fueled by wood or LPG,
10 that is kindled and maintained outdoors on residential premises for private, non-commercial
11 purposes.

12
13 **RESIN APPLICATION AREA.** [See FC1502.1.] An area where reinforced plastics are used to
14 manufacture products by hand lay-up or spray-fabrication methods.

15
16 **RESPONSIBLE PERSON.** [See FC2602.1.] A person trained in the fire safety hazards associated
17 with hot work and in the necessary and appropriate measures to minimize those hazards, who is
18 designated by the owner of a premises to authorize the performance of hot work at the premises.

19
20 **RETAIL DISPLAY AREA.** [See FC2802.1.] The area of a Group M occupancy open for the
21 purpose of viewing or purchasing merchandise offered for sale. Individuals in such establishments
22 are free to circulate among the items offered for sale which are typically displayed on shelves,
23 racks or the floor.

24
25 **ROLL COATING.** [See FC1502.1.] The process of coating, spreading and impregnating fabrics,
26 paper or other materials as they are passed directly through a tank or trough containing flammable
27 or combustible liquids, or over the surface of a roller revolving partially submerged in a flammable
28 or combustible liquid.

29
30 **RUBBISH.** Combustible and noncombustible waste materials, including dust, dirt, ashes, rags,
31 paper, cartons, cans, plastic and glass containers, and discarded appliances.

32
33 **RULES.** Rules of the [commissioner] department, promulgated pursuant to the authority granted
34 by the New York City Charter, this code, or other law, rule or regulation.

35
36 **SAFETY CAN.** [See FC2702.1.] An approved container with a capacity of not more than 5-
37 gallons (19 L) and equipped with a spring-closing lid and spout cover designed to relieve internal
38 pressure when exposed to fire.

39
40 **SAFETY DATA SHEET (SDS).** A document prepared in accordance with the regulations of the
41 United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a federally approved
42 state OSHA plan which sets forth information concerning a hazardous material.

43
44 **SCENERY.** [See FC802.1.] Any or all of those devices ordinarily used on a stage in the
45 presentation of a theatrical, artistic, musical or other similar live performance, or at a production
46 location, such as back drops, side tabs, teasers, borders or scrim, rigid flats, set pieces, and all
47 properties, except costumes.

1
2 **SEAPLANE BASE.** [See FC1102.1.] An area of water that is used for the landing or takeoff of
3 airplanes, and any appurtenant areas of land or water designed or used for fueling, defueling,
4 maintenance, repair or storage of seaplanes.

5
6 **SECONDARY CONTAINMENT.** [See FC2702.1.] A device, equipment or system designed to
7 contain liquid or solid, that is external to and separate from the primary containment device,
8 equipment or system.

9
10 **SEED COTTON.** [See FC2902.1.] Cotton in its raw, unprocessed (unginned) form, an
11 agricultural commodity consisting of cotton fiber (lint) attached to the seed of the cotton plant.

12
13 **SELF-SERVICE MOTOR FUEL-DISPENSING FACILITY.** [See FC2202.] A motor fuel-
14 dispensing facility wherein motor fuel is dispensed by customers of the facility from a motor fuel
15 storage and dispensing system into the fuel tank of motor vehicles or motorcycles. There are two
16 approved types of self-service motor fuel-dispensing facilities:

17
18 Self-service automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)

19 Self-service CNG motor fuel-dispensing facility (motor vehicles)

20
21 **SEMICONDUCTOR FABRICATION FACILITY.** [See FC1802.1.] A building or structure,
22 or part thereof, in which electrical circuits or devices, commonly known as semiconductors, are
23 manufactured on solid crystalline substances having electrical conductivity greater than insulators
24 but less than conductors.

25
26 **SEPARATION DISTANCE.** [See FC3302.1.] The distance that is to be maintained during the
27 fireworks display from the outer perimeter of the discharge area to each viewing area or protected
28 area. The separation distance represents the distance determined by the department to be necessary
29 and sufficient to secure viewing areas and protected areas from hazards associated with a fireworks
30 display, including but not limited to blast, fire, fallout and noise hazards.

31
32 **SERVICE CORRIDOR.** [See FC1802.1.] For purposes of semiconductor fabrication facilities, a
33 fully enclosed passage, other than one designated as a required means of egress, through which
34 HPM can be moved during handling.

35
36 **SHELF STORAGE.** [See FC2302.1.] For purposes of high-piled combustible storage, storage on
37 shelves less than 30 inches (762 mm) deep with the distance between shelves not exceeding 3 feet
38 (914 mm) vertically.

39
40 **SHELTER IN PLACE.** [See FC402.1.] The precaution of directing building occupants to remain
41 indoors, at their present location, in response to a fire or non-fire emergency.

42
43 **SINGLE-STATION SMOKE ALARM.** [See FC902.1.] An assembly incorporating the detector,
44 the control equipment, and the alarm-sounding device in one unit, operated from a power supply
45 either in the unit or obtained at the point of installation.

1 **SMALL ARMS AMMUNITION.** [See FC3302.1.] A shotgun, rifle or pistol cartridge, and any
2 cartridge for propellant-actuated devices, excluding ammunition containing bursting charges or
3 incendiary, trace, spotting or pyrotechnic projectiles.
4
5 **SMALL ARMS AMMUNITION PRIMERS.** [See FC3302.1.] Small percussion-sensitive
6 explosive charges, encased in a cap, used to ignite propellant powder.
7
8 **SMOKE ALARM.** [See FC902.1.] A single- or multiple-station alarm responsive to smoke and
9 not connected to a fire alarm system.
10
11 **SMOKE DETECTOR.** [See FC902.1.] A listed device that senses visible or invisible particles
12 of combustion.
13
14 **SMOKE DETECTOR MAINTENANCE COMPANY CERTIFICATE.** [See FC902.1.] A
15 certificate issued by the commissioner to a person engaged in the business of performing smoke
16 detector cleaning and testing, which authorizes such person to engage in such business and
17 supervise the performance of such cleaning and testing by certificate of fitness holders.
18
19 **SMOKELESS PROPELLANTS.** [See FC3302.1.] Solid propellants, commonly referred to as
20 smokeless powders, used in small arms ammunition, cannons, rockets, propellant-actuated devices
21 and similar articles.
22
23 **SOLID.** [See FC2702.1.] A material that has a melting point and decomposes or sublimates at a
24 temperature greater than 68°F (20°C).
25
26 **SOLID SHELVING.** [See FC2302.1.] For purposes of high-piled storage, shelving that is solid,
27 slatted or of other construction located in racks and that obstructs sprinkler discharge down into
28 the racks.
29
30 **SOLVENT DISTILLATION UNIT.** [See FC3402.1.] An appliance that receives contaminated
31 flammable or combustible liquids and which distills the contents to remove contaminants and
32 recover the solvents.
33
34 **SPECIAL AMUSEMENT BUILDING.** A building that is temporary, permanent or mobile that
35 contains a device or system that conveys passengers or provides a walkway along, around or over
36 a course in any direction as a form of amusement arranged so that the egress path is not readily
37 apparent due to visual or audio distractions or an intentionally confounded egress path, or is not
38 readily available because of the mode of conveyance through the building or structure.
39
40 **SPECIAL EFFECT.** [See FC3302.1.] A visible or audible effect used for entertainment or other
41 display purposes, often used to create an illusion.
42
43 **SPECIAL INDUSTRIAL EXPLOSIVE DEVICE.** [See FC3302.1.] An explosive power pack
44 containing an explosive charge in the form of a cartridge or construction device, including, but not
45 limited to, explosive rivets, explosive bolts, explosive charges for driving pins or studs, cartridges
46 for explosive-actuated power tools and charges of explosives used in automotive air bag inflators,
47 jet tapping of open hearth furnaces and jet perforation of oil well casings.

1
2 **[SPEED BUMP.** See FC502.1.]

3
4 **SPONSOR.** [See FC3302.1.] The person that has retained a fireworks contractor to conduct a
5 fireworks display, and to whom the fireworks display permit is issued.

6
7 **SPRAY BOOTH.** [See FC1502.1.] A mechanically ventilated appliance of varying dimensions
8 and construction provided to enclose or accommodate a spraying operation and to confine and
9 limit the escape of spray vapor and residue and to exhaust it safely.

10
11 **SPRAY ROOM.** [See FC1502.1.] A room designed to accommodate spraying operations
12 constructed in accordance with the Building Code. The room enclosure shall be at least 2-hour
13 fire-resistant rated.

14
15 **SPRAYING SPACE.** [See FC1502.1.] The interior of a spray room, spray booth, exhaust duct,
16 or other area in which, as a result of flammable finishing operations, surfaces are exposed to
17 flammable vapors or mists or combustible dust, and are susceptible to accumulation of flammable
18 or combustible residues or deposits.

19
20 **SPRINKLER SYSTEM.** [See FC902.1.] A fire extinguishing system, other than a water mist fire
21 extinguishing system, that uses water as the sole extinguishing agent.

22
23 **STAGED EVACUATION.** Building or occupancy with a fire alarm system that is programmed
24 for a staged evacuation sequence of operation, in which alarm notification devices activate on the
25 floor on which a fire occurs, the floor above, and in some buildings, the floor below. Fire alarm
26 systems that are not programmed for staged evacuation typically activate alarm notification
27 devices on all floors (full evacuation) to initiate evacuation by all building occupants.

28
29 **STAGING AREA.** [See FC1102.1.] Any portion of a premises or other location from where an
30 external load is to be lifted by helicopter.

31
32 **STANDARD CUBIC FEET (SCF).** [See FC2702.1.] Cubic feet of gas at normal temperature
33 and pressure (NTP).

34
35 **STANDPIPE, MULTI-ZONE.** [See FC902.1.] A standpipe system that is vertically subdivided
36 as required by the construction codes, including the Building Code, into zones to limit the
37 maximum operating pressure in the system. Each zone will have its own individual automatic
38 water supply.

39
40 **STANDPIPE SYSTEM.** [See FC902.1.] Piping installed in a building or structure that serves to
41 transfer water from a water supply to hose connections at one or more locations in a building or
42 structure used for firefighting purposes.

43
44 **STEEL.** Hot- or cold-rolled as defined by the Building Code.

45
46 **STILL.** See Distillery Equipment.

1 **STORAGE BATTERY.** An electrochemical device, equipment or system designed to store and
2 generate electrical energy. Types of storage batteries include:

3
4 **Flow Battery.** A storage battery that stores and generates an electrical current by ion exchange
5 through a membrane separating liquid electrolytes.

6
7 **Lead-Acid Battery.** A storage battery that is comprised of lead electrodes immersed in sulfuric
8 acid electrolyte, including vented (flooded) or valve regulated lead acid (VRLA) batteries.

9
10 **Lithium-Ion Battery.** A storage battery in which an electrical current is generated by lithium
11 ions embedded in a carbon graphite or nickel metal-oxide substrate placed in a high-viscosity
12 carbonate mixture or gelled polymer electrolyte.

13
14 **Lithium Metal Polymer Battery.** A storage battery in which an electrical current is generated
15 by the interaction between lithiated positive active material electrically separated from metallic
16 lithium or lithiated negative active material, and nonaqueous liquid or polymerized
17 electrolytes.

18
19 **Nickel-Cadmium (Ni-Cd) Battery.** An alkaline storage battery in which the positive active
20 material is nickel oxide, the negative active material contains cadmium, and the electrolyte is
21 potassium hydroxide.

22
23 **Nickel Metal Hydride (NiMH) Battery.** An alkaline storage battery in which the positive
24 active material is nickel oxide, the negative active material is a hydrogen-absorbing alloy, and
25 the electrolyte is potassium hydroxide.

26
27 **Nonrecombinant Battery.** A storage battery in which, under conditions of normal use,
28 hydrogen and oxygen gases created by electrolysis are vented into the air outside of the battery.

29
30 **Recombinant Battery.** A storage battery in which, under conditions of normal use, hydrogen
31 and oxygen gases created by electrolysis are converted into water inside the battery instead of
32 venting into the air outside of the battery.

33
34 **Valve-Regulated Lead-Acid (VRLA) Battery.** A lead-acid battery consisting of sealed cells
35 furnished with a valve that opens to vent the battery whenever the internal pressure of the
36 battery exceeds the ambient pressure by a set amount. In VRLA batteries, the liquid electrolyte
37 in the cells is immobilized in an absorptive glass mat (AGM cells or batteries) or by the
38 addition of a gelling agent (gel cells or gelled batteries).

39
40 **Vented (Flooded) Lead-Acid Battery.** A lead-acid battery consisting of cells that have
41 electrodes immersed in liquid electrolyte. Flooded lead-acid batteries have a provision for the
42 user to add water to the cell and are equipped with a flame-arresting vent which permits the
43 escape of hydrogen and oxygen gas from the cell in a diffused manner such that a spark, or
44 other ignition source, outside the cell will not ignite the gases inside the cell.

1 **STORAGE BATTERY UNIT.** A storage battery system in the configuration in which it was
2 tested and listed to Underwriters Laboratories (UL) Standard 9540, including any cabinet or other
3 enclosure.
4

5 **STRAIN.** See Global Strain Method.
6

7 **STRUCTURE.** Any construction on, above or below real property, including buildings,
8 enclosures, sheds and tents.
9

10 **SUPERVISORY SIGNAL.** [See FC902.1.] A signal indicating the need for action in connection
11 with the supervision of guard tours, fire extinguishing systems or equipment, fire alarm systems
12 or the maintenance features of related systems.
13

14 **SUPERVISORY SIGNAL-INITIATING DEVICE.** [See FC902.1.] An initiating device, such
15 as a valve supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe
16 sprinkler system, that triggers a supervisory signal.
17

18 **SYSTEM.** [See FC2702.1.] An assembly of devices, equipment, containers, appurtenances,
19 pumps, compressors and connecting piping that is designed to perform a complex and/or complete
20 function.
21

22 **TANK.** A vessel containing more than 60 gallons (227 L).
23

24 **TANK, ATMOSPHERIC.** [See FC2702.1.] A storage tank designed to operate at pressures from
25 atmospheric through 1.0 pound per square inch gauge (760 mm Hg through 812 mm Hg) measured
26 at the top of the tank.
27

28 **TANK, PORTABLE.** [See FC2702.1.] A container of more than 60-gallon (227 L) capacity, and
29 designed to be loaded into or on or temporarily attached to a transport vehicle, marine vessel, or
30 watercraft and equipped with skids, mountings or accessories to facilitate handling of the tank by
31 mechanical means. It does not include any cargo tank or tank car.
32

33 **TANK, PRIMARY.** [See FC3402.1.] A listed atmospheric tank used to store liquid.
34

35 **TANK, PROTECTED ABOVEGROUND.** An atmospheric aboveground tank listed in
36 accordance with UL 2085, including the design requirements of integral secondary containment,
37 protection from physical damage, and an insulation system designed to reduce the heat transferred
38 to the primary tank when the tank is exposed to a high-intensity liquid pool fire.
39

40 **TANK, STATIONARY.** [See FC2702.1.] A container having not less than 1,000-pound (454 kg)
41 water capacity, designed primarily for stationary installations, and not intended to be moved in the
42 course of normal use.
43

44 **TAR KETTLE.** [See FC302.1.] A device designed to heat tar, asphalt, pitch or similar materials,
45 typically for waterproofing operations, that, utilizing a flammable gas or a combustible liquid,
46 generates a flame to heat a vessel containing such a material. Tar kettle does not include asphalt
47 melters.

1
2 **TENT.** [See FC2402.1.] A nonpressurized membrane structure of a fabric weather barrier
3 supported by poles and guys in which the fabric weather barrier does not impart stability to the
4 structure. Tents need not be fully enclosed on the sides.

5
6 **THEFT RESISTANT.** [See FC3302.1.] Construction designed to deter unauthorized entry into
7 magazines or other explosives storage facilities, so as to prevent unauthorized access to stored
8 explosives.

9
10 **TNT EQUIVALENT.** [See FC3302.1.] A measurement of the quantity of an explosive calculated
11 by reference to the quantity of trinitrotoluene that contains the equivalent explosive energy.

12
13 **TOOL.** [See FC1802.1.] For purposes of semiconductor fabrication facilities, a device, storage
14 container, workstation, or process machine used in a fabrication area.

15
16 **TORCH-APPLIED ROOF SYSTEM.** [See FC2602.1.] Bituminous roofing systems using
17 membranes that are adhered by heating with a torch and melting asphalt back coating instead of
18 mopping hot asphalt for adhesion.

19
20 **TOXIC MATERIAL.** [See FC3702.1.] A chemical that is lethal at the following doses or
21 concentration:

22
23 1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram,
24 but not more than 500 milligrams per kilogram of body weight when administered orally to
25 albino rats weighing between 200 and 300 grams each; or

26
27 2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram
28 but not more than 1,000 milligrams per kilogram of body weight when administered by
29 continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin
30 of albino rabbits weighing between 2 and 3 kilograms each; or

31
32 3. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per
33 million but not more than 2,000 parts per million by volume of gas or vapor, or more than
34 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when
35 administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to
36 albino rats weighing between 200 and 300 grams each.

37
38 **Exception:** Chlorine. Although chlorine is, by definition, a toxic material, for purposes of
39 this code it shall be classified as a highly toxic material.

40
41 **TRAFFIC CALMING DEVICES.** Roadway features of fire apparatus access roads designed or
42 installed to reduce traffic volume and/or vehicle speed, including street alignment, barriers, speed
43 bumps and speed tables.

44
45 **[TRANSVERSE FLUE SPACE.** See FC2302.1.]

46

1 **TROUBLE SIGNAL.** [See FC902.1.] A signal initiated by the fire alarm system or device
2 indicative of a fault in a monitored circuit or component.

3
4 **TUBE TRAILER.** [See FC3002.1.] A tractor trailer upon which a number of tubular gas
5 containers have been installed, typically with a manifold connecting the container valves, that is
6 used to deliver and dispense a compressed gas.

7
8 **UNNECESSARY ALARM.** [See FC902.1.] An alarm signal transmitted by a fire alarm system
9 which functioned as designed, but for which a department response proved unnecessary. An
10 example of an unnecessary alarm is an alarm triggered by smoke from a lit cigarette in a non-
11 smoking area, when the presence of such smoke does not implicate fire safety concerns.

12
13 **UNSTABLE (REACTIVE) MATERIAL.** [See FC4302.1.] A material, other than an explosive,
14 which in the pure state or as commercially produced, will vigorously polymerize, decompose,
15 condense or become self-reactive and undergo other violent chemical changes, including
16 explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the
17 presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials
18 are classified as follows:

19
20 **Class 1.** [See FC4302.1.] Materials that in themselves are normally stable but which can
21 become unstable at elevated temperatures and pressures.

22
23 **Class 2.** [See FC4302.1.] Materials that in themselves are normally unstable and readily
24 undergo violent chemical change but do not detonate. This class includes materials that can
25 undergo chemical change with rapid release of energy at normal temperatures and pressures,
26 and that can undergo violent chemical change at elevated temperatures and pressures.

27
28 **Class 3.** [See FC4302.1.] Materials that in themselves are capable of detonation or of explosive
29 decomposition or explosive reaction but which require a strong initiating source or which must
30 be heated under confinement before initiation. This class includes materials that are sensitive
31 to thermal or mechanical shock at elevated temperatures and pressures.

32
33 **Class 4.** [See FC4302.1.] Materials that in themselves are readily capable of detonation or
34 explosive decomposition or explosive reaction at normal temperatures and pressures. This
35 class includes materials that are sensitive to mechanical or localized thermal shock at normal
36 temperatures and pressures.

37
38 **UNWARRANTED ALARM.** [See FC902.1.] An alarm signal transmitted by a fire alarm system
39 which failed to function as designed as a result of improper installation, improper maintenance,
40 malfunction, or other factor. Examples of unwarranted alarms are alarms resulting from improper
41 smoke detector placement, improper detector setting for installed location, lack of system
42 maintenance, and control panel malfunction.

43
44 **VAPOR PRESSURE.** [See FC2702.1.] The pressure exerted by a volatile fluid, as determined in
45 accordance with ASTM D 323.

1 **VENDOR.** [See FC3302.1.] Any person engaged in the transportation and storage of explosives
2 in connection with the sale of such explosives for blasting operations.

3
4 **VESSEL.** [See FC302.1.] A motorized watercraft, other than a seaplane, used or capable of being
5 used as a means of transportation, including watercraft not primarily used for transportation
6 purposes, such as houseboats.

7
8 **VIEWING AREA.** [See FC3302.1.] Areas designated for viewing a fireworks display, to which
9 spectators are restricted.

10
11 **VOICE COMMUNICATION CAPABILITY.** [See FC402.1.] The ability to communicate to
12 the occupants of a building or occupancy by means of a fire alarm system with one-way or two-
13 way voice communication.

14
15 **WATER MIST SYSTEM.** A fire extinguishing system which uses water mist as a fire
16 extinguishing agent. Very fine droplets of water are generated and released under pressure as a
17 mist.

18
19 **WATER-REACTIVE MATERIAL.** [See FC4402.1.] A material that explodes, violently reacts,
20 produces flammable, toxic or other hazardous gases, and/or generates enough heat to cause
21 autoignition or ignition of combustible materials upon exposure to water or moisture. Water-
22 reactive materials are classified as follows:

23
24 **Class 1.** [See FC4402.1.] Materials that react with water with some release of energy, but not
25 violently.

26
27 **Class 2.** [See FC4402.1.] Materials that react violently with water or cause water to boil upon
28 contact; produce flammable, toxic or other hazardous gases upon contact with water; or
29 adjoining combustible materials.

30
31 **Class 3.** [See FC4402.1.] Materials that react explosively with water without requiring heat or
32 confinement.

33
34 **WHARF.** [See FC302.1.] A structure or bulkhead constructed along the shore of an inlet, lake or
35 river, or other navigable body of water, used or designed to be used to tie up vessels so that they
36 may lie alongside the shore, and/or to anchor piers or floats.

37
38 **WORKSTATION.** [See FC1802.1.] For purposes of semiconductor fabrication facilities, a
39 defined space within a fabrication area in which a specific function, laboratory procedure or
40 research activity relating to semiconductor manufacture is conducted. A workstation may include
41 equipment using HPM, hazardous materials storage cabinets, flammable liquid storage cabinets or
42 gas cabinets, ventilation equipment, fire protection devices, detection devices and electrical
43 devices.

44
45 **ZONING RESOLUTION.** The New York City Zoning Resolution.
46
47

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**CHAPTER 3
GENERAL PRECAUTIONS AGAINST FIRE**

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**SECTION FC 301
GENERAL**

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23

301.1 Scope. This chapter shall govern the operation and maintenance of buildings, structures and premises with respect to precautions to prevent fire and the spread of fire. This chapter shall additionally govern the design, installation, operation and maintenance of the operations, facilities and premises set forth herein.

24
25
26
27

301.2 Permits. Permits shall be required as set forth in FC105.6.

28
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32

**SECTION FC 302
DEFINITIONS**

33
34
35
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38

302.1 Definitions. The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

39
40
41
42
43
44
45
46

ASPHALT MELTER. [An approved device designed to heat asphalt, typically for waterproofing operations, that, utilizing a flammable gas or a combustible liquid, generates an enclosed flame that indirectly heats a vessel containing the asphalt.]

AUTOMOTIVE SALVAGE AND WRECKING FACILITY. [Any premises used for the dismantling and/or wrecking of motor vehicles in connection with the sale of auto parts or scrap metal.]

COKE. [A solid carbonaceous material manufactured from the distillation of bituminous coal, petroleum or coal tar, with a thermal heating value of not more than 13,200 British thermal units per hour (3869 W), a volatile composition of not more than 0.5 percent, an NFPA Standard 704 fire hazard rating of not more than 1, and an NFPA Standard 704 reactivity rating of 0.]

COKE-FUELED SALAMANDER. [A metal vessel, typically cylindrical in shape, used to burn coke in the open air for the purpose of maintaining an open fire for construction-related curing and drying. A coke-fueled salamander does not utilize a combustible liquid or flammable gas and does not generate a flame in a sustained or controlled manner and therefore is not an open flame device or portable space heater as those terms are used in this code.]

COMPUTATIONAL FLUID DYNAMICS ANALYSIS. [A simulation and analysis of air flow, including temperature gradients, and for a fire, the products of combustion, over time and distance.]

ELECTRIC BARBECUE. [Any device designed for heating or cooking food on an open grate cooking surface above exposed heating elements. An electric grill that has its heating elements embedded within a solid cooking surface is not an electric barbecue.]

1 **FLOAT.** A floating dock or structure to which marine vessels or watercraft may be moored and
2 which is typically used as means by which passengers and freight may be transferred from ship
3 to shore.]
4

5 **HI-BOY.** [A cart used to move hot roofing materials on a roof.]
6

7 **HIGH-VOLTAGE TRANSMISSION LINE.** [An electrical power transmission line operating
8 at or above 66 kilovolts.
9

10 **MARINA.** A facility on, in or around a body of water, protected by natural or manmade features,
11 that is used or designed to be used for the mooring, servicing or storage of marine vessels or
12 watercraft, or the provision of services to the passengers and crews of such vessels or watercraft.
13 A marina typically is comprised of one or more docks, piers, wharfs, and storage and fueling
14 facilities for watercraft.]
15

16 **OPEN FIRES.** [The burning of materials wherein products of combustion are emitted directly
17 into the ambient air without passing through a stack or chimney from an enclosed chamber. For
18 the purpose of this definition, a chamber shall be regarded as enclosed when, during the time
19 combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide
20 combustion air and permit the escape of exhaust gas are open.]
21

22 **OPEN FLAME.** [A flame that is generated by any material or device in a sustained and controlled
23 manner and that is not securely enclosed by noncombustible material, such as a candle that is
24 unenclosed or enclosed in a globe or lantern, or a gas light lantern, but not a flame contained in a
25 furnace or other similar approved device, equipment or system. Torches operated in accordance
26 with FC Chapter 26 and lighted smoking paraphernalia shall not be considered an open flame.]
27

28 **OPEN-FLAME DEVICE.** [Any device utilizing an open flame.
29

30 **PIER.** A structure built over the water, typically supported by piles.]
31

32 **PORTABLE FUELED EQUIPMENT.** [Any portable device, equipment or system, whether or
33 not flue-connected, that utilizes a flammable or combustible liquid or flammable gas as a fuel,
34 except an open-flame device.]
35

36 **PORTABLE SPACE HEATER.** [Any portable equipment designed or used for space heating
37 that utilizes a combustible liquid or flammable gas as a fuel, whether or not flue-connected.]
38

39 **POWERED INDUSTRIAL EQUIPMENT.** [Equipment used in commercial and industrial
40 applications, including floor scrubbers and floor buffers, powered by a lead-acid battery system.]
41

42 **POWERED INDUSTRIAL TRUCK.** [A forklift, tractor, platform lift truck or motorized hand
43 truck powered by a lead-acid battery system, a metal hydride hydrogen storage system or an
44 internal combustion engine. Powered industrial trucks do not include farm vehicles or motor
45 vehicles for highway use.]
46

47 **POWERED MOBILITY DEVICES.**

1
2 **PRODUCTION LOCATION.**

3
4 **RESIDENTIAL FIRE PIT.**

5
6 **TAR KETTLE.** [A device designed to heat tar, asphalt, pitch or similar materials, typically for
7 waterproofing operations, that, utilizing a flammable gas or a combustible liquid, generates a flame
8 to heat a vessel containing such a material. Tar kettle does not include asphalt melters.
9

10 **VESSEL.** A motorized watercraft, other than a seaplane, used or capable of being used as a means
11 of transportation, including watercraft not primarily used for transportation purposes, such
12 as houseboats.
13

14 **WHARF.** A structure or bulkhead constructed along the shore of an inlet, lake or river, or other
15 navigable body of water, used or designed to be used to tie up vessels so that they may lie
16 alongside the shore, and/or to anchor piers or floats.]
17

18 **SECTION FC 303**
19 **TAR KETTLES AND ASPHALT MELTERS**
20

21 **303.1 Transporting.** Tar kettles and asphalt melters shall not be transported or otherwise moved
22 when the heat source for the kettle or melter is operating.
23

24 **Exception:** Tar kettles and asphalt melters in the process of patching road surfaces.
25

26 **303.2 Location.** Tar kettles and asphalt melters shall not be located within 20 feet (6096 mm) of
27 any combustible material, combustible building surface or any building opening and within a
28 controlled area identified by the use of traffic cones, barriers or other approved means. Tar kettles,
29 asphalt melters and pots shall not be utilized indoors or on the roof of a building or structure,
30 except that LPG-fueled asphalt melters may be utilized on the roof of a building or structure in
31 accordance with the rules. Roofing kettles, and operating tar kettles and asphalt melters shall not
32 block means of egress, gates, roadways or entrances.
33

34 **303.3 Location of fuel containers.** Fuel containers shall be located at least 10 feet (3048 mm)
35 from the burner.
36

37 **Exception:** Containers properly insulated from heat or flame are allowed to be within 2 feet
38 (610 mm) of the burner.
39

40 **303.4 Supervision.** An operating tar kettle or asphalt melter requiring a permit shall be under the
41 personal supervision of a person holding a certificate of fitness. The certificate of fitness holder
42 shall be within 100 feet (30 480 mm) of the kettle or melter, have the kettle or melter within sight
43 and have unobstructed access to the kettle or melter. Ladders and other obstacles shall not form a
44 part of the route between the certificate of fitness holder and the kettle or melter. The certificate of
45 fitness holder shall not have to climb or descend a ladder or circumvent any obstacle to gain access
46 to the kettle or melter.
47

1 **303.5 Portable fire extinguishers.** There shall be at least one portable fire extinguisher complying
2 with the requirements of FC906 and with a minimum 3-A:40-B:C rating within 25 feet (7620 mm)
3 of each tar kettle and asphalt melter during the period such kettle or melter is being utilized, and
4 one additional portable fire extinguisher with a minimum 3-A:40-B:C rating on the roof being
5 covered.

6
7 **303.6 Lids.** Tar kettles and asphalt melters shall be equipped with tight-fitting lids.

8
9 **303.7 Hi-boys.** Hi-boys shall be constructed of noncombustible materials. Hi-boys shall be limited
10 to a capacity of 55 gallons (208 L). Fuel sources or heating elements shall not be allowed as part
11 of a hi-boy.

12
13 **303.8 Kettle and asphalt melter construction.** Any kettle used as a tar kettle and any melter used
14 as an asphalt melter shall be constructed of noncombustible materials.

15
16 **303.9 Fuel containers under air pressure.** It shall be unlawful to store, handle or use fuel
17 containers that operate under air pressure.

18
19 **303.10 Flammable liquid fuel.** It shall be unlawful to store, handle or use tar kettles or asphalt
20 melters that utilize flammable liquid as a fuel.

21
22 **303.11 Roofing operations.** Roofing operations, including repairs, using open-flame devices shall
23 comply with the requirements of [FC1417] FC3317 and FC Chapters [26] 35 and [35] 58.

24
25 **SECTION FC 304**
26 **STORAGE AND ACCUMULATION OF RUBBISH**
27 **AND OTHER COMBUSTIBLE WASTE**
28

29 **304.1 Accumulation of combustible waste.** It shall be unlawful to cause or allow rubbish and
30 other combustible waste to accumulate in a building or structure or upon a premises.

31
32 **304.1.1 Maintenance.** Roofs, courts, yards, vacant lots, alleys, parking lots, open spaces, and
33 the space beneath a grandstand, bleacher, pier, wharf, or other similar structure, shall be
34 regularly cleaned so as to prevent the accumulation of any rubbish, vegetation or other
35 combustible waste.

36
37 **304.1.2 Vegetation.** Weeds, grass, vines, brush or other vegetation that is capable of being
38 ignited shall be regularly pruned, or cleared and removed for a distance of 10 feet (3048 mm)
39 from any building or structure.

40
41 **304.2 Unsafe storage of combustible waste prohibited.** It shall be unlawful to store rubbish or
42 other combustible waste in a manner that creates a fire hazard or public nuisance.

43
44 **304.3 Containers.** Rubbish and other combustible waste stored pending removal in a building or
45 structure or upon a premises shall be stored in accordance with this section, and any other
46 applicable law, rule or regulation.

1 **304.3.1 Spontaneous ignition.** Rubbish and other combustible waste susceptible to
2 spontaneous ignition, such as oily rags, shall be stored in a listed disposal container. Contents
3 of such containers shall be removed and disposed of daily.
4

5 **304.3.2 Capacity exceeding 40 gallons.** Dumpsters and other containers with a capacity
6 exceeding 40 gallons (0.15 m³) shall be provided with lids. Such containers and their lids shall
7 be constructed of noncombustible materials or of materials having a peak rate of heat release
8 not exceeding 300 kW/m² when tested in accordance with ASTM E 1354 at an incident heat flux
9 of 50 kW/m² in the horizontal orientation, and listed and labeled as such.
10

11 **304.3.3 Capacity exceeding 200 gallons.** Dumpsters and other containers with an individual
12 capacity exceeding 200 gallons (0.76 m³) shall not be stored indoors, and shall not be stored
13 outdoors within 5 feet (1524 mm) of combustible walls, openings or combustible roof eave
14 lines.
15

16 **Exceptions:**

- 17
- 18 1. Dumpsters or containers in areas protected throughout by a sprinkler system.
 - 19
 - 20 2. Storage in a building or structure of Type I or Type IIA construction or other
21 construction with an equivalent fire rating, where such building or structure is located
22 not less than 10 feet (3048 mm) from other buildings or structures and used
23 exclusively for container or dumpster storage.
24

25 **304.3.4 Wastebaskets in Group I-2 and I-3 occupancies.** Wastebaskets and other waste
26 containers, including their lids, used in Group I-2 and I-3 occupancies shall be constructed of
27 noncombustible materials or of materials having a peak rate of heat release not exceeding
28 300 kW/m² when tested in accordance with ASTM E 1354 at an incident heat flux of 50
29 kW/m² in the horizontal orientation. Metal wastebaskets and other metal waste containers with
30 a capacity of 20 gallons (76 L) or more shall be listed in accordance with UL 1315 and
31 shall be provided with a noncombustible lid.
32

33 **304.4 Outdoor storage.** Outdoor storage of combustible waste at a transfer station, recycling
34 facility, or other lawful outdoor combustible waste storage facility, shall comply with the
35 requirements of FC315.
36

37 **SECTION FC 305**
38 **IGNITION SOURCES**
39

40 **305.1 Clearance from ignition sources.** Clearance between ignition sources, such as luminaires,
41 heaters and open-flame devices, and combustible materials shall be maintained in an approved
42 manner.
43

44 **305.2 Hot ashes and spontaneous ignition sources.** Hot ashes, cinders, smoldering coals or
45 greasy or oily materials subject to spontaneous ignition shall not be deposited in a combustible
46 container, or within 10 feet (3048 mm) of other combustible material, including combustible walls

1 and partitions and combustible waste, or within 2 feet (610 mm) of openings to buildings or
2 structures.

3
4 **Exception:** The minimum required separation distance to other combustible materials shall be
5 2 feet (610 mm) where the material is deposited in a covered, noncombustible container placed
6 on a noncombustible floor, ground surface or stand.
7

8 **305.3 Open-flame warning devices.** It shall be unlawful to use an open-flame device on roadways
9 as a warning signal or for any other purposes.

10
11 **Exception:** The use of fusees at the scene of an emergency or as required by standard railroad
12 operating procedures.
13

14 **305.4 Deliberate or negligent burning.** It shall be unlawful to deliberately or through negligence
15 set fire to or cause the burning of combustible material or combustible waste in such a manner as
16 to endanger the safety of persons or property.
17

18 **SECTION FC 306** 19 **MOTION PICTURE FILM AND SCREENS** 20

21 **306.1 Motion picture projection rooms.** Electric arc, xenon or other light source projection
22 equipment which develops hazardous gases, dust or radiation and the projection of ribbon-type
23 cellulose nitrate film, regardless of the light source used in projection, shall be operated within a
24 motion picture projection room complying with the requirements of Chapter 4 of the Building
25 Code.
26

27 **306.2 Cellulose nitrate film storage, handling and use.** Cellulose nitrate film shall be stored,
28 handled and used in accordance with NFPA 40 and subject to the approval of the commissioner.
29

30 **306.2.1 Supervision.** The handling and use of cellulose nitrate film, including motion picture
31 projection, shall be under the personal supervision of a person holding a certificate of fitness.
32 The storage of cellulose nitrate film shall be under the general supervision of a person holding
33 a certificate of fitness.
34

35 **306.3 Motion picture screens.** The screens upon which motion pictures are projected shall be of
36 noncombustible construction as set forth in Chapter 6 of the Building Code, or shall meet the flame
37 propagation performance criteria of NFPA 701, or shall comply with the requirements for a Class
38 A interior finish in accordance with Chapter 8 of the Building Code. Screens installed prior to the
39 effective date of this code shall comply with the applicable Building Code requirements. The
40 construction supporting such motion picture screens shall be of noncombustible construction as
41 set forth in Chapter 6 of the Building Code, and shall comply with the load bearing requirements
42 of the Building Code.
43

44 **SECTION FC 307** 45 **OPEN FIRES** 46

47 **307.1 General.** Kindling, building, maintaining or using an open fire is prohibited.

1
2 **Exceptions:**
3

- 4 1. Portable outdoor barbecues as authorized by FC307.5.
5
6 2. Outdoor noncommercial barbecue fires in equipment provided by and located in city
7 parks where such open fires are allowed by the Department of Parks and Recreation.
8
9 3. In connection with training of fire brigades or similar purposes by persons or entities
10 where such training is required by law, rule or regulation.
11
12 4. Approved open fires used for special effects in connection with television, motion
13 picture, theatrical and other entertainment productions.
14
15 5. Coke-fueled salamanders at a construction site in accordance with FC307.6 and the rules.
16
17 6. Lighting of charcoal for hookah use on the premises of non-tobacco hookah
18 establishments in accordance with FC310 and the rules.
19
20 7. Residential fire pits as authorized by FC307.7.
21

22 **307.2 Authorization.** Open fires allowed pursuant to FC307.1 may only be kindled, built,
23 maintained or used with the prior written authorization of the agencies with regulatory jurisdiction,
24 property owner and other required approvals, and only when such open fires are maintained in
25 compliance with all conditions of such authorization or approval. The commissioner may prohibit
26 the kindling, building, maintaining or use of open fire or order the extinguishment of any open fire
27 allowed by this section, upon a determination that such open fire will create an undue hazard
28 because of conditions in the surrounding environment.
29

30 **307.3** Reserved.
31

32 **307.4 Attendance.** Open fires shall be constantly attended until the fire is extinguished. A
33 minimum of one portable fire extinguisher complying with the requirements of FC906 with a
34 minimum 4-A rating or other approved on-site fire-extinguishing equipment, such as a garden hose
35 connected to an approved water supply, shall be available for immediate use.
36

37 **307.5 Portable outdoor barbecues.** Charcoal, electric, and LPG and piped natural gas-fueled
38 portable outdoor barbecues may be operated and maintained in compliance with the requirements
39 of this section.
40

41 **307.5.1 General.** Portable outdoor barbecues burning charcoal, powered by electricity, or
42 fueled by LPG containers or piped natural gas may be stored and used on any residential
43 premises in compliance with the requirements of this section and the rules. Portable outdoor
44 barbecues burning charcoal, powered by electricity, or fueled by piped natural gas may be
45 stored and used on any other premises in compliance with the requirements of this section and
46 the rules, except as may be restricted by the Zoning Resolution or the Department by rule or
47 order. Stationary outdoor grills and other outdoor cooking equipment shall be installed in

1 accordance with the Building and Mechanical Codes, and operated and maintained in
2 accordance with this section.

3
4 **307.5.2 Grate area.** The total grate area of a portable outdoor barbecue shall not exceed
5 10 square feet (0.929 m²).
6

7 **307.5.3 Clearance distances.** Portable outdoor barbecues shall not be stored or used within 10
8 feet (3048 mm) of any combustible waste, combustible material, or any combustible building
9 surface, including combustible roofs and decks. To the maximum extent feasible, windows,
10 doors and other building openings within 10 feet (3048 mm) of a barbecue in use shall be kept
11 closed. An entrance door shall be closed immediately after entering or exiting the building
12 while the barbecue is in use.
13

14 **307.5.4 Fire extinguishing equipment.** A garden-type hose attached to a water supply, or a
15 minimum of one portable fire extinguisher complying with the requirements of FC906 with a
16 minimum 4-A rating, shall be provided for any portable outdoor barbecue, and shall be readily
17 accessible whenever the portable outdoor barbecue is in use. A portable fire extinguisher
18 complying with the requirements of FC906 and with a Class K rating shall be provided for any
19 portable outdoor barbecue used for commercial cooking purposes, and shall be readily
20 accessible whenever such barbecue is in use.
21

22 **307.5.5 Natural gas piping.** The natural gas piping supplying portable outdoor barbecues
23 designed to use piped natural gas shall be designed and installed in accordance with the Fuel
24 Gas Code.
25

26 **307.5.6 LPG containers.** Portable outdoor barbecues fueled by LPG containers shall
27 additionally comply with the requirements of FC307.5.6.1 and 307.5.6.2.
28

29 **307.5.6.1 Group R-2 occupancies.** Only portable outdoor barbecues designed for use with
30 LPG containers with a capacity of 16.4 ounces (0.465 kg) may be stored or used on the
31 premises of a Group R-2 occupancy. Indoor storage of 16.4-ounce (0.465 kg) LPG
32 containers for this or any other purpose is limited to a maximum of four such containers
33 per dwelling unit.
34

35 **307.5.6.2 Group R-3 occupancies.** Portable outdoor barbecues designed for use with LPG
36 containers with a capacity of 20 pounds (9.08 kg) or LPG containers with a capacity of
37 16.4 ounces (0.465 kg) may be stored or used on the premises of a Group R-3 occupancy.
38 Twenty-pound LPG containers shall not be stored or used indoors, or on any rooftop or
39 balcony. A maximum of two 20-pound LPG containers may be used to fuel a portable
40 outdoor barbecue. Indoor storage of 16.4-ounce (0.465 kg) LPG containers for this or any
41 other purpose is limited to a maximum of four such containers per dwelling unit.
42

43 **307.5.7 Cleaning.** Portable outdoor barbecues shall be periodically cleaned by removing
44 grease or fat accumulations from grills and in trays below the grill.
45

1 **307.6 Coke-fueled salamanders.** Coke and coke-fueled salamanders may be stored, handled and
2 used for construction-related curing and drying at construction sites in accordance with this section
3 and the rules.
4

5 **307.6.1 Supervision.** The handling and use of coke and coke-fueled salamanders at
6 construction sites, including the extinguishment of the coke, shall be under the personal
7 supervision of a certificate of fitness holder. A certificate of fitness holder may not supervise
8 the handling or use of more than fifty coke-fueled salamanders, or the handling or use of coke
9 or coke-fueled salamanders that are located on more than one floor. The storage of coke and
10 coke-fueled salamanders at construction sites shall be under the general supervision of a
11 certificate of fitness holder.
12

13 **307.7 Residential Fire Pits.** Residential fire pits may be stored and used to maintain an open
14 fire in compliance with the requirements of this section and the rules on the premises of a
15 detached Group R-3 occupancy in any R1, R2, or R3 residential zoning district.
16

17 **307.7.1 Safe operations.** Residential fire pits must be operated in accordance with
18 manufacturer instructions for such residential fire pit, and shall be constantly attended
19 while a fire is lit.
20

21 **307.7.2 Clearance distances.** Residential fire pits shall not be stored or used within 10 feet
22 (3048 mm) of any combustible waste, combustible material, or any combustible building
23 surface. To the extent feasible, windows, doors and other building openings within 25 feet
24 (7620 mm) of a residential fire pit in use shall be kept closed. An entrance door shall be
25 closed immediately after entering or exiting the building while a residential fire pit is in
26 use.
27

28 **307.7.3 Design and operation.** The department may establish by rule standards for the
29 design, installation, operation and maintenance for residential fire pits, provided that such
30 rules are consistent with provisions established by this section.
31

32 **307.7.4 Hazardous environmental conditions.** The department may prohibit use of
33 residential fire pits in any location upon determination that such activity creates an undue
34 fire hazard because of conditions in the surrounding environment, including during wind
35 conditions or red flag weather.
36

37 **SECTION FC 308** 38 **OPEN FLAMES** 39

40 **308.1 General.** This section governs the use of open flames in all buildings, structures and
41 premises.
42

43 **308.2 Use of open flames.** Open flames may be lighted, maintained and used only as allowed in
44 this section. Stationary appliances, including cooking, space heating and water heating appliances,
45 are not open-flame devices subject to this section and shall be designed and installed in accordance
46 with the construction codes. Portable fueled devices, equipment and systems, including LPG-
47 fueled cookstoves and torches, shall be operated in accordance with FC313.

1
2 **308.3 Prohibitions.** It shall be unlawful to:

- 3
4 1. cause or allow an open flame to be lit or maintained in any room or other area of a building,
5 structure, premises, marine vessel, watercraft or other place in which a hazardous material is
6 stored, handled or used, or where conditions exist that could cause ignition of flammable
7 vapors or combustible material.
8
9 2. use or maintain in any area in which smoking is prohibited, as set forth in FC310 or
10 elsewhere in this code, a lighted match or other flame which has not been approved for use
11 by the [commissioner] department in such areas.
12
13 3. place or discard, or cause to be placed or discarded, an open flame, lighted match or other
14 flaming substance or object on any surface or article where it can cause the ignition of
15 combustible material or combustible waste, or otherwise cause an unwanted fire.
16
17 4. store or use candles, incense or similar open-flame producing items in Group R-1 college
18 and university dormitories.
19
20 5. use or maintain an open flame or open-flame device in or on a building, structure or premises
21 as a signal or marker, except that fusees may be used on roadways to alert motorists to
22 stopped vehicles or other emergency condition.
23
24 6. light and release or allow to become airborne any lantern, balloon, or other item or craft
25 containing or fueled by a flame or other heat-producing material, except for balloon
26 operations authorized by FC Chapter 20 and other operations authorized by the department.
27

28 **[308.3 Use of open flames.** Open flames may only be lighted, maintained and used in Group A
29 occupancies and public gathering places in accordance with this section.
30

31 **308.3.1 Flaming food and beverage preparation.** The preparation of flaming foods or
32 beverages in Group A occupancies and public gathering places shall be in accordance with FC
33 308.3.1.1 through 308.3.1.5.
34

35 **308.3.1.1 Dispensing.** Flammable or combustible liquids used in the preparation of
36 flaming foods or beverages shall be dispensed from one of the following:
37

- 38 1. A 1-ounce (29.6 ml) container; or
39
40 2. A container not exceeding 1-quart (946.5 ml) capacity with a controlled-pouring
41 device that will limit the flow to a 1-ounce (29.6 ml) serving.
42

43 **308.3.1.2 Containers not in use.** Containers shall be secured to prevent spillage when not
44 in use.
45

46 **308.3.1.3 Serving of flaming food.** The serving of flaming foods or beverages shall be
47 done in a safe manner and shall not create flames higher than 6 inches (152.4 mm). The

1 pouring, ladling or spooning of liquids is restricted to a maximum height of 8 inches (203
2 mm) above the receiving receptacle.
3

4 **308.3.1.3.1 Ignition.** The flaming food or beverage shall be ignited on serving tables.
5 Such tables shall have noncombustible tops or, if the top is combustible, it shall be
6 protected by a noncombustible mat. The mat, when used, shall cover the entire top of
7 the table. Flames shall be extinguished before serving the food or beverage.
8

9 **308.3.1.4 Location.** Flaming foods or beverages shall be prepared only in the immediate
10 vicinity of the table being served. Flaming foods and beverages shall not be transported or
11 carried while burning.
12

13 **308.3.1.5 Fire protection.** The person preparing the flaming foods or beverages shall have
14 a wet cloth towel immediately available for use in smothering the flames in the event of an
15 emergency and, in addition to portable fire extinguishers required by FC906, carbon
16 dioxide type extinguishers with at least a 5-B rating shall be kept within 25 feet (7620 mm)
17 of the area in which flaming foods and beverages are ignited and at the doorway between
18 the kitchen and the dining area.]
19

20 **308.3.2 Open-flame decorative devices.** Open-flame decorative devices, including wall-
21 mounted candles, torch sconces, insect-repellant candles in glass jars or metal cans, tabletop
22 candles and oil lamps, free standing torch holders and candelabras, shall comply with the
23 following requirements:
24

- 25 1. Class I and Class II liquids and LPG shall not be used.
- 26
- 27 2. Liquid- or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel
28 must self-extinguish and not leak fuel at a rate of more than 0.25 teaspoon per minute
29 (1.26 ml per minute) if tipped over.
30
- 31 3. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at
32 the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) when the device or
33 holder is not in an upright position.
34
- 35 4. The device or holder shall be designed so that it will return to the upright position after
36 being tilted to an angle of 45 degrees from vertical.
37

38 **Exception:** Devices that self-extinguish if tipped over and do not spill fuel or wax at
39 the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.
40

- 41 5. The flame shall be enclosed except where openings on the side are not more than 0.375
42 inch (9.5mm) diameter or where openings are on the top and the distance to the top is
43 such that a piece of tissue paper placed on the top will not ignite in 10 seconds.
44
- 45 6. Enclosures shall be made of noncombustible materials and securely attached to the open-
46 flame device.
47

1 **Exception:** An enclosure is not required to be attached to any open-flame_device that
2 will self-extinguish if the device is tipped over.

3
4 7. Fuel canisters shall be safely sealed for storage.

5
6 8. Storage and handling of combustible liquids shall be in accordance with FC Chapter 34.

7
8 9. Shades, where used, shall be made of noncombustible materials and securely attached
9 to the open-flame device holder or enclosure.

10
11 10. Candelabras with flame-lighted candles shall be securely fastened in place to prevent
12 overturning, and shall be located away from occupants using the area and away from
13 possible contact with drapes, curtains or other combustibles.

14
15 11. Open-flame decorative devices in Group A occupancies and other buildings, structures
16 and premises used for a public gathering shall additionally comply with the requirements
17 of applicable rules promulgated by the commissioner designed to ensure the safe use of
18 such devices.

19
20 **308.3.3 Separation from combustibles.** Open flames shall be kept at a safe distance from
21 decorations, decorative vegetation or other combustible materials.

22
23 **308.3.4 Aisles and exits.** Lighted candles shall be prohibited in areas where occupants stand,
24 or in an aisle or exit.

25
26 **308.3.5 Reserved.**

27
28 **308.3.6 Theatrical performances.** Where use is approved in conjunction with theatrical
29 performances, open flames shall be used in accordance with FC Chapter 33 and NFPA 160.

30
31 **308.3.7 Prohibition.** It shall be unlawful to light, maintain or use an open flame in a Group A
32 occupancy or other building or structure used for a public gathering.

33
34 **Exceptions:**

35
36 1. Open flames may be used in the following locations and circumstances, provided
37 that precautions are taken to prevent ignition of combustible material and otherwise
38 ensure the safety of occupants, in accordance with this code, the rules and the permit:

39
40 1.1. Where necessary for ceremonial or religious purposes.

41
42 1.2. On stages and platforms as a necessary part of a performance in accordance
43 with FC308.3.6.

44
45 1.3. Where candles on tables are securely supported on substantial noncombustible
46 bases and the candle flames are protected in accordance with FC308.3.2(5).

1 1.4. The preparation of flaming foods or beverages in accordance with FC308.3.1.

2
3 1.5. Open-flame devices using LPG for demonstrations in exhibitions or trade
4 shows.

5
6 1.6. Open-flame devices for food warming and browning.

7
8 1.7. Open-flame decorative devices in accordance with FC308.3.2.

9
10 2. Nonportable heat-producing equipment installed in compliance with the
11 requirements of FC Chapter 6 and the Mechanical Code.

12
13 3. Natural gas light fixtures installed in compliance with the requirements of the
14 Building Code and the Plumbing Code, and approved precautions are taken to prevent
15 ignition of combustible materials.

16
17 **308.4 Torches for removing paint.** It shall be unlawful to remove paint in or on buildings,
18 structures or premises with a torch or any other flame-producing device. Such paint removal may
19 be performed using heat-producing devices other than open-flame devices. The person using such
20 heat-producing device to remove the paint shall remain at the location where the heating operation
21 was performed to maintain a fire watch for not less than 1 hour after using such device.

22
23 **308.5 Signals and markers.** Open-flame devices, such as lanterns or kerosene road flares, shall
24 not be operated or used as a signal or marker in or on any building, structure or premises.

25
26 **Exception:** The proper use of fusees at the scene of an emergency or as required by standard
27 railroad operating procedures.]

28
29 **308.4 General safety precautions.** Open flames and open-flame devices are ignition sources that
30 can readily ignite combustible materials. When their use is allowed by this section, all safety
31 precautions appropriate to the circumstances shall be observed, including the following
32 requirements:

33
34 1. Candles and other unenclosed open flames shall be constantly attended while lit.

35
36 2. Open flames and open-flame devices, including lighted candles, shall be protected from
37 accidental contact by appropriate placement, and secured from tipping or other movement
38 by a suitable candleholder or other device.

39
40 3. Open flames and open-flame devices, including lighted candles, except open-flame devices
41 designed to be surface mounted, shall be placed on a noncombustible surface.

42
43 4. Open flames and open-flame devices, including lighted candles, shall be kept at least 3 feet
44 (914 mm) from any combustible material or combustible waste.

45
46 5. Open flames and open-flame devices, including lighted candles, shall not be placed or kept
47 in any corridor, stairwell or exit.

1
2 6. Open flame food warming devices shall be placed on non-combustible surfaces and
3 constantly attended while lit. LPG-fueled open flame food warming devices shall not be used
4 for food warming except where authorized by the department by issuance of an open flame
5 permit.
6

7 **308.5 Use of open flames in assembly occupancies and places of public gathering.** Open flames
8 may be lighted, maintained and used in Group A occupancies and public gathering places only as
9 allowed in FC 308.5.1 through 308.5.4 and the rules.
10

11 **308.5.1 Prohibitions.** It shall be unlawful to light, maintain or use an open flame in a Group
12 A occupancy or other building or structure used for a public gathering.
13

14 **Exceptions:**
15

16 1. Open flames are allowed in the following locations when used for the following
17 purposes, provided that safety precautions are taken to prevent ignition of
18 combustible material and otherwise ensure the safety of occupants in accordance with
19 FC308.4, other applicable provisions of this code and the rules, and the terms and
20 conditions of the permit or other approval:
21

22 1.1. Use of candles and open-flame devices in accordance with FC308.5.2.
23

24 1.2. The preparation of flaming foods or beverages in accordance with FC308.5.3.
25

26 1.3. Special effects in connection with a theatrical performance or other event for
27 which a special effect permit has been granted in accordance with FC308.5.4.
28

29 1.4. Open-flame devices for food warming in accordance with the rules.
30

31 1.5. Open-flame devices for demonstrations in exhibitions or trade shows in
32 accordance with the rules.
33

34 1.6 Where necessary for ceremonial or religious purposes.
35

36 2. Natural gas light fixtures installed in compliance with the requirements of the
37 Building Code and the Plumbing Code, and approved precautions are taken to prevent
38 ignition of combustible materials.
39

40 **308.5.2 Open-flame decorative devices.** Open-flame decorative devices, including wall-
41 mounted candles, torch sconces, insect-repellant candles in glass jars or metal cans, tabletop
42 candles and oil lamps, free standing torch holders and candelabras, shall comply with the
43 following requirements:
44

45 1. Use of Class I and Class II liquids, including alcohol, and LPG in open flame decorative
46 devices, is prohibited.
47

1 2. Liquid- or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel
2 must self-extinguish and not leak fuel at a rate of more than 0.25 teaspoon per minute
3 (1.26 ml per minute) if tipped over.

4
5 3. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at
6 the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) when the device or
7 holder is not in an upright position.

8
9 4. The device or holder shall be designed so that it will return to the upright position after
10 being tilted to an angle of 45 degrees from vertical.

11 **Exception:** Devices that self-extinguish if tipped over and do not spill fuel or wax at
12 the rate of more than 0.25 teaspoon per minute (1.26 ml per minute) if tipped over.

13
14
15 5. The flame shall be enclosed except where openings on the side are not more than 0.375
16 inch (9.5mm) diameter or where openings are on the top and the distance to the top is
17 such that a piece of tissue paper placed on the top will not ignite in 10 seconds.

18
19 6. Enclosures shall be made of noncombustible materials and securely attached to the open-
20 flame device.

21 **Exception:** An enclosure is not required to be attached to any open-flame decorative
22 device that will self-extinguish if the device is tipped over.

23
24
25 7. Fuel canisters shall be safely sealed for storage.

26
27 8. Storage and handling of combustible liquids shall be in accordance with FC Chapter 57.

28
29 9. Shades, where used, shall be made of noncombustible materials and securely attached
30 to the open-flame device holder or enclosure.

31
32 10. Candelabras with flame-lighted candles shall be securely fastened in place to prevent
33 overturning, and shall be located away from occupants using the area and away from
34 possible contact with drapes, curtains or other combustibles.

35
36 11. Open-flame devices shall not be placed in any aisle, standing area, corridor or
37 component of the means of egress.

38
39 **308.5.3 Flaming food and beverage preparation.** The preparation and serving of flaming
40 foods and beverages in Group A occupancies and public gathering places shall be in
41 accordance with FC 308.5.3.1 through 308.5.3.4.

42
43 **308.5.3.1 Dispensing of liquid.** Alcohol or other flammable or combustible liquid used in
44 the preparation of flaming food and beverages shall be stored in a container with a capacity
45 not exceeding 1 quart (946.5 ml) and dispensed from such container using a controlled-
46 pouring device limiting the flow to a 1-ounce (29.6 ml) serving. The container shall have
47 a secure cap or lid or one designed to prevent spillage when not in use.

1
2 **308.5.3.2 Ignition and serving of flaming food.** Flaming food shall be ignited and served
3 as follows:

- 4
5 1. Flaming food shall be ignited on a noncombustible surface or, if the surface is
6 combustible, it shall be protected by a noncombustible mat that covers the entire top
7 surface of the table.
8
9 2. The flames generated for flaming food shall not exceed 6 inches (152.4 mm) above
10 the serving dish. Any pouring, ladling or spooning of liquids is restricted to a
11 maximum height of 8 inches (203 mm) above the receiving receptacle.
12
13 3. Flaming food shall not be ignited on or above the table at which the patrons to whom
14 the food is to be served are seated. Flaming food shall be ignited on a nearby serving
15 table or cart at least 3 feet (914 mm) from patrons, or lighted in the kitchen and
16 transported to the table on a serving cart.
17
18 4. The flames generated by flaming food shall be extinguished before the food is placed
19 on the table before the patron.
20
21 5. The person preparing the flaming foods shall have a wet cloth towel immediately
22 available for use in smothering the flames in the event of an emergency. In addition
23 to portable fire extinguishers required by FC906, a portable fire extinguisher with a
24 minimum 2-A:10B rating shall be kept at or near the location where flaming food or
25 beverage is ignited.
26

27 **308.5.3.3 Ignition and serving of flaming beverages.** Ignition and serving of flaming
28 beverages at patron tables shall be conducted in the same manner as flaming food, as set
29 forth in FC308.5.3.2. Flaming beverages shall not be ignited and served on bars and
30 counters at which the public is seated unless a safe perimeter of at least 3 feet (914 mm)
31 from any patrons can be established and maintained while the beverage is lighted and
32 flaming.
33

34 **308.5.3.4 Staff training.** Any staff serving flaming food or beverages shall be trained and
35 knowledgeable in the safe ignition and handling of such food or beverages.
36

37 **308.5.4 Special effects.** Use of open flames as a special effect is allowed in conjunction with
38 theatrical performances and in other places of assembly or public gathering only when
39 authorized by the department. When approved, open flames shall be used in accordance with
40 FC Chapter 56 and NFPA 160.
41

42 **308.6 [Portable fueled open-flame devices.** Portable open-flame devices fueled by flammable
43 gases or combustible liquids shall be enclosed or used in such a manner as to prevent the flame
44 from contacting or igniting combustible material or combustible waste.] **Alcohol-fueled**
45 **decorative open-flame devices.** Alcohol-fueled decorative open-flame devices shall be designed,
46 installed, operated and maintained in accordance with FC 308.6.1 through 308.6.5.
47

1 **308.6.1. Prohibitions.** It shall be unlawful to install or use a stationary or portable alcohol-
2 fueled open-flame device in Group A, E and I occupancies, and public gathering spaces. It
3 shall be unlawful to use portable alcohol-fueled open-flame devices in Group R occupancies.
4

5 **308.6.2 Design.** Stationary and portable alcohol-fueled open-flame devices installed or used
6 in New York City shall be designed in accordance with the following requirements:
7

- 8 1. The device shall be constructed of metal, fire-resistant glass and/or other noncombustible
9 material of sufficient thickness as to be capable of withstanding the heat generated by the
10 open flames.
- 11
- 12 2. The device shall be constructed to provide protection from the flames at the maximum
13 flame height the device is capable of generating.
14
- 15 3. The open flame shall be generated in a controlled manner through the use of a wick,
16 valve or other approved method. A device that generates a flame in an uncontrolled
17 manner is an open fire prohibited by FC307.1.
18
- 19 4. The device shall have a means of manually extinguishing the flame, either by a shutoff
20 valve, a means of manually closing the device that cuts off the supply of oxygen to the
21 flame thereby extinguishing the flame, or other approved method. The method by which
22 the flame is extinguished shall not require use of a battery-powered device.
23
- 24 5. The device shall use solid fuel or be fueled through a pump or other means of liquid fuel
25 transfer from a container to the device without spillage. Only the type of fuel specified
26 for the device shall be used.
27
- 28 6. The fuel capacity of the device shall not exceed 64 fluid ounces (1888 ml) or the
29 equivalent in solid fuel, except as authorized by the department.
30
- 31 7. The device shall be listed by a nationally recognized testing laboratory.
32

33 **308.6.3 Installation.** All stationary and portable alcohol-fueled open-flame devices shall be
34 installed or placed in accordance with listing requirements, manufacturer's instructions and the
35 following fire safety requirements:
36

- 37 1. The device shall be installed or placed at a location protected from movement and air
38 drafts, and at least 3 feet (914 mm) from combustible surfaces and materials, including
39 upholstered furniture, draperies, and wood surfaces.
40
- 41 2. The device shall be installed or placed in a room of sufficient size and ventilation to
42 avoid dangerous accumulations of carbon monoxide or carbon dioxide, taking into
43 consideration the capacity of the device's alcohol reservoir and rate of burning. In no
44 event shall a device be installed or used in a room smaller than that recommended by the
45 manufacturer's instructions.
46

1 3. Devices designed for stationary installation shall be securely affixed to the floor, wall or
2 ceiling or in furniture to prevent movement. No devices shall be installed in or on a wall
3 or ceiling, or in a wooden cabinet or other furniture of combustible construction, unless
4 it is of a type for which a certificate of approval has been issued by the department.
5

6 **308.6.4 Safety precautions.** Alcohol-fueled decorative devices shall be used in accordance
7 with manufacturer's instructions and the following safety precautions:
8

9 1. A lighted device shall not be left unattended. Flames shall be extinguished when the
10 person responsible for attending to the operation of the device leaves the room or goes to
11 sleep. The shutoff switch or device closure shall be used to ensure that the alcohol flames,
12 which are not always readily visible, are extinguished.
13

14 2. A device shall not be fueled or moved when it is lighted or when it is not lighted but still
15 hot.
16

17 3. A smoke alarm and a carbon monoxide alarm, or detectors, shall be installed in any room
18 in which an alcohol-fueled decorative device is installed or used.
19

20 4. A portable fire extinguisher for household use shall be kept readily available in any room
21 in which an alcohol-fueled decorative open-flame device is installed or used.
22

23 **308.6.5 Storage of fuel.** Alcohol stored for use in alcohol-fueled decorative open-flame
24 devices shall be stored in a tightly sealed container in a cool location, away from heat and
25 ignition sources. Such fuel storage is limited to 1 gallon (3.8 L).
26

27 **SECTION FC 309**
28 **POWERED INDUSTRIAL TRUCKS, [AND] EQUIPMENT**
29 **AND MOBILITY DEVICES**
30

31 **309.1 General.** Powered industrial trucks, [and] powered industrial equipment and powered
32 mobility devices shall be designed, operated and maintained in accordance with this section.
33

34 **309.2 Powered industrial trucks.** Powered industrial trucks fueled by flammable or combustible
35 liquids or flammable gases shall be designed and operated in accordance with FC 309.2.1 through
36 309.2.5.
37

38 **[309.1.1] 309.2.1 Hazardous locations.** Powered industrial trucks that are [used] operated in
39 areas designated as hazardous (classified) locations in accordance with the Electrical Code
40 shall be listed and labeled for use in such environments in accordance with NFPA 505. Entry
41 by [non-classified] equipment that is not listed or approved as suitable for the specific
42 classified location may be allowed for the purpose of maintenance or other necessary business
43 operation where the owner has established an entry authorization procedure and has verified
44 that the entry area is clear of hazardous environment and will remain so for the duration of the
45 entry.
46

1 **[309.1.2] 309.2.2 Powered industrial trucks using flammable gas fuel.** Powered industrial
2 trucks that use LPG or other flammable gas as fuel shall be limited to one fuel container with a
3 capacity not greater than 40 pounds (18.16 kg) or 340 SCF (9.63 m³) of flammable gas, whichever
4 is less, except that powered industrial trucks used to resurface ice that are designed to operate with
5 more than one such container shall be limited to operating with two such containers. Liquefied gas
6 containers installed in a horizontal position shall be of such a design that the pressure relief valve
7 will discharge vapor properly. Powered industrial trucks that use LPG or other flammable gas as
8 fuel shall not be parked near open flames or other heat or ignition sources, or near open pits,
9 underground entrances, elevator shafts, or similar areas. Such powered industrial trucks shall be
10 stored and used in locations with adequate ventilation. It shall be unlawful to store or use such
11 powered industrial trucks in a basement, cellar or other areas below grade.

12 **[309.2 Battery chargers.** Battery chargers used to charge batteries in powered industrial trucks
13 and powered industrial equipment shall be of an approved type. Combustible storage shall be kept
14 a minimum of 3 feet (914 mm) from battery chargers. Battery charging shall not be conducted in
15 areas accessible to the public.

16
17 **309.3 Ventilation.** Ventilation shall be provided in an approved manner in battery-charging areas
18 to prevent the accumulation of flammable gas.

19
20 **309.4 Portable fire extinguishers.** Powered industrial trucks shall be equipped with one 2-B:C
21 rated portable fire extinguisher. Battery-charging areas shall be provided with a portable fire
22 extinguisher complying with the requirements of FC906 having a minimum 4-A:20-B:C rating
23 within 20 feet (6096 mm) of the battery charger.]

24
25 **[309.5] 309.2.3 Fueling.** Powered industrial trucks using a flammable or combustible liquid
26 or flammable gas fuel shall be fueled in compliance with the requirements of [FC309.5.1]
27 FC 309.2.3.1 through [309.5.4] 309.2.3.4.

28
29 **[309.5.1] 309.2.3.1 Location.** All fueling, including container replacement, shall be
30 conducted outdoors or in areas specifically approved for that purpose, and in accordance
31 with this code and the rules.

32
33 **309.2.3.2 Liquid fuels.** Fixed liquid fuel-dispensing equipment for powered industrial
34 trucks shall be designed, installed, operated and maintained in accordance with FC
35 Chapter 23. Emergency refueling of powered industrial trucks using portable containers
36 shall be in accordance with FC Chapters 23 and 57. The engine of a powered industrial
37 truck shall be shut off and the operator shall not be on or inside the truck during refueling.

38
39 **[309.5.2] 309.2.3.3 Container replacement.** Outdoor connecting and disconnecting of
40 fuel gas containers shall be conducted away from open pits, underground entrances, or
41 other areas below grade, and away from all open flames or other heat or ignition sources.
42 Fueling of powered industrial trucks shall be in accordance with FC Chapter [38] 61, if
43 LPG-powered, and FC Chapters [22] 23 and [35] 58, if CNG-powered, and the rules.

44
45 **[309.5.3 Fixed fuel-dispensing equipment.** Fixed liquid fuel-dispensing equipment for
46 powered industrial trucks and for filling of portable containers used to fuel powered
47 industrial equipment shall be designed, installed, operated and maintained in accordance

1 with FC Chapter 22.]
2

3 **[309.5.4] 309.2.3.4 Hydrogen fueling.** Filling of containers for powered industrial trucks
4 with hydrogen, including metal hydride hydrogen storage system containers, shall be
5 conducted in accordance with [FC2209] FC2309.
6

7 **[309.6] 309.2.4 Repairs.** Repairs to fuel systems or electrical systems, and repairs utilizing
8 open flame or welding, shall be done in [approved] an indoor or outdoor location[s or in indoor
9 areas specifically] approved for that purpose.
10

11 **[309.7] 309.2.5 Storage.** When not in use, powered industrial trucks [that use a liquid and/or
12 a gas fuel] shall be stored in approved designated storage areas. Each storage area shall be
13 provided with a portable fire extinguisher complying with the requirements of FC906 having
14 a minimum 4-A:20-B:C rating.
15

16 **309.3 Battery-powered industrial trucks, industrial equipment and mobility devices.** Powered
17 industrial trucks, powered industrial equipment and powered mobility devices using a storage
18 battery shall be designed in accordance with FC309.3.1, and shall be charged and stored in a
19 storage, charging and/or repair facility, including any storage or charging area in Group B, R-2 or
20 M occupancy, that is designed, installed, operated and maintained in accordance with the
21 construction codes, Electrical Code and FC 309.3.2 through 309.3.4.
22

23 **Exceptions.**

24
25 1. Storage and charging in a Group R-3 occupancy or in a dwelling unit in a Group R-2
26 occupancy of not more than 5 powered mobility devices using a storage battery,
27 provided that such devices are for personal use.
28

29 2. Charging of a single powered mobility device by and in the presence of its owner or
30 user.
31

32 **309.3.1 Battery chargers.** Powered industrial trucks, powered industrial equipment and
33 powered mobility devices using a storage battery shall be charged in accordance with the
34 manufacturer's instructions and the applicable listing standard using the original equipment
35 manufacturer-supplied charging equipment, or other charging equipment suitable for the
36 purpose, that is designed in accordance with applicable federal, New York State and/or New
37 York City laws, rules or regulations, and listed:
38

39 1. pursuant to UL Standard 1564 or other approved listing of an approved testing
40 laboratory; or
41

42 2. for use with the truck, item of equipment or device in accordance with UL Standard
43 2272, UL Standard 2849 or other approved listing of an approved testing laboratory.
44

45 **309.3.2 Battery inspection.** A storage battery shall be inspected for cracks, punctures, leaking
46 contents or other damage prior to charging or re-charging if the battery was dropped,
47 involved in a collision or otherwise subjected to a potential mechanism of damage.

1 Damaged batteries shall not be re-used. Damaged batteries and batteries at the end of their
2 useable life shall be promptly removed from the premises and lawfully disposed of.

3
4 **309.3.3 Battery charging areas.** Powered industrial trucks, powered industrial equipment and
5 powered mobility devices using a storage battery shall be charged in a suitable indoor room or
6 area or outdoor location that:

7
8 1. has sufficient natural or mechanical ventilation in accordance with the Mechanical Code
9 to prevent the accumulation of any flammable or other gases that may be discharged
10 during normal charging operations;

11
12 2. has an adequate electrical supply and a sufficient number of electrical receptacles to
13 allow the charging equipment for each truck, item of equipment or device to be directly
14 connected to a receptacle. Extension cords and power strips shall not be used. A
15 minimum of 3 feet (914 mm) shall be maintained between each truck, item of equipment
16 or device during charging operations;

17
18 3. has an adequate electrical supply and a sufficient number of electrical receptacles to
19 allow the charging equipment for battery packs and other removable storage batteries to
20 be directly connected to a receptacle. Extension cords and power strips shall not be used.
21 Battery packs and other removable storage batteries shall not be stacked or charged in
22 an enclosed cabinet (unless the cabinet is specially designed and approved by the
23 department for such purpose). Except as otherwise approved by the department, a
24 minimum distance of 2 feet (610 mm) shall be maintained between each battery pack or
25 other removable storage battery during charging operations, provided that the aggregate
26 energy capacity of battery packs or other removable storage batteries that can be charged
27 in a single fire area does not exceed 20 kWh. A minimum distance of 3 feet (914 mm)
28 shall be maintained if the aggregate energy capacity exceeds 20 kWh. The aggregate
29 energy capacity of battery packs or other removable batteries that can be charged in a
30 single fire area shall not exceed 50 kWh.

31
32 4. is not used for the storage of combustible materials, combustible waste or hazardous
33 materials;

34
35 5. is separated by a fire barrier with a minimum one-hour fire-resistance rating from areas
36 in which repairs or other servicing is conducted on the storage battery or other electrical
37 components of the truck, item of equipment or mobility device;

38
39 6. where six or more trucks, items of industrial equipment or devices using a storage
40 battery are being charged at a single indoor location, is dedicated for battery charging
41 and secured from unauthorized entry; separated by a fire barrier which encloses the
42 entire space with a minimum one-hour fire-resistance rating; and protected by a fire
43 sprinkler system and one or more smoke detectors or smoke alarms. If the building or
44 occupancy is equipped with a fire alarm system, the smoke detector shall be connected
45 to such system. If the ambient temperature of the room during battery charging
46 operations exceeds the limitations set forth in the manufacturer's instructions or the

1 equipment listing, the room or area shall be temperature controlled to prevent over-
2 heating or other unsafe battery condition; and

3
4 7. is provided with a portable fire extinguisher complying with the requirements of FC906
5 having a minimum 4-A:20-B:C rating.

6
7 **309.3.4 Storage areas. Indoor storage rooms or areas or outdoor enclosures used for the**
8 **storage, but not charging or repair, of powered industrial trucks, powered industrial equipment**
9 **and powered mobility devices using a storage battery shall comply with the requirements of**
10 **FC 309.3.3(4), (5) and (7).**

11
12 **SECTION FC 310**
13 **SMOKING**

14
15 **310.1 General.** Smoking, including the carrying of a lighted pipe, cigar, cigarette or any other type
16 of smoking paraphernalia or material, shall be conducted in accordance with this section.

17
18 **310.2 Prohibitions.** It shall be unlawful to:

- 19
20 1. smoke in any area in which smoking is prohibited, as set forth in this section or elsewhere
21 in this code.
22
23 2. place or discard, or cause to be placed or discarded, any lighted pipe, cigar, cigarette or other
24 type of smoking paraphernalia or material where it can cause the ignition of combustible
25 material or combustible waste, or otherwise cause an unwanted fire.
26
27 3. smoke in any building, structure, premises or part thereof where flammable or combustible
28 materials or explosives are manufactured, stored, handled, used or transported.
29
30 4. smoke in the following occupancies and spaces:
31
32 4.1. Cellars and basements, except in R-3 occupancies.
33
34 4.2. Group A occupancies and public gathering places, except for smoking non-tobacco
35 smoking products in a non-tobacco hookah establishment in accordance with FC310.7.
36
37 4.3. Group M occupancies, except for smoking non-tobacco smoking products in a non-
38 tobacco hookah establishment in accordance with FC310.7.
39
40 4.4. Hospitals, nursing homes, rehabilitation facilities and similar medical facilities
41 housing the ill, aged and infirm, except within designated smoking rooms when in
42 compliance with the requirements of the Title 17 of the Administrative Code, the New
43 York City Health Code and rules promulgated by the commissioner.
44
45 4.5. On any bulkhead, dock, drydock, shipyard, pier, wharf, warehouse or shed on the
46 waterfront.
47

1 4.6. On board any ship, barge, ferry, lighter, carfloat, scow, and all other similar floating
2 watercraft or equipment whether berthed or moored at a dock, wharf, pier, or to a
3 marine vessel made fast thereto or in a shipyard.

4
5 4.7. Factories as set forth in Section 283 of the New York State Labor Law.

6
7 4.8. Lumber yard or woodworking facility as set forth in FC2803.5.3.

8
9 4.9. As otherwise prohibited by this code or the rules.

10
11 **310.3 “No Smoking” signs.** When smoking is prohibited by this code or the rules, durable “No
12 Smoking” signs shall be conspicuously posted at approved locations throughout the facility or
13 other location in accordance with FC310, or as otherwise specifically provided in this code. The
14 content, lettering, size and color of required “No Smoking” signs shall be in accordance with the
15 rules, or as otherwise approved by the commissioner.

16
17 **310.3.1 Location.** “No Smoking” signs shall be conspicuously posted at all entrances to
18 facilities in which smoking has been entirely prohibited and any area therein where hazardous
19 materials are stored, handled or used. Facilities or areas within such facilities in which smoking
20 is allowed in designated areas shall have signs indicating that smoking is allowed in designated
21 areas only.

22
23 **310.4 Removal of signs prohibited.** A posted “No Smoking” sign shall not be removed, obscured
24 or rendered illegible.

25
26 **310.5 Compliance with “No Smoking” signs.** It shall be unlawful to smoke, or discard or deposit
27 any burning substance, in any building, structure or premises or part thereof, in which “No
28 Smoking” signs are posted pursuant to this code or the rules or otherwise for fire safety purposes.

29
30 **310.6 Ash trays.** Where smoking is allowed, suitable noncombustible ash trays or receptacles shall
31 be provided at appropriate locations.

32
33 **310.7 Non-tobacco hookah establishments.** Smoking of non-tobacco smoking products is
34 allowed in non-tobacco hookah establishments lawfully operating pursuant to Chapter 5 of Title
35 17 of the Administrative Code (as those terms are defined therein), provided that such
36 establishments are designed, installed, operated and maintained in accordance with the following
37 requirements:

38
39 **310.7.1. Permits.** Permits shall be required as set forth in FC105.6.

40
41 **310.7.2 Supervision.** The storage of coal and other solid or liquid flammable and combustible
42 materials in non-tobacco hookah establishments shall be under the general supervision of a
43 person holding a certificate of fitness. The handling and use of charcoal and other solid or
44 liquid flammable and combustible materials in non-tobacco hookah establishments shall be
45 under the personal supervision of a person holding a certificate of fitness.

1 **310.7.3 Use of charcoal or other material for smoking paraphernalia.** Where smoking
2 paraphernalia requires the use of lighted charcoal or any other solid or liquid flammable or
3 combustible material, such material shall be stored, handled and used in accordance with this
4 section and the rules.

5
6 **310.7.3.1 Smoking paraphernalia.** Smoking paraphernalia shall comply with such safety
7 measures as may be prescribed in the rules to minimize the risk of fire associated with the
8 use of such paraphernalia.

9
10 **310.7.3.2 Storage of charcoal.** Charcoal shall be stored in [the same manner as solid fuel
11 used for commercial cooking operations, as set forth in FC 609.5.2 and the rules]
12 accordance with FC315.7. Other flammable or combustible materials shall be stored in
13 compliance with the requirements of this code [or] and the rules.

14
15 **310.7.3.3 Preparation, handling and disposal of charcoal and other materials.**
16 Charcoal shall be prepared for use in an [enclosed stationary furnace or oven vented to the
17 outdoors in accordance with the Construction Codes, in] approved indoor or outdoor area,
18 on a noncombustible surface, using an approved [vessel] device heated by an electric
19 element or other approved device or method, stored in an oven or other approved
20 noncombustible vessel, and vented by means of a hood, or in a room with an approved
21 ventilation system, or other approved method, as set forth in the rules. Lighted charcoal
22 and ashes, cinders and other fire debris, and other combustible waste shall be handled and
23 disposed of in such manner as may be prescribed in the rules to minimize the risk of fire.

24
25 **310.7.3.4 Portable fire extinguishers.** In addition to complying with the requirements of
26 FC906, a portable fire extinguisher with at least a [5-B] 2-A:10-B:C rating shall be
27 provided and maintained in a non-tobacco hookah establishment in the charcoal
28 preparation area and in each area in which non-tobacco smoking products are smoked.

29
30 **310.7.3.5 Decorations.** Decorations in non-tobacco hookah establishments shall be flame-
31 resistant in accordance with FC805 and the rules.

32
33 **310.8 Hazardous environmental conditions.** The commissioner may prohibit lighted matches,
34 cigarettes, cigars or other burning substances in any location upon a determination that such
35 activity creates an undue fire hazard because of conditions in the surrounding environment.

36
37 **SECTION FC 311**
38 **VACANT AND TEMPORARILY UNOCCUPIED PREMISES**

39
40 **311.1 Vacant buildings.** Any vacant building, structure or premises, or part thereof, shall be
41 deemed to constitute a temporarily unoccupied building and shall be safeguarded and maintained
42 in compliance with the requirements of this section, unless such building, structure or premises
43 has been deemed unsafe pursuant to Article 216 of Title 28 of the Administrative Code, in which
44 case it shall be safeguarded and maintained in compliance with the requirements of the Department
45 of Buildings and/or the Department of Housing, Preservation and Development, as applicable.

1 **311.2 Temporarily unoccupied buildings.** Temporarily unoccupied buildings, structures,
2 premises or parts thereof, including tenant spaces, shall be secured and protected in accordance
3 with this section.

4
5 **311.2.1 Security.** Exterior openings and interior openings accessible to unauthorized persons,
6 including tenants, shall be locked or otherwise protected to prevent entry by unauthorized
7 persons.

8
9 **311.2.2 Fire protection.** Fire alarm, sprinkler and standpipe systems shall be maintained in an
10 operable condition at all times, except as authorized by the commissioner.

11
12 **311.2.3 Fire separation.** Fire-resistance-rated partitions, fire barriers, and fire walls, including
13 those separating temporarily unoccupied tenant spaces from the remainder of the building shall
14 be maintained. Openings, joints, and penetrations in fire-resistance-rated assemblies shall be
15 protected in accordance with Chapter 7 of the Building Code.

16
17 **311.3 Removal of combustible waste.** The owner of any building, structure or premises, or part
18 thereof, that is deemed unsafe, and any temporarily unoccupied building, structure or premises, or
19 part thereof, shall remove therefrom and prevent accumulations of rubbish and other combustible
20 waste by regular cleaning of the premises.

21
22 **Exception:** Temporarily unoccupied buildings, structures, premises or parts thereof
23 undergoing construction or repair in accordance with the Building Code, where rubbish and
24 other combustible waste is controlled and removed in accordance with FC304.

25
26 **311.4 Removal of hazardous materials.** The owner of any vacant building, structure or premises,
27 or part thereof, that contains hazardous materials and that is deemed unsafe pursuant to Article 216
28 of Title 28 of the Administrative Code shall comply forthwith with the facility closure
29 requirements of [FC2701.6] FC5001.6. The owner of a temporarily unoccupied building, structure
30 or premises, or part thereof, that contains hazardous materials regulated by FC Chapter [27] 50
31 shall comply with the facility closure requirements of [FC2701.6] FC5001.6. Vacant and
32 temporarily unoccupied buildings, structures or premises, and all parts thereof, shall thereafter be
33 maintained free of hazardous materials, including hazardous waste material, except as approved
34 by the commissioner.

35
36 **311.5 Covered malls.** Unoccupied tenant spaces in covered malls shall be:

- 37
38 1. kept free from the storage of any combustible materials.
39
40 2. kept separate from other tenant spaces and areas of the mall by maintaining any fire
41 separation requirement of the Building Code during the period of time that the space remains
42 unoccupied or under reconstruction.
43
44 3. periodically inspected on at least a weekly basis to ensure that the space is being
45 maintained in accordance with this section. Doors to spaces shall be secured from entry by
46 keeping all doors locked at all times when the space is unoccupied.
47

1 4. kept free from rubbish and other combustible waste.

2
3 **SECTION FC 312**
4 **VEHICLE IMPACT PROTECTION**

5
6 **312.1 General.** Vehicle impact protection required by this code shall be provided by posts that
7 comply with the requirements of FC312.2 or [by other approved physical barriers that comply with
8 the requirements of] FC312.3, and FC312.4.

9
10 **312.2 Posts.** Posts used to provide vehicle impact protection shall comply with the following
11 requirements:

- 12
13 1. Constructed of steel not less than 4 inches (102 mm) in diameter and concrete filled.
14
15 2. Spaced not more than 4 feet (1219 mm) between posts on center.
16
17 3. Set not less than 3 feet (914 mm) deep in a concrete footing of not less than a 15-inch (381-
18 mm) diameter.
19
20 4. Set with the top of the posts not less than 3 feet (914 mm) above grade.
21
22 5. Located not less than 3 feet (914 mm) from the protected object.
23

24 **312.3 Other barriers.** [Physical barriers shall be a minimum of 36 inches (914 mm) in height and
25 shall resist a force of 12,000 pounds (53 375 N) applied 36 inches (914 mm) above the adjacent
26 ground surface.] Barriers meant to resist, deflect or visually deter vehicular impact, other than
27 posts in accordance with FC312.2, shall be designed and installed in an approved manner
28 commensurate with anticipated impact scenarios.

29
30 **312.4 Fire apparatus access.** Posts and other barriers that may obstruct or impede fire apparatus
31 access shall be removable by the department in an approved manner.

32
33 **SECTION FC 313**
34 **PORTABLE FUELED EQUIPMENT**

35
36 **313.1 Scope.** The storage, handling and use of portable fueled equipment shall be governed by this
37 section and the rules.

38
39 **313.2 General.** Portable fueled equipment shall be stored, handled and used in accordance with
40 this section.

41
42 **313.3 Prohibitions.** It shall be unlawful to:

- 43
44 1. Store, handle or use indoors portable fueled equipment, including lawn-care equipment,
45 snow blowers, portable generators [and], kerosene and other portable space heaters, and any
46 portable fueled device, equipment or system that generates a flame, other than one installed
47 in accordance with the construction codes. The owner of a building, structure or premises

1 shall not provide, or cause to be provided, any such equipment, including equipment
2 designed for space heating.

3
4 **Exceptions:**

- 5
6 1. Indoor storage of lawn-care equipment, power washers, snow blowers, portable
7 generators and other portable fueled equipment designed for outdoor use in a garage
8 or garage space separated from dwelling spaces or other occupancies in accordance
9 with the Building Code, or in a building classified as a Group U occupancy; or in
10 another approved storage area in a building. This exception shall not apply to portable
11 space heaters.
12
- 13 2. The indoor storage, handling and use of portable fueled equipment where authorized
14 by this code, including portable fueled equipment allowed by this section, open-flame
15 devices allowed by [FC 308 and 314] FC308, displays allowed by FC314, and
16 construction equipment allowed by FC Chapter [14] 33, and portable fueled
17 equipment allowed for demonstrations at exhibitions and trade shows by the rules.
18
- 19 3. The storage of portable fueled equipment for sale or distribution in a mercantile or
20 storage occupancy.
21
- 22 4. The storage, handling and use of portable fueled equipment in a business, factory or
23 mercantile occupancy engaged in the business of manufacturing or repairing of such
24 equipment, provided that portable space heaters are operated solely in connection
25 with such manufacturing or repair, and are not used for space heating purposes.
26
- 27 2. Store, handle or use for space heating, other than storage for sale, any portable fueled
28 equipment that utilizes a flammable liquid as a fuel, or, except as authorized by FC313.5,
29 that utilizes a combustible liquid as a fuel. Any such portable fueled equipment that shows
30 evidence of having been used shall be deemed to be or have been in use.
31
- 32 3. Use any portable fueled equipment that utilizes waste oil as a fuel. Any such portable fueled
33 equipment that shows evidence of having been used shall be deemed to be or have been in
34 use.
35
- 36 4. Remove paint in or on buildings, structures or premises with a torch or any other flame-
37 generating device. Paint removal may be conducted using heat-producing devices other than
38 portable fueled equipment. The person using such heat-producing device to remove the paint
39 shall remain at the location where the heating operation was conducted to maintain a fire
40 watch for not less than 1 hour after using such device.
41

42 **313.4 Confiscation and removal.** The commissioner may confiscate or order the removal of
43 portable fueled equipment from indoor or outdoor locations where the storage, handling or use of
44 such equipment is determined by the commissioner to be hazardous.
45

46 **313.5 Portable space heaters.** Portable fueled equipment used for space heating shall additionally
47 be stored, handled and used in accordance with FC 313.5.1 and 313.5.2.

1
2 **313.5.1 Listing and labeling of space heaters.** Portable space heaters and other portable
3 fueled equipment used for space heating shall be listed and labeled.
4

5 **313.5.2 Authorized uses.** Portable space heaters may be used for space heating as set forth in
6 FC 313.5.2.1 through 313.5.2.6.
7

8 **313.5.2.1 Portable natural gas heaters.** Portable space heaters fueled by piped natural gas
9 may be stored, handled and used for outdoor use when designed, installed, operated and
10 maintained in accordance with this code, including FC313.6, the rules and the construction
11 codes, including the Building Code.
12

13 **313.5.2.2 Construction sites.** Portable space heaters may be stored, handled and used at
14 construction sites in accordance with FC Chapter [14] 33 and the rules.
15

16 **313.5.2.3** Reserved.
17

18 **313.5.2.4 Local emergency.** In the event of failure during severe cold weather of a central
19 heating unit in any building or structure other than a private dwelling, multiple dwelling or
20 Group A occupancy, portable space heaters approved for such indoor use may be used for
21 a period not to exceed 2 weeks when such use has been approved.
22

23 **313.5.2.5 Public emergencies.** In the event of a public emergency which disrupts,
24 interferes with or impairs the operation or use of equipment, supplies or utilities normally
25 utilized for heating, use of portable space heaters for indoor or outdoor use may be
26 authorized by the commissioner upon a declaration of emergency by the mayor.
27

28 **313.5.2.6 Supervision.** The handling and use of portable space heaters shall be under the
29 personal supervision of a certificate of fitness holder or a plumber. The storage of portable
30 space heaters, and the fuel therefor, shall be under the general supervision of a certificate
31 of fitness holder or a plumber.
32

33 **Exception:** Group R-3 occupancies.
34

35 **313.6 Portable natural gas heaters.** Portable space heaters fueled by piped natural gas shall be
36 designed, operated and maintained in accordance with FC 313.6.1 through 313.6.5.
37

38 **313.6.1 Clearance to buildings.** Heaters shall be located outdoors and at least 5 feet (1524
39 mm) from any building or structure.
40

41 **313.6.2 Clearance to combustible materials.** Heaters shall not be located beneath, or closer
42 than 5 feet (1524 mm) to combustible decorations and combustible overhangs, awnings,
43 sun control devices or similar combustible attachments to buildings or structures.
44

45 **313.6.3 Proximity to exits.** Heaters shall not be located within 5 feet (1524 mm) of exits or
46 exit discharges.
47

1 **313.6.4 Tip-over switch.** Heaters shall be equipped with a tilt or tip-over switch that
2 automatically shuts off the flow of gas if the appliance is tilted more than 15 degrees (0.26 rad)
3 from the vertical.
4

5 **313.6.5 Guard against contact.** The heating element or combustion chamber of heaters shall
6 be permanently protected so as to prevent accidental contact by persons or material.
7

8 **313.7 Torches.** Where allowed, indoor use of torches shall be in accordance with FC Chapters 35,
9 58 and 61 and the rules. Indoor use of LPG-fueled torches in residential occupancies for soldering,
10 food browning and other household uses, shall be limited to torches with an LPG container
11 capacity of 16.4 ounces in accordance with FC Chapter 61 and the rules.
12

13 **SECTION FC 314** 14 **INDOOR DISPLAYS**

15
16 **314.1 General.** Indoor displays in any occupancy shall be designed and installed in accordance
17 with FC 314.2 through 314.4.
18

19 **314.2 Fixtures and displays.** Fixtures and displays of goods for sale to the public shall be arranged
20 so as to maintain free, immediate and unobstructed access to exits as required by FC Chapter 10
21 and the construction codes, including the Building Code.
22

23 **314.3 Highly combustible goods.** It shall be unlawful to display highly combustible goods,
24 including flammable or combustible liquids, liquefied flammable gases, oxidizing materials,
25 pyroxylin plastics and agricultural goods, in main exit access aisles, corridors, common areas of
26 covered malls, or within 5 feet (1524 mm) of entrances to exits and exterior exit doors.
27

28 **314.4 Vehicles and watercraft.** [Watercraft and fueled] Fueled and electric vehicles[,] (including
29 motor vehicles, motorcycles and mopeds[,]) and watercraft that are displayed indoors shall comply
30 with the following requirements:
31

32 1. [Batteries] Vehicle and watercraft engines shall not be operated at any time when the display
33 is open to the public. Liquid-fueled vehicle and watercraft engine batteries shall be
34 disconnected[,] or the engine otherwise disabled from starting by installation of an ignition
35 lock, “kill switch” (relay) or other approved means. Battery or other electrical connections
36 that are disconnected shall be adequately taped to prevent arcing. For electric and gaseous-
37 fueled vehicles:
38

39 1.1. Battery power necessary to preserve vehicle safety features shall be maintained.
40

41 1.2. Appropriate safety measures shall be implemented to prevent the engine from being
42 started and/or the vehicle from moving or other approved means, including securing
43 the engine start key or fob and preventing remote engine start.
44

45 2. Fuel in fuel tanks shall not exceed [one-quarter] one-eighth tank or [5] 2.5 gallons ([19] 9.5
46 L) (whichever is less). Gaseous-fueled vehicles or watercraft shall contain no more fuel than
47 the energy equivalent of 2.5 gallons (9.5 L) of gasoline.

- 1
2 3. Fuel tanks and fill openings shall be closed and secured with a locking gas cap.
3
4 4. Fueling or defueling shall not be conducted indoors.
5
6 5. No repairs or other work shall be conducted on a motor vehicle or watercraft in the display
7 area.
8
9 6. Where indoor display of motor vehicles and watercraft is in Group A occupancies and other
10 public gathering places, aisles with an unobstructed minimum width of 3 feet (914 mm) shall
11 be maintained.
12
13 7. Such [additional] other requirements as the [commissioner] department may promulgate
14 [governing the display of such vehicles and watercraft in Group A occupancies, and
15 buildings, structures or premises used for public gatherings.] by rule.
16

17 **314.5 Required clearance from fire safety systems.** Sprinklers and fire alarm systems shall not
18 be obstructed by indoor displays.
19

20 **314.5.1 Sprinkler systems.** A sprinkler system shall be installed in or under covered kiosks,
21 displays, booths, or concession stands that exceed 4 feet (1219 mm) in width. The clearance
22 between any sprinkler head deflector installed above the top of the kiosks, displays, booths, or
23 concession stands shall not be less than 18 inches (457 mm).
24

25 **Exception:** Open-grid and drop-out ceilings complying with the requirements of NFPA 13,
26 as modified by FC Appendix B, may be installed beneath sprinklers.
27

28 **314.5.2 Fire alarm systems.** Sufficient clearance shall be provided between kiosks, displays,
29 booths, or concession stands and fire alarm and carbon monoxide systems equipment and
30 devices including detectors and strobes, so as not to interfere with their operation.
31

32 **SECTION FC 315**
33 **COMBUSTIBLE MATERIALS STORAGE**
34 **AND OTHER STORAGE HAZARDS**
35

36 **315.1 General.** [Combustible materials] Storage of materials shall be [stored, handled and used]
37 in accordance with this section.
38

39 **Exception:** Storage of materials during construction and demolition operations shall comply
40 with the requirements of FC Chapter [14] 33.
41

42 **315.2 Storage in buildings.** Storage of [combustible] materials in buildings shall be orderly and
43 stacked materials shall be stable. Storage [area] of combustible materials shall be separated from
44 heaters or heating devices by distance or shielding so that ignition cannot occur.
45

46 **315.2.1 Ceiling clearance.** Storage shall be maintained 2 feet (610 mm) or more below the
47 ceiling in areas of buildings not protected by a sprinkler system, or a minimum of 18 inches

1 (457 mm) below sprinkler head deflectors in areas protected by a sprinkler system, provided,
2 however, that storage of noncombustible materials to the ceiling may be authorized by the
3 department when such storage is within 30 inches (762 mm) of a fire partition.
4

5 **315.2.2 Means of egress.** [Combustible materials] Materials shall not be stored in a manner
6 that obstructs egress from any building, structure or premises.
7

8 **315.2.3 Equipment rooms.** Combustible material shall not be stored in boiler rooms,
9 mechanical rooms or electrical equipment rooms.
10

11 **315.2.4 Attic, under-floor and concealed spaces.** Attic, under-floor and concealed spaces
12 used for storage of combustible materials shall be protected on the storage side as required for
13 1-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are
14 self-closing and are of noncombustible construction or solid wood core not less than 1.75
15 inches (44.5 mm) in thickness. Storage shall not be placed on exposed joists.
16

17 **Exceptions:**

- 18 1. Areas protected throughout by sprinkler systems.
- 19 2. Group R-3 and Group U occupancies.
- 20 3. Groups S-1 and S-2 occupancies.
- 21
- 22
- 23
- 24

25 **315.3 Outdoor storage.** Outdoor storage of combustible materials[shall not be located within 10
26 feet (3048 mm) of a property line or within 50 feet (15 240 mm) of the nearest wall of a building
27 occupied as a Group A occupancy, Group E educational occupancy, Group I-2 occupancy, or any
28 building, structure or premises used for a public gathering] in quantities in excess of 32 cubic feet
29 (0.91 m³) shall comply with FC 315.3.1 through 315.3.6.

30 **[315.3.1 Storage beneath overhead projections from buildings.** Combustible materials
31 stored or displayed outdoors at locations adjoining buildings or structures that are protected
32 throughout by a sprinkler system shall not be stored or displayed under eaves, canopies or other
33 projections or overhangs that are not protected by a sprinkler system.]
34

35 **315.3.1 Property line.** Except as otherwise provided in FC315.3.5, outdoor storage of
36 combustible materials shall not be located within 10 feet (3048 mm) of a property line.
37

38 **[315.3.2 Height.** Storage in the open shall not exceed 20 feet (6096 mm) in height.]
39

40 **315.3.2 Adjoining properties.** Except as otherwise provided in FC315.3.5, outdoor storage of
41 combustible materials shall not be located within 50 feet (15 240 mm) of the nearest wall of a
42 building occupied as a Group A occupancy, Group E educational occupancy, Group I-2
43 occupancy, or any building, structure or premises used for a public gathering.
44

45 **315.3.3 [Reduced separation distance.** The separation distances required by FC 315.3 may
46 be reduced when approved and when in compliance with the requirements of FC 315.3.3.1
47 through 315.3.3.3.]**Building walls, openings and overhead projections.** Except as otherwise

1 provided in FC315.3.5, outdoor storage of combustible materials shall not be located:

2
3 1. Within 10 feet (3048 mm) of any building wall that is constructed of a combustible
4 material;

5
6 2. Within 10 feet (3048 mm) of any building opening, regardless of the wall construction;
7 and

8
9 3. Under building eaves, canopies, awnings and other overhangs.

10
11 [315.3.3.1 **Fencing.** The outdoor storage area shall be enclosed by an approved well-
12 constructed and maintained fence between 10 and 18 feet (3048 and 5486 mm) in height
13 above the street level. If any building having an unpierced fire wall adjoins the enclosure,
14 no fence shall be required on that side.

15
16 **315.3.3.2 Separation from building openings.** The outdoor storage area shall be
17 completely separated from any window or door openings of any wall of an adjoining
18 building by a well-constructed and maintained fence of noncombustible material of an
19 approved height, erected at least 6 feet (1829 mm) from such opening and extending at
20 least 6 feet (1829 mm) on each side thereof and continued to the sides of the enclosure or
21 carried to the walls of the building.

22
23 **315.3.3.3 Pile height.** The outdoor storage at any point shall not be piled higher than 2 feet
24 (610 mm) below the top of the fence required by FC 315.3.3.1.

25
26 **315.3.4 Portable fire extinguishers.** At least one portable fire extinguisher with a rating
27 of at least 4-A shall be provided for every 2,500 square feet (232.3 m²) of storage area,
28 or portion thereof, or in lieu thereof, a hose of at least 1 inch (25 mm) in diameter, equipped
29 with a nozzle of at least 1/2 inch (12.7 mm) in diameter, sufficient in length to reach all
30 parts of the enclosure, and connected to an adequate water supply may be provided.]

31
32 **315.3.4 Height.** Outdoor storage shall not exceed 20 feet (6096 mm) in height or such lower
33 maximum height allowed by the Building Code or Zoning Resolution.

34
35 **315.3.5 Reduced separation distance.** The separation distances set forth in FC315 may be
36 reduced when the combustible materials are:

37
38 1. Stored in approved cabinets or containers as set forth in FC315.7.2.2, or other approved
39 cabinet or container suitable for the type or quantity of stored combustible material;

40
41 2. Where appropriate to the type of stored combustible material, enclosed by a solid fence
42 of an approved noncombustible material and an approved height. The combustible
43 materials shall not be piled higher than 2 feet (610 mm) below the top of the fence; and/or

44
45 3. One or more other approved fire protection measures are provided.

1 **315.3.6 Portable fire extinguishers.** At least one portable fire extinguisher with a rating of at
2 least 4-A shall be provided for every 2,500 square feet (232.3 m²) of storage area, or portion
3 thereof, or in lieu thereof, a hose of at least 1 inch (25 mm) in diameter, equipped with a nozzle
4 of at least ½ inch (12.7 mm) in diameter, sufficient in length to reach all parts of the enclosure,
5 and connected to an adequate water supply may be provided.
6

7 **315.4 Space underneath grandstands and bleachers.** Except where enclosed in not less than 1-
8 hour fire-resistance-rated construction in accordance with the Building Code, spaces underneath
9 grandstand and bleacher seating shall not be occupied or utilized for purposes other than means of
10 egress.
11

12 **315.5 Storage underneath high-voltage transmission lines.** It shall be unlawful to store
13 hazardous materials or combustible materials outdoors within the utility easement underneath
14 high-voltage transmission lines.
15

16 **315.6 Storage in plenums.** It shall be unlawful to use plenums for storage of combustible or other
17 material, including equipment and cabling that has been taken out of service and abandoned, unless
18 such equipment and cables have been tagged for future use in accordance with Electrical Code.
19 The accessible portion of such abandoned equipment and cables shall be removed.
20

21 **315.7 Storage of solid fuel.** Storage of wood, charcoal or other combustible material for use as
22 solid fuel, including for use in commercial cooking appliances, fireplaces or solid fuel-burning
23 equipment approved by the Department of Buildings, and in non-tobacco hookah establishments,
24 shall be in accordance with FC 315.7.1 through 315.7.3, except that storage of solid fuel in Group
25 R-2 occupancies shall be in accordance with FC315.7.4.
26

27 **Exceptions:**
28

- 29 1. Storage for sale of solid fuel in a mercantile establishment.
- 30
- 31 2. Group R-3 occupancies.
32

33 **315.7.1 Supply for immediate use.** Not more than a one-day supply of solid fuel may be kept
34 in the same room as the solid fuel-burning equipment or in the room with the fuel loading or
35 clean-out doors or other opening. Unless the solid fuel-burning equipment is designed for
36 internal storage of solid fuel, the solid fuel stored in such room shall not be located:
37

- 38 1. Within 3 feet (914 mm) of the solid-fuel burning equipment or any other heating or
39 cooking appliance;
- 40
- 41 2. Within 6 feet (1829 mm) of any solid fuel loading opening or door of the solid fuel-
42 burning equipment; or
- 43
- 44 3. Above any cooking or heating equipment, flue or vent.
45

46 **315.7.2 Additional solid fuel storage.** Solid fuel in excess of a one-day supply shall be stored
47 indoors and/or outdoors in accordance with FC 315.7.2.1 through 315.7.2.2.

1
2 **315.7.2.1 Indoor.** Solid fuel may be stored indoors in:

- 3
4 1. A room dedicated to the storage of not more than 150 cubic feet (4.3 m³) of solid
5 fuel, provided that such storage room is protected by a sprinkler system and enclosed
6 by a minimum of 1-hour fire barriers and horizontal assemblies (walls, floor and
7 ceiling) constructed in accordance with the Building Code; or
8
9 2. A building or occupancy protected throughout by a sprinkler system, in metal
10 cabinets dedicated to the storage of solid fuel that:
11
12 2.1. Are designed and constructed in accordance with FC5003.8.7 (for hazardous
13 materials storage);
14
15 2.2. Are placed on a stable, noncombustible surface; and
16
17 2.3. Have a maximum aggregate capacity of 75 cubic feet (2.1 m³); or
18
19 3. Metal cabinets designed and installed in accordance with FC315.7.2.1(2) that are
20 located in a room that is protected by a sprinkler system and enclosed by a minimum
21 of 1-hour fire barriers and horizontal assemblies (walls, floor, and ceiling)
22 constructed in accordance with the Building Code, but such room is not required to
23 be dedicated solely to the storage of solid fuel.
24

25 **315.7.2.2 Outdoor.** Solid fuel shall be stored in well-constructed metal cabinets or
26 containers (with welded seams) dedicated to the storage of solid fuel that:

- 27
28 1. Have securely-closing, close-fitting metal door or lids;
29
30 2. Are placed on a concrete or other stable, noncombustible surface;
31
32 3. Have a maximum aggregate capacity of 75 cubic feet (2.1 m³); and
33
34 4. Are designed and constructed in accordance with FC5003.8.7 (for hazardous
35 materials storage) or, if not located within 6 feet (1829 mm) of a combustible surface,
36 are designed and well-constructed of steel having a thickness of not less than 0.0478
37 inch (1.2 mm) (18 gauge).
38

39 **315.7.3. Protection of solid fuel.** Solid fuel shall be protected by:

- 40
41 1. Keeping the doors or lids to a solid fuel storage room, cabinet or container closed;
42
43 2. Posting a durable sign or marking that reads “SOLID FUEL – KEEP FIRE AWAY” at
44 the entrance to a solid fuel storage room or storage cabinet or container; and
45

1 3. Storing charcoal and similar combustible materials in their original packaging, or in
2 noncombustible containers with securely-closing lids and an internal vertical dimension
3 of not more than 48 inches (1219 mm).

4
5 **315.7.4 Storage of solid fuel in Group R-2 occupancies.** Storage of solid fuel in Group R-2
6 occupancies, including storage for use in fireplaces and solid fuel-burning equipment approved
7 by the Department of Buildings, shall be in accordance with FC 315.7.4.1 and 315.7.4.2.

8
9 **315.7.4.1 Indoor storage.** Indoor storage of solid fuel shall not exceed 4 cubic feet
10 (0.11 m³) of solid fuel in each dwelling unit, which shall be stored in a safe manner away
11 from sources of ignition.

12
13 **315.7.4.2 Outdoor storage.** Outdoor storage of solid fuel shall be in accordance with
14 FC315.7.2.2.

15
16 **SECTION FC 316**
17 **HAZARDS TO EMERGENCY RESPONDERS**

18
19 **316.1 Hoistway and shaftway protection.** The doors and/or gates to hoistways, freight elevator
20 shafts, trap doors and other means used to provide access to vertical openings, shall be kept closed
21 and secured, or otherwise protected, except when being used to provide access, and shall be closed,
22 secured or otherwise protected, as applicable, at the end of each work day.

23
24 **316.2 Shaftway markings.** Vertical shafts shall be identified as required by this section.

25
26 **316.2.1 Exterior access to shaftways.** Outside openings accessible to the department and
27 which open directly on a hoistway or shaftway communicating between two or more floors in
28 a building shall be plainly marked with the word SHAFTWAY in red letters at least 6 inches
29 (152 mm) high on a white background. Such warning signs shall be placed so as to be readily
30 discernible from the outside of the building.

31
32 **316.2.2 Interior access to shaftways.** Door or window openings to a hoistway or shaftway
33 from the interior of the building shall be plainly marked with the word SHAFTWAY in red
34 letters at least 6 inches (152 mm) high on a white background. Such warning signs shall be
35 placed so as to be readily discernible.

36
37 **Exception:** Marking shall not be required on shaftway openings which are readily
38 discernible as openings onto a shaftway by the construction or arrangement.

39
40 **316.3 Pitfalls.** Installations designed to disable, injure, maim or kill intruders are prohibited. No
41 person shall install or use firearms, sharp or pointed objects, razor wire, explosives, flammable or
42 combustible liquid containers, or dispensers containing highly toxic, toxic, irritant, piercing sounds
43 or other hazardous materials in a manner which may passively or actively disable, injure, maim or
44 kill a firefighter or other emergency responder who enters a building or premises, forcibly or
45 otherwise, for the purpose of controlling or extinguishing a fire, rescuing trapped occupants or
46 rendering other emergency assistance.

1 **316.4 Security device.** It shall be unlawful to install, operate or maintain a security device that
2 emits any substance that could obscure a means of egress in any building, structure or premises.
3

4 **SECTION FC 317**
5 **AUTOMOTIVE SALVAGE AND WRECKING FACILITIES**
6

7 **317.1 General.** Automotive salvage and wrecking facilities shall be designed, installed, operated
8 and maintained in accordance with this section. The design and installation provisions of this
9 section shall apply to both new and existing facilities.
10

11 **317.2 Prohibitions.** It shall be unlawful to:

- 13 1. Dispose of any fuel or flammable or combustible liquid waste by discharging or otherwise
14 disposing of such fuel or liquid waste in any drain or sewer, upon any premises, or in any
15 river, stream or other body of water.
16
- 17 2. Light or maintain an open fire for the burning, dismantling, salvaging, scrapping wrecking
18 of motor vehicles or parts thereof.
19

20 **317.3 Supervision.** Automotive salvage and wrecking facilities shall be supervised as follows:

- 21 1. The facility shall be under the personal supervision of a person holding a certificate of fitness
22 for automotive salvage and wrecking facilities, who shall ensure that the facility is designed,
23 installed, operated and maintained in accordance with this code and other applicable laws,
24 rules, and regulations.
25
- 26 2. The [de-fueling] defueling of motor vehicle fuel tanks and the transfer of fuel from the
27 defueling equipment shall be conducted by or under the personal supervision of a certificate
28 of fitness holder.
29
- 30 3. Hot work shall be personally conducted by a person holding a certificate of fitness for such
31 work in accordance with FC Chapter 35.
32

33
34 **317.4 Facility requirements.** Automotive salvage and wrecking facilities shall be in accordance
35 with FC 317.4.1 through 317.4.3.
36

37 **317.4.1 Licensing.** Department permits and other approvals shall be issued to an automotive
38 salvage and wrecking facility only if such facility is licensed and maintained in accordance
39 with requirements of the New York State Department of Motor Vehicles and the New York
40 City Department of Consumer Affairs.
41

42 **317.4.2 Lawful occupancy.** Department permits and other approvals shall be issued to
43 automotive salvage and wrecking facilities only if use of the premises for such facility is
44 authorized by the certificate of occupancy or otherwise constitutes a lawful use of the premises.
45

46 **317.4.3 Design requirements.** Automotive salvage and wrecking facilities shall be designed
47 in accordance with FC 317.4.3.1 through 317.4.3.3.

1
2 **317.4.3.1 Facility enclosure.** The facility shall be enclosed on all sides by a solid, opaque
3 fence or wall at least 8 feet (2438 mm) in height in accordance with the Building Code and
4 the Zoning Resolution.

5
6 **317.4.3.2 Fire apparatus roads.** The facility shall be accessible from fire apparatus roads
7 with a minimum unobstructed width of 20 feet (6096 mm). An outdoor area of the facility
8 shall be accessible by fire apparatus roads on all four sides with a distance between such
9 roads of not greater than 50 feet (15 240 mm) by 100 feet (30 480 mm).

10
11 **317.4.3.3 Defueling area.** The defueling of motor vehicle fuel tanks shall be conducted at
12 an approved location that is protected throughout by a fire extinguishing system.

13
14 **317.5 Operation and maintenance.** Automotive salvage and wrecking facilities shall be operated
15 and maintained in accordance with FC 317.5.1 through 317.5.4.

16
17 **317.5.1 Fire apparatus access roads.** Fire apparatus access roads shall be maintained
18 unobstructed to provide access for department apparatus.

19
20 **317.5.2 Torch operations.** Torch operations shall be conducted in accordance with FC
21 Chapter [26] 35 and in compliance with the following requirements:

- 22
23 1. Torch operations shall be conducted at least 35 feet (10 668 mm) from combustible
24 waste, other motor vehicles, stacks of motor vehicles or other combustible material,
25 unless protection in the form of noncombustible shields or covers are provided to restrict
26 the scattering of sparks and molten metal.
27
28 2. Torch operations shall not be conducted in any location where hazardous gases or vapors
29 may be present. Fuel tanks of motor vehicles shall be emptied of fuel and purged of all
30 flammable vapors before any torch operations are commenced.
31
32 3. Compressed gas containers, when in use, shall be properly supported and placed a safe
33 distance from torch operations.
34
35 4. Compressed gas containers, when not in use, and reserve containers, shall be properly
36 supported and stored in a location remote from torch operations. The valves of such
37 containers shall be closed and protected from mechanical damage by the placement of
38 protective caps. Empty containers shall be treated as full.
39
40 5. Torch operation areas shall be protected by a charged hose line, at least 1 inch (25 mm)
41 in diameter, connected to an approved source of water. In lieu of such hose line, at least
42 four portable fire extinguishers with a minimum 2-A rating each may be provided.
43
44 6. The torch operator or a person designated as a fire watch shall search the torch operation
45 area immediately after operations to determine that no sparks or molten metal remain in
46 the area. Additionally, a second such search shall be conducted ½ hour thereafter. A

1 record of such searches shall be maintained in a log book at the premises and made
2 available for inspection by any representative of the department.
3

4 **317.5.3 Draining of motor vehicle fluids.** The draining of fluids from motor vehicles shall be
5 in accordance with FC 317.5.3.1 and 317.5.3.2.
6

7 **317.5.3.1 Draining of motor vehicle fuel tanks.** As soon as practicable after arrival, the
8 fuel tank of motor vehicles received at salvage and wrecking facilities shall be defueled
9 through the vehicle's fuel connection, or other approved procedure. Defueling equipment
10 shall be listed for such purpose as a complete assembly and shall have a container capacity
11 not exceeding 65 gallons (246 L). The fuel recovered by the defueler shall be transferred
12 to a storage tank complying with the requirements of FC Chapter [22] 23 or [34] 57, as
13 applicable. Defueling equipment shall not be used to fuel motor vehicles.
14

15 **317.5.3.2 Draining of other motor vehicle fluids.** Crankcase oil and other flammable or
16 combustible liquid waste shall be removed from motor vehicles and stored outdoors, in
17 tanks complying with the requirements of FC Chapter [34] 57, or, when approved, portable
18 containers.
19

20 **317.5.4 Emergency operations.** In automotive salvage and wrecking facilities provided with
21 cranes for the purpose of moving or stacking motor vehicles, procedures shall be developed by
22 the owner such that a crane operator would be made available in a reasonable period of time
23 in the event that crane operation is required during a fire or other emergency.
24

25 **317.6 Excessive fires.** The occurrence of more than two fires in an automotive salvage and
26 wrecking facility during any 12-month period shall give rise to a rebuttable presumption that the
27 owner has failed to properly maintain the facility in compliance with the requirements of this
28 section, and shall be grounds for revocation of department permits and other approvals, or other
29 appropriate enforcement action.
30

31 **317.7 Air bags.** Undeployed waste air bags shall be stored and handled at automotive salvage and
32 wrecking facilities in accordance with the FC 317.7.1 through 317.7.3.
33

34 **317.7.1 Limitation on storage.** Not more than 250 undeployed waste air bags shall be stored
35 at an automotive salvage and wrecking facility unless the facility is an approved air bag waste
36 collection facility in accordance with EPA regulations and registered with the New York State
37 Department of Environmental Conservation.
38

39 **317.7.2 Storage of undeployed waste air bags.** No later than the end of each workday,
40 undeployed waste air bags shall be packaged for shipment and disposal in compliance with
41 DOTn regulations and stored in a cool, dry and secure area, free of oil, grease, detergent, or
42 water, at least 50 feet from any hot work area or other source of ignition. The air bag leads
43 shall be protected from stray current by shunting them and wrapping them in electrical tape or
44 by other approved method. Storage of more than 250 undeployed waste air bags shall require
45 that the automotive salvage and wrecking facility be an approved air bag waste collection
46 facility.
47

1 **317.7.3 Removal of undeployed waste air bags.** Undeployed waste air bags shall be disposed
2 of by a lawful waste hauler in accordance with EPA, DOTn and New York State Department
3 of Environmental Conservation regulations.
4

5 **SECTION FC 318**
6 **ROOFTOP GARDENS AND LANDSCAPING**
7

8 **318.1 General.** Rooftop gardens and landscaping, including living walls, shall be designed,
9 installed, operated and maintained in accordance with the construction codes, including the
10 Building Code and this section.
11

12 **318.2 Rooftop access and obstructions.** Rooftop gardens and landscaping subject to the rooftop
13 access and obstruction provisions of FC504.4 shall be designed and installed in compliance with
14 the requirements of that section.
15

16 **318.3 Maintenance of vegetation.** Rooftop gardens and landscaping shall be maintained in a
17 healthy condition and shall not be allowed to encroach upon areas required to be kept clear.
18 Vegetation shall be regularly pruned for these purposes and vegetation capable of being ignited
19 shall be regularly cleared and removed from the rooftop and the building.
20

21 **318.4 Maintenance equipment.** Portable fueled equipment, including flammable and combustible
22 liquid fuels, used for the maintenance of rooftop garden and landscaping vegetation shall be stored
23 in accordance with FC 313 and [3404.3.4.4] 5704.3.4.4.
24

25 **318.5 Water supply.** Rooftop gardens or landscaping exceeding 250 square feet (23 m²) shall be
26 provided with a rooftop garden hose connected to an approved water supply. Where the size of the
27 rooftop garden, extent of landscaping, type of vegetation, and/or premises maintenance history
28 warrant, the department may require installation of an irrigation system or other approved method
29 of hydration to ensure proper maintenance of the vegetation.
30

31 **SECTION FC 319**
32 **[MARINAS] RESERVED**
33

34 **[319.1 Scope.** This section shall govern the design, installation, operation and maintenance of
35 marinas mooring or storing more than five marine vessels or watercraft 65 feet (19 812 mm) or
36 less in length.
37

38 **319.2 General.** Marinas shall be designed, installed, operated and maintained in accordance with
39 the requirements of NFPA 303 and this section.
40

41 **319.3 Fire safety precautions.** Marinas shall comply with the fire safety precautions set forth in
42 NFPA 303 and this section.
43

44 **319.3.1 Combustible waste.** Marinas shall be kept free of accumulations of combustible waste
45 in accordance with FC304. Rubbish and other combustible waste shall not be allowed to
46 accumulate beneath marina structures, piers or wharves.
47

1 **319.3.2 Sources of ignition.** Open flames and open-flame devices shall not be used within 3
2 feet (914 mm) of combustible material. Open flames, open-flame devices and other sources of
3 ignition shall not be stored or used in the areas in which smoking is prohibited pursuant to
4 FC319.3.3. Portable electric lights approved for use in a hazardous location shall be used where
5 flammable vapors may be present, and shall be equipped with safety devices designed to
6 prevent physical damage to the bulbs.
7

8 **319.3.3 Smoking.** It shall be unlawful to smoke in the following areas of a marina, and any
9 other areas as the commissioner may proscribe by rule:
10

- 11 1. Where fuels are stored or dispensed.
- 12
- 13 2. Where flammable or combustible liquids are stored, handled or used.
- 14
- 15 3. Battery storage and battery charging areas.
- 16
- 17 4. Covered or enclosed boat storage areas.
- 18

19 **319.3.4 Lumber and other combustible material storage.** Lumber and other combustible
20 materials shall be stored in accordance with FC Chapter 19, at a location separate from the area
21 in which marine vessel construction or repair, marine vessel or watercraft fueling, or other
22 work involving the handling or use of flammable or combustible liquids or open flames is
23 conducted.
24

25 **319.4 Marina operations.** Marinas shall be operated in accordance with NFPA 303 and this
26 section.
27

28 **319.4.1 Storage.** Marine vessels and watercraft shall be stored in accordance with Chapter 7
29 of NFPA 303 and this section.
30

31 **319.4.1.1 Clearances.** No vessel or watercraft shall be stored closer than 3 feet (914 mm)
32 to any lot line, or closer than 3 feet (914 mm) horizontally from another vessel, unless
33 access for firefighting operations is provided in another approved manner.
34

35 **319.4.1.2 Combustible waste and cargo.** All combustible waste and cargo shall be
36 removed from vessels and watercraft in storage.
37

38 **319.4.1.3 Batteries and fuel.** Where practicable, batteries and all fuel shall be removed
39 from the vessel. Where removal of batteries is impracticable, precautions during charging
40 of batteries shall be taken in accordance with FC319.3. Where removal of fuel is
41 impracticable, all tank stop valves shall be closed and the tank inspected to ensure that
42 there are no leaks. Adequate ventilation shall be provided for hull and bilge areas.
43

44 **319.4.1.4 Covers.** Shrink-wrapped plastic or other material used to cover vessels in storage
45 shall be flame-resistant in accordance with FC Chapter 8 and the rules.
46

1 **319.4.2 Hot work operations.** Hot work operations and other use of open flames shall comply
2 with the requirements of FC Chapter 26 and this section. All flammable liquid, combustible
3 liquid or flammable gas, except the fuel in stationary storage tanks of vessels, shall be removed
4 from the vessel before any hot work is performed on the vessel. In addition, before hot work
5 is performed batteries and battery terminals shall be protected against accidental shorting or
6 sparking, or the batteries shall be removed. If hot work is to be conducted on a vessel's
7 stationary fuel tank or fuel piping, both the tank and the piping shall first be emptied and
8 purged. All areas of the vessel, including the bilge, shall be ventilated to eliminate any
9 flammable and combustible vapors before any hot work is commenced.

10
11 **319.4.3 Engine test stand fuel supply.** Engine test stands shall be supplied by a fuel storage
12 system complying with the requirements of FC Chapter 34. The fuel tank supplying the engine
13 test stand shall be installed outdoors, and the fuel tank and piping located a safe distance from
14 engine exhaust. The fuel piping shall be of steel construction and provided with an automatic
15 shutoff valve designed to shut off the fuel supply in the event of a fire.

16
17 **319.5 Flammable and combustible liquids and flammable gases.** The storage, handling and use
18 of flammable and combustible liquids and flammable gases shall be in accordance with
19 FC Chapters 34, 35 and 38 and this section.

20
21 **319.5.1 Marine liquid fuel dispensing.** Marine liquid motor fuel-dispensing facilities shall be
22 designed, installed, operated and maintained in accordance with FC Chapter 22.

23
24 **319.5.2 Use for cleaning.** Use of flammable and combustible liquids for cleaning purposes
25 shall be in accordance with FC3405.3.6.1.

26
27 **319.5.3 Storage arrangements.** Except when displayed for sale in sealed containers,
28 flammable and combustible liquids shall be stored in liquid storage cabinets, liquid storage
29 rooms or in approved underground storage systems. Such installations shall comply with the
30 requirements of FC Chapters 22 and 34.

31
32 **319.5.4 Quantity limitations when stored for sale.** Flammable and combustible liquids
33 displayed for sale in sealed containers shall comply with the requirements of FC Chapters 22
34 and 34, as applicable, except in no case shall the quantities displayed exceed 200 gallons (757
35 L).

36
37 **319.5.5 Flammable gases.** LPG on vessels used for residential purposes shall be stored,
38 handled and used in compliance with the requirements of FC Chapter 38 and the rules. CNG
39 on vessels used for residential purposes shall be stored, handled and used in compliance with
40 the requirements of FC Chapter 35 and the rules.

41
42 **319.6 Fire protection systems and equipment.** Marinas shall be equipped with fire protection
43 systems and equipment in accordance with this section.

44
45 **319.6.1 Standpipes.** If the furthest point of any pier or float exceeds 250 feet (76 200 mm)
46 from a fire apparatus-accessible location, the pier or float shall be equipped throughout with a
47 standpipe system in accordance with NFPA 303. Systems shall be provided with hose

1 connections located such that no point on the marina pier or float system exceeds 150 feet (45
2 720 mm) from a standpipe hose connection. Such system shall have a design capacity of 250
3 gallons per minute (946 L/min) and shall be provided with one or more fire department
4 connections at an approved location, and when required by the commissioner, to an approved
5 water supply. Standpipe hose connection locations shall be clearly identified by a flag or other
6 approved means designed to be readily visible from the pier accessing the float system.
7

8 **319.6.2 Yard hydrant system.** Fire apparatus-accessible locations as required by FC319.7.1
9 shall be within 250 feet (76 200 mm) of a fire hydrant or other approved water supply, and
10 shall be situated such that a hose stream from 250 feet (76 200 mm) of hose line stretched from
11 such location will reach all portions of the premises.
12

13 **319.6.3 Portable fire extinguishers.** One non-freezing type portable fire extinguisher of the
14 ordinary (moderate) hazard type shall be provided at each required standpipe hose connection.
15 Where there is no standpipe connection, one non-freezing type portable fire extinguisher with
16 at least a 2-A rating shall be provided for every 2,500 square feet (232 m²), or part thereof.
17 Additional portable fire extinguishers, suitable for the hazards involved, shall be provided and
18 maintained in accordance with FC906.
19

20 **319.7 Fire department access.** Fire apparatus access shall be provided to a marina facility as set
21 forth in Chapters 4 and 7 of NFPA 303, and FC 319.7.1 and 319.7.2.
22

23 **319.7.1 Access road.** A road capable of supporting a department firefighting apparatus, with
24 a width of not less than 20 feet (6096 mm) or a width as required by FC503, where applicable,
25 shall be provided from a public street to one or more fire apparatus-accessible locations on the
26 premises.
27

28 **319.7.2 Aisles.** Any outdoor area of the marina shall be accessible by fire apparatus on all four
29 sides, with a distance between the fire apparatus-accessible aisles of not more than 75 feet (22
30 860 mm). Such access aisles shall be kept unobstructed.
31

32 **319.7.3 Parking.** Motor vehicles shall not be parked on fire apparatus access roads or aisles,
33 unless approved.
34

35 **319.7.4 Slip identification.** Slips and other mooring spaces shall be individually identified by
36 a number and/or letter, which shall be conspicuously marked or posted. The direction to each
37 slip and mooring space shall be conspicuously marked or posted at the base of each pier, finger
38 pier, float and finger float.
39

40 **319.7.5 Fire department staging areas.** Staging areas for fire department access and
41 firefighting operations shall be provided on all floats. An area at least 4 feet wide by 10 feet
42 long (1219 mm by 3048 mm), exclusive of walkways, with a curb or barrier having a minimum
43 height of 4 inches (102 mm) shall be provided and maintained unobstructed at each standpipe
44 hose connection for this purpose. Each staging area shall be identified by a durable sign reading
45 "FIRE DEPARTMENT STAGING AREA—KEEP CLEAR."
46

47 **319.8 Emergency communications and preparedness.** Emergency communications and

1 emergency preparedness shall be in accordance with FC 319.8.1 and 319.8.2.
2

3 **319.8.1 Communications.** The marina shall be provided with a public address system or other
4 approved means of notifying occupants of a fire on the premises. A telephone not requiring a
5 coin to operate or another approved, clearly identified means to notify the department, shall be
6 provided on the premises in an approved location.
7

8 **319.8.2 Emergency preparedness.** Marina owners shall designate and train a fire brigade in
9 fire emergency procedures, including the sounding of an alarm, notification to the department,
10 and operation of fire protection systems and portable fire extinguishers. A chart designating
11 the members of the fire brigade and indicating each person's responsibilities shall be posted
12 on the premises in a conspicuous approved location.]
13

14 **SECTION FC 320**
15 **LAUNDRY CARTS**
16

17 **320.1 Laundry carts with a capacity of 1 cubic yard or more.** Laundry carts with an individual
18 capacity of 200 gallons (1 cubic yard or 0.76 m³) or more used for laundry purposes shall be
19 constructed of noncombustible materials or of materials having a peak rate of heat release not
20 exceeding 300 kW/m² at an incident heat flux of 50 kW/m² when tested in a horizontal orientation
21 in accordance with ASTM E 1354, and shall be listed and labeled as such.
22

23 **SECTION FC 321**
24 **FIXED GUIDEWAY TRANSIT**
25 **AND PASSENGER RAIL SYSTEMS**
26

27 **321.1 Scope.** This section shall govern the design, installation, operation and maintenance of
28 underground, open cut, surface and elevated fixed guideway transit and passenger rail systems.
29

30 **321.2 Design and installation.** The design and installation of fire safety and life safety systems
31 for fixed guideway transit and passenger rail systems, including emergency ventilation systems,
32 emergency voice communication systems, fire protection systems and means of egress, shall be in
33 accordance with NFPA 130 and all Annexes thereto, as modified by FC Appendix B; the Electrical
34 Code; the provisions of the construction codes applicable to fire safety and life safety systems; and
35 this section.
36

37 **321.2.1 Fire scenario design parameters.** Approved fire scenarios used for designing fixed
38 guideway transit and passenger rail systems shall be in accordance with Sections [4.6] 4.4 and
39 [A 4.6] A 4.4.2 of NFPA 130, as modified by FC Appendix B, and the following:
40

- 41 1. The worst case scenario, as set forth in NFPA 130, as modified by FC Appendix B, shall
42 be used for both the station and trainway designs.
43
- 44 2. Computational fluid dynamics analysis for the fire simulation shall be performed for an
45 approved period of time, both with and without mitigating systems, including but not
46 limited to ventilation and sprinkler protection.
47

-
-
3. The tenable condition parameters reported in the computational fluid dynamics analysis, including but not limited to heat, visibility and carbon monoxide, shall be precisely reported in the analysis.

1
2
3
4
5 **321.3 Operation and maintenance.** The operation and maintenance of fixed guideway transit and
6 passenger rail systems shall be in accordance with NFPA 130 and all Annexes thereto, as modified
7 by FC Appendix B.
8

9 **321.4 Construction site fire safety.** Construction operations of fixed guideway transit and
10 passenger rail systems, including stations and tunnels, shall be conducted in accordance with
11 Chapter 33 of the Building Code; this code, including FC Chapter [14] 33; and NFPA 130, as
12 modified by FC Appendix B. Approved fire extinguishing systems shall be provided for
13 construction shanties and construction storage facilities and areas.
14

15 **SECTION FC 322**
16 **ROAD TUNNELS, BRIDGES AND OTHER LIMITED ACCESS HIGHWAYS**
17

18 **322.1 Scope.** This section shall govern the design, installation, operation and maintenance of road
19 tunnels, bridges and other limited access highways used or designed to be used by motor vehicles.
20

21 **322.2 Design and installation.** The design and installation of fire safety and life safety systems
22 for road tunnels, bridges and other limited access highways, including emergency ventilation
23 systems, emergency voice communication systems, fire protection systems and means of egress,
24 shall be in accordance with NFPA 502, as modified by FC Appendix B; the Electrical Code; the
25 provisions of the construction codes applicable to fire safety and life safety systems; and this
26 section.
27

28 **322.2.1 Fire scenario design parameters.** Approved fire scenarios used for designing road
29 tunnels shall be in accordance with NFPA 502, as modified by FC Appendix B, and the
30 following:
31

- 32 1. The worst case scenario, as set forth in NFPA 502, as modified by FC Appendix B, shall
33 be used for designs.
34
- 35 2. Computational fluid dynamics analysis for the fire simulation shall be performed for an
36 approved period of time, both with and without mitigating systems, including but not
37 limited to ventilation and sprinkler protection.
38
- 39 3. The tenable condition parameters reported in the computational fluid dynamics analysis,
40 including but not limited to heat, visibility and carbon monoxide, shall be precisely
41 reported in the analysis.
42

43 **322.3 Operation and maintenance.** The operation and maintenance of road tunnels, bridges and
44 other limited access highways used or designed to be used by motor vehicles shall be in accordance
45 with NFPA 502, as modified by FC Appendix B.
46

1 **322.4 Construction site fire safety.** Construction operations of road tunnels, bridges and other
2 limited access highways shall be conducted in accordance with Chapter 33 of the Building Code;
3 this code, including FC Chapter [14] 33; and NFPA 502, as modified by FC Appendix B.
4 Approved fire extinguishing systems shall be provided for construction shanties and construction
5 storage facilities and areas.

6
7 **SECTION FC 323**
8 **WASTEWATER TREATMENT AND COLLECTION FACILITIES**
9

10 **323.1 Scope.** This section shall govern the design, installation, operation and maintenance of fire
11 protection systems and other fire safety measures at wastewater treatment and collection facilities.
12

13 **323.2 General.** Fire protection systems and other fire safety measures at wastewater treatment
14 facilities shall be designed, installed, operated and maintained in accordance with NFPA 820.
15

16 **SECTION FC 324**
17 **ELECTRIC GENERATING PLANTS**
18

19 **324.1 Scope.** This section shall govern the design, installation, operation and maintenance of fire
20 protection systems and other fire safety measures at electric generating plants.
21

22 **324.2 General.** Fire protection systems and other fire safety measures at electric generating plants
23 shall be designed, installed, operated and maintained in accordance with NFPA 850, except for
24 microturbine installations, which shall be designed, installed, operated and maintained in
25 accordance with [FC3510] FC5810.
26

27 **SECTION FC 325**
28 **PRODUCTION LOCATIONS**
29

30 **325.1 Scope.** This section shall govern the protection of fire safety at production locations used
31 for filming and rigging, except for soundstages, production studios and approved production
32 facilities, as those terms are defined in NFPA 140.
33

34 **325.2 General.** Production locations shall comply with the fire safety measures required by this
35 section and by NFPA 140, as applicable.
36

37 **325.3 Permits.** Permits shall be required as set forth in FC105.6.
38

39 **325.4 Interagency coordination.** The department shall develop and establish, in consultation with
40 the Mayor's Office of Film, Theatre and Broadcasting, or an officer, employee or unit of the
41 Department of Small Business Services as may be authorized to issue permits in accordance with
42 paragraph r of subdivision 1 of section 1301 of the charter or pursuant to its rules, and such other
43 agencies as the department determines to be necessary and appropriate, a protocol and other
44 processes to:
45

- 46 1. Provide to the department real-time access to information submitted to the Mayor's Office
47 of Film, Theatre and Broadcasting, or an officer, employee or unit of the Department of

1 Small Business Services as may be authorized to issue permits in accordance with
2 paragraph r of subdivision 1 of section 1301 of the charter or pursuant to its rules, in
3 connection with permit applications;

- 4
- 5 2. Provide notification to the local firehouse each time a permit for filming or rigging is issued
6 for activities that occur at a production location within the area of response for such
7 firehouse.
8
- 9 3. Enable the department to evaluate relevant fire safety considerations at production locations,
10 familiarize local firehouses or other members of the department with field conditions,
11 including alterations being performed at such locations, in advance of and during the course
12 of rigging and filming, and provide additional production location information in a timely
13 manner to firefighters and other emergency response personnel during fire and non-fire
14 emergencies; and
15
- 16 4. Coordinate approval of permit applications to allow the department to determine whether
17 any premises associated with the proposed production location is subject to any outstanding
18 department or Department of Buildings violation that the department determines constitutes
19 a life safety hazard sufficient to warrant denial of the application. The Mayor's Office of
20 Film, Theatre and Broadcasting, or an officer, employee or unit of the Department of Small
21 Business Services as may be authorized to issue permits in accordance with paragraph r of
22 subdivision 1 of section 1301 of the charter or pursuant to its rule, shall deny such permit
23 application when the department makes such a determination.
24

25 **325.5 Fire safety at production locations.** The department shall promulgate rules addressing fire
26 safety at production locations. Such rules shall establish fire safety standards, procedures and
27 requirements in consideration of such location's occupancy, construction and condition, including
28 factors such as whether means of egress are impeded and a working sprinkler system exists, and
29 the nature of the production activities to take place at such location, including set construction or
30 other alterations, and whether pyrotechnic or other special effects will be conducted. Such rules
31 may require the following fire safety measures:
32

- 33 1. The presence of one or more production location fire safety managers, to be designated by
34 the permit holder, during production activities determined by the department to require such
35 supervision. Production location fire safety managers shall have such qualifications and
36 duties as set forth in FC325.6 and the rules.
37
- 38 2. The presence of department representatives or standby fire apparatus during production
39 activities, as determined by the department.
40
- 41 3. Directing the cessation of filming activities when an unsafe condition arises that is
42 detrimental to fire safety, until such time as such condition is corrected.
43
- 44 4. Such other fire safety measures as the department may require.
45

46 **325.6 Production location fire safety manager.** When required by the rules, production locations
47 shall be under the personal supervision of one or more production location fire safety managers,

1 each of whom shall hold the required certificate of fitness. The permit holder shall designate such
2 production location fire safety managers before the commencement of the activity authorized by a
3 permit for rigging and shooting pursuant to 43 RCNY § 9-01.
4

5 **325.6.1 Fire safety manager duties.** The production location fire safety manager shall
6 have such duties and responsibilities as set forth in the rules, including but not limited to:
7

- 8 1. Ensuring compliance with the requirements of this code and other laws, rules and
9 regulations enforced by the department.
- 10 2. Personally inspecting and monitoring the production location, confirming that
11 permits or other required approvals have been obtained, and completing fire safety
12 surveys or other recordkeeping.
- 13 3. Notifying the permit holder of any conditions detrimental to fire safety in accordance
14 with the rules.

15
16
17
18 **325.7 Means of egress.** Means of egress shall be maintained free from obstruction at production
19 locations. Prior approval of the Department of Buildings and/or the department shall be obtained
20 in accordance with applicable laws, rules and regulations for any alteration or obstruction of the
21 means of egress.
22

23 **325.8 Housekeeping.** All production locations shall be maintained free of accumulation of
24 combustible waste in accordance with FC304.
25

26 **325.9 Portable fire extinguishers.** The permit holder responsible for a production location shall
27 provide one or more portable fire extinguishers when required by the rules.
28 (L.L. 2021/034, 3/28/2021, eff. 7/26/2021)
29

30
31 **CHAPTER 4**
32 **EMERGENCY PLANNING AND PREPAREDNESS**
33

34 **SECTION FC 401**
35 **GENERAL**
36

37 **401.1 Scope.** This chapter governs emergency reporting, planning and preparedness.
38

39 **401.2 Emergency reporting.**
40

41 **401.2.1 Reporting to department.** Any owner, occupant or other person who becomes aware
42 of a fire or explosion or any other emergency shall immediately report such emergency to the
43 department. No owner or other person shall issue any directive or take any action to prevent or
44 delay the reporting of a fire or other emergency to the department.
45

46 **401.2.2 Signage.** A durable, legible sign setting forth the following information for reporting
47 a fire or other emergency (including the text to be inserted based on the building's location)

1 shall be posted in a conspicuous location in the lobby of the main front entrance of a Group A,
2 B, E, F, I, M and R-1 building:

3
4 Fire alarm box at _____ and _____
5 (Name of street) (Name of street)
6 or
7

8 To report a fire or other emergency by telephone dial ["911" or, depending upon the borough
9 in which the property is located, insert one of the following telephone numbers:

10
11 Bronx properties (718) 430-0200
12 Brooklyn properties (718) 965-8300
13 Manhattan properties (212) 570-4300
14 Queens properties (718) 476-6200
15 Staten Island properties (718) 494-4296
16

17 "911." Such sign may include, in buildings or occupancies with a designated telephone number
18 for reporting of emergencies occurring in or affecting the building or occupancy, such
19 telephone number, provided that such signage states that the fire and emergency first be
20 reported to "911."

21
22 **Exception:** Buildings exempt from such sign requirement as set forth in the rules.
23

24 **401.3 Emergency preparedness plans.** The emergency preparedness plans required by this
25 chapter shall serve to assure that procedures are in place that can be timely implemented in the
26 event of a fire or non-fire emergency to provide the information, guidance, direction and assistance
27 needed to protect the safety of building occupants, including, if necessary, effecting their
28 evacuation, relocation or sheltering in place. Such emergency preparedness plans shall further
29 serve to assure that knowledgeable assistance is readily available on the premises to emergency
30 response personnel responding to a fire or non-fire emergency at the premises.
31

32 **401.3.1 General.** The owner of any premises required by this chapter to have an emergency
33 preparedness plan shall cause such plan to be prepared for such premises in the form prescribed
34 by the commissioner, and periodically reviewed and amended, in accordance with this section
35 and the rules. The commissioner may prescribe by rule the qualifications of the person
36 preparing such plans.
37

38 **401.3.2 Types of emergency preparedness plans.** This chapter establishes the following three
39 types of emergency preparedness plans, which reflect the use, size, complexity and risk
40 vulnerability of the building or occupancy; the presence of building staff and/or other building
41 occupants capable of implementing such plan; the availability of voice communication
42 capability; and other considerations:
43

44 1. Level 1: comprehensive fire safety/emergency action plan (FC401.4).

45
46 2. Level 2: fire and emergency preparedness plan (FC401.5).
47

1 3. Level 3: fire and emergency preparedness guide and notices (FC401.6).
2

3 **401.3.2.1 Multi-building campus plans.** The fire commissioner may approve a
4 multi-building campus emergency preparedness plan, including specific minimum staffing
5 qualifications and levels, for educational and health care occupancies subject to FC408,
6 410 and/or FC413, with certain specified emergency preparedness functions performed by
7 staff assigned to multiple campus buildings. Such multi-building campuses shall consist of
8 a single block, contiguous blocks or other approved geographic area, or a series of
9 physically interconnected buildings.
10

11 **401.3.3 Maintenance on premises.** A copy of the emergency preparedness plan shall be
12 maintained at the premises for which such plan is required and kept readily available for
13 inspection at all times. The department may require that the emergency preparedness plan be
14 maintained at an approved location on the premises in an approved first responder box secured
15 by a citywide standard key to ensure availability of the plan at all times.
16

17 **401.3.4 Building information card and floor plans.** In buildings or occupancies required to
18 prepare a comprehensive fire safety and emergency action plan, and in high-rise buildings and
19 large-area buildings required to prepare a fire and emergency preparedness plan, or such other
20 building or occupancy as required by this chapter or the rules, a building information card
21 depicting and/or setting forth the fire safety information prescribed by the commissioner by
22 rule shall be maintained on the premises and submitted or otherwise made available to the
23 department as set forth in the rules. An amended building information card shall be submitted
24 for department review and approval as set forth in the rules. When required by this code or
25 rule, building floor plans [for any such building or occupancy] shall be submitted to the
26 [Department] department in an approved manner.
27

28 **401.3.5 Periodic review and revision.** Emergency preparedness plans and building
29 information cards shall be reviewed and updated as necessitated by changes in staff
30 assignments, use or occupancy, or the design and arrangement of the premises, but at least
31 annually. An entry shall be made in the log book required by FC401.8 documenting such
32 review, and indicating the general nature of any amendments to be made to such plan.
33 Submission of an amended emergency preparedness plan shall not be required solely by reason
34 of staffing changes or revisions to the building information card. Fire and emergency
35 preparedness guides and notices shall be reviewed prior to each distribution required by this
36 code or the rules, and shall be revised within 60 days of any change in building construction
37 or service equipment materially affecting the content of such guide or notice.
38

39 **401.3.6 Applicability to existing buildings and occupancies.** The preparation of an
40 emergency preparedness plan shall constitute an operational requirement. Except as otherwise
41 provided in this section, owners of buildings and occupancies required by this chapter to have
42 a comprehensive fire safety and emergency action plan shall have 24 months from the
43 promulgation of rules implementing such emergency preparedness plan provisions of this
44 chapter to prepare such plan and submit it to the department for acceptance. Owners of
45 buildings and occupancies required by this chapter to have any other emergency preparedness
46 plan shall have 18 months from the promulgation of rules implementing such emergency

1 preparedness plan provisions of this chapter to prepare such plan and, if required by this
2 chapter, submit it to the department for acceptance.
3

4 **401.3.6.1 New and existing buildings and occupancies.** Until rules implementing the
5 emergency preparedness plan provisions of this chapter take effect, buildings and
6 occupancies required to prepare an emergency preparedness plan under this code shall
7 comply with the emergency preparedness plan requirements set forth in the Fire Code and
8 rules in effect on the date prior to the effective date of this section.
9

10 **[401.3.6.2 Updating of existing fire safety and evacuation plans.** Any owner of a Group
11 B office building existing on the effective date of this section that is required by this chapter
12 to have a comprehensive fire safety and emergency action (Level 1) plan and:
13

14 1. for which building a fire safety and evacuation plan was submitted and approved by
15 the Department prior to January 1, 2000, and has not been comprehensively amended
16 since January 1, 2011, shall prepare and submit for department approval within 3
17 years of the effective date of this section a comprehensive fire safety and emergency
18 action (Level 1) plan complying with the requirements of this chapter and the rules.
19 This provision shall not be construed to extend the time for compliance with
20 provisions of this chapter requiring the preparation and periodic review and revision
21 of such plans.
22

23 2. for which building a fire safety and evacuation plan was submitted and approved by
24 the Department on or after January 1, 2000, but prior to January 1, 2011, and has not
25 been comprehensively amended since January 1, 2011, shall prepare and submit for
26 department approval within 5 years of the effective date of this section a
27 comprehensive fire safety and emergency action (Level 1) plan complying with the
28 requirements of this chapter and the rules. This provision shall not be construed to
29 extend the time for compliance with provisions of this chapter requiring the
30 preparation and periodic review and revision of such plans.]
31

32 **401.3.7 Existing emergency preparedness staffing.** Any building or occupancy that prior to
33 [the effective date of this section] March 30, 2014, obtained department approval of the
34 voluntary installation of a fire alarm system with [two-way voice communication] a staged
35 evacuation sequence and was required to provide a fire safety director or other specified
36 emergency preparedness staffing shall [maintain such staffing unless a higher level of staffing
37 is required by this chapter] provide staffing in accordance with this chapter and the rules.
38

39 **401.3.8 Cooperation.** All owners, employers of building occupants (including lessees of
40 tenant spaces and similar occupancies) and building occupants shall cooperate in the
41 development and coordination of emergency preparedness plans, including designation of
42 building occupants to assist in the implementation of such plan.
43

44 **401.4 Comprehensive fire safety/emergency action plan (Level 1).** Level 1 plans and staffing
45 shall be in accordance with FC 401.4.1 through 401.4.5, the provision of the FC 404 through 415,
46 as applicable, and the rules.
47

1 **401.4.1 General.** The commissioner shall promulgate rules establishing standards, procedures
2 and requirements for a written comprehensive fire safety and emergency action plan that
3 addresses the safety of occupants of premises in the event of a fire, explosion, biological,
4 chemical or nuclear incident or release, natural disaster, or other emergency, or the threat
5 thereof, or a declaration of emergency by a lawful authority, and for the coordination of the
6 emergency response to a medical emergency at the premises.
7

8 **401.4.2 Form.** The rules shall specify the form of the comprehensive fire safety and emergency
9 action plan and supporting documentation.
10

11 **401.4.3 Content.** The rules shall specify the information to be contained in the comprehensive
12 fire safety and emergency action plan, which shall include the following information and
13 documentation, and/or such other information and documentation as the commissioner may
14 prescribe:
15

- 16 1. The designation of an FLS director and other FLS staff, and their respective duties and
17 responsibilities, including FLS staff responsible for the operation of building elevators,
18 fire protection systems, mechanical ventilation systems, building utilities, and other
19 building service equipment.
20
- 21 2. The procedures for reporting a fire or other emergency to the department, including the
22 primary and alternative means of such reporting.
23
- 24 3. The procedures for coordinating with firefighting, emergency medical service and
25 other emergency response personnel, including notifying such personnel upon arrival
26 of the location of the emergency and the response thereto.
27
- 28 4. The means provided for receiving and monitoring public emergency notification
29 systems in accordance with FC401.9.
30
- 31 5. The procedures for notifying building occupants of a fire or other emergency,
32 including the primary and alternative means of such notification, the alarm or tone
33 sounded to alert building occupants, and the information communicated to building
34 occupants.
35
- 36 6. The actions to be taken in response to a fire and each type of non-fire emergency, and
37 whether the response will require the sheltering in place, in-building relocation, partial
38 or full evacuation of building occupants, or combination thereof, and the procedures
39 for each such response.
40
- 41 7. The procedures for accounting for building occupants after such occupants have been
42 in-building relocated, or partially or fully evacuated to a safe area.
43
- 44 8. The procedures for identifying any persons on the premises who are qualified and willing
45 to provide cardio-pulmonary resuscitation or other emergency medical care to building
46 occupants upon notification by the FLS director.
47

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- 9. Site plans indicating the following:
 - 9.1. Surrounding buildings and streets, including cross streets, and fire apparatus access roads.
 - 9.2. The location of building occupant assembly areas.
- 10. A written description of the following building components and service equipment and their location, as applicable:
 - 10.1. Access to and egress from the building, including entrances and exits.
 - 10.2. Corridors and exit passageways providing access to exit stairwells or exit discharges.
 - 10.3. Stairwells with letter designation.
 - 10.4. Access and convenience stairs.
 - 10.5. Elevators, with bank letter and car number designations.
 - 10.6. Fire command center.
 - 10.7. Floor warden and firefighter telephones.
 - 10.8. Manual fire alarm boxes.
 - 10.9. Fire department connections, and sprinkler and standpipe system control valves.
 - 10.10. Areas of the building not protected by a sprinkler system.
 - 10.11. Emergency power generators and associated fuel storage.
 - 10.12. Evacuation and in-building relocation routes.
 - 10.13. Areas of refuge and in-building relocation areas.
 - 10.14. Any evacuation assistance devices.
 - 10.15. Automatic external defibrillators required by law to be maintained for public use.
- 11. Sprinkler system and standpipe system riser diagrams, identifying the locations of the following, as applicable:
 - 11.1. Water supply.

1 11.2. Fire department connections.

2
3 11.3. Gravity and pressure tanks.

4
5 11.4. Fire pumps.

6
7 11.5. Water supply control valves.

8
9 11.6. Piping, except branch sprinkler piping.

10
11 12. Locations of hazardous material storage in quantities requiring a permit, and
12 hazardous material operations and facilities regulated by this code.

13
14 13. Procedures for identifying in advance building occupants who require assistance to
15 participate in the plan because of an infirmity or disability or other special need, and
16 approved procedures for providing for such assistance.

17
18 14. A fire safety maintenance program.

19
20 15. A building information card in accordance with FC401.3.4.

21
22 **401.4.4 Submission and acceptance.** Every comprehensive fire safety and emergency action
23 plan shall be submitted to the department for acceptance in the manner prescribed by the
24 department. Acceptance of such plans shall be obtained prior to occupancy of the building or
25 occupancy.

26
27 **401.4.5 Fire and life safety staff.** The owner of any premises required by this chapter to have
28 a comprehensive fire safety and emergency action plan shall designate competent persons to
29 act as FLS staff, including a person designated to serve as FLS director. The owner shall
30 employ or otherwise retain sufficient FLS staff to implement such plan during regular business
31 hours and to otherwise comply with the requirements of this chapter and the rules. The persons
32 designated as FLS staff shall possess such qualifications and/or hold such certificates of fitness
33 as are required by this chapter or the rules.

34
35 **401.4.5.1 Fire and life safety director.** The comprehensive fire safety and emergency
36 action plan shall designate an FLS director and deputy FLS directors who shall hold an
37 FLS director certificate of fitness. The FLS director shall have the following duties and
38 responsibilities and such other duties and responsibilities as the commissioner may
39 prescribe by rule:

40
41 1. The FLS director shall be present in the building at all times during regular business
42 hours. When the FLS director is absent during regular business hours, a deputy FLS
43 director shall be present in the building and shall perform the duties of the FLS
44 director. When a building other than a Group R-1 transient residential building or
45 occupancy is occupied, but the number of building occupants falls below the level
46 requiring the presence of an FLS director, the FLS building evacuation supervisor
47 may perform the duties of the FLS director. The FLS director shall endeavor to ensure

1 that adequate FLS staff is present during regular business hours, and, in the absence
 2 of designated staff, shall designate interim FLS staff.
 3

4 2. In the event of a fire, a medical emergency or other non-fire emergency in the
 5 building, the FLS director shall report to the fire command center or designated
 6 alternative location; implement such fire safety and/or non-fire emergency actions as
 7 are warranted by the circumstances, in accordance with the provisions of the
 8 comprehensive fire safety and emergency action plan, this code and the rules; notify
 9 arriving emergency response personnel of the nature of the emergency and the
 10 response thereto; and comply with the directions of the emergency response
 11 personnel and/or other lawful authority.
 12

13 3. The FLS director designated shall be fully familiar with the provisions of the
 14 comprehensive fire safety and emergency action plan and shall conduct the FLS staff
 15 training and fire and non-fire emergency drills required by FC 401.4.5.2 and 401.7.
 16

17 **Exception:** FLS staff training and fire and non-fire emergency drills may be
 18 conducted by a person holding a certificate of fitness as FEP coordinator or fire
 19 drill conductor under the personal supervision of the FLS director.
 20

21 **401.4.5.2 Training.** FLS staff shall be trained in the performance of their duties in
 22 accordance with the comprehensive fire safety and emergency action plan.
 23

24 **401.4.5.2.1 Initial training.** FLS staff shall receive initial training in the contents of
 25 the comprehensive fire safety and emergency action plan upon their designation as FLS
 26 staff. Such training shall familiarize them with:
 27

- 28 1. their duties in the event that it is necessary to implement fire safety or non-fire
 29 emergency actions in accordance with such plan; and
- 30 2. appropriate fire prevention measures for the occupancy.
 31

32
 33 **401.4.5.2.2 Refresher training.** With the exception of the FLS director, FLS staff shall
 34 receive, and participate in, periodic refresher training to maintain their state of
 35 readiness.
 36

37 **401.4.5.2.3 Duration and frequency of training.** The duration and frequency of initial
 38 and refresher training of FLS staff shall be in accordance with FC Table 401.4.5.2.3.
 39
 40
 41

**FC TABLE 401.4.5.2.3
 FLS STAFF TRAINING**

FLS STAFF MEMBER	INITIAL TRAINING DURATION		REFRESHER TRAINING DURATION AND FREQUENCY	
	FIRE SAFETY	NON-FIRE EMERGENCY	FIRE SAFETY	NON-FIRE EMERGENCY
Deputy FLS directors (all occupancies)	Not applicable	Not applicable	1 hour annually	1 hour semiannually
FLS building evacuation supervisors	2 hours	3 hours	1 hour annually	1 hour semiannually
All other FLS staff	1 hour	2 hours	1 hour annually	1 hour annually

1 **401.4.5.2.4 Training methods.** FLS staff training sessions shall be provided in the
2 form of live instruction and, if desired, computerized training. At least one-half (1/2) of
3 the FLS staff training sessions required each year shall be in the form of live instruction,
4 which may incorporate video presentations and/or review of other educational
5 materials. The balance of the required training sessions may be conducted in the form
6 of approved computerized training, without live instruction, provided that such
7 computerized training is interactive, and includes an evaluation of the FLS staff
8 members' understanding of the training materials.

9
10 **401.4.5.2.5 Recordkeeping.** A written record of FLS staff training shall be maintained
11 in the log book required by FC401.8. An entry shall be made in such log book for each
12 training session conducted.

13
14 **401.5 Fire and emergency preparedness plan (Level 2).** Level 2 plans and staffing shall be in
15 accordance with FC 401.5.1 through 401.5.5, the provisions of FC 404 through 415, as applicable,
16 and the rules.

17
18 **401.5.1 General.** The commissioner shall promulgate rules establishing standards, procedures
19 and requirements for a written fire and emergency preparedness plan that provides for fire
20 safety and non-fire emergency preparedness in buildings or occupancies of a lesser size,
21 complexity, and/or risk vulnerability than those requiring a comprehensive fire safety and
22 emergency action plan, and for the coordination of the emergency response to a medical
23 emergency at the premises.

24
25 **401.5.2 Form.** Fire and emergency preparedness plans shall have a simplified, standardized
26 format that allows for completion by persons without specialized qualifications. The rules
27 promulgated by the commissioner shall specify the form of such plans and any supporting
28 documentation.

29
30 **401.5.3 Content.** The rules promulgated by the commissioner shall specify the information to
31 be contained in the fire and emergency preparedness plan, which shall include the following
32 information and documentation, and/or such other information and documentation as the
33 commissioner may prescribe:

- 34
35 1. The designation of the FEP coordinator, by name, certificate number and position at
36 the premises, and other FEP staff, by name and/or position at the premises, and
37 certificate number, if required.
- 38
39 2. The procedure by which a fire or other emergency is reported to the department, and
40 the FEP staff responsible for ensuring such reporting.
- 41
42 3. The procedure for notifying building occupants of a fire or other emergency, and the
43 FEP staff responsible for ensuring such notification.
- 44
45 4. The procedure for coordinating with firefighting, emergency medical service and other
46 emergency response personnel, including notifying such personnel upon arrival of the

1 location of the emergency and the response thereto, and the FEP staff responsible for
2 such coordination.

3
4 5. The procedure for monitoring a public emergency notification system in accordance
5 with FC401.9.

6
7 6. Procedures for identifying and assisting building occupants who require assistance
8 because of an infirmity, disability or other special need.

9
10 7. Identification of fire prevention measures appropriate to the occupancy, to be included
11 in staff training and drills, and the FEP staff or building staff responsible for addressing
12 any unsafe conditions, including:

13
14 7.1. Unobstructed and unimpeded access to means of egress.

15
16 7.2. Proper storage and removal of combustible materials and combustible waste on
17 the premises.

18
19 7.3. Maintenance of decorative vegetation.

20
21 7.4. Proper use of extension cords, outlets and electrical equipment.

22
23 7.5 Maintenance of sprinkler head clearances.

24
25 7.6 Posting and maintenance of “No Smoking” signs required by this code.

26
27 8. The procedure for the ongoing monitoring of the premises during regular business
28 hours to verify compliance with the following requirements, and the FEP staff
29 responsible for such monitoring:

30
31 8.1. Access to the means of egress is unobstructed and unimpeded.

32
33 8.2. The premises does not become overcrowded.

34
35 8.3. Allowable use of open flames and open-flame devices is being conducted
36 properly and safely.

37
38 8.4. The prohibition against smoking, where required by this code or the rules, is
39 being observed.

40
41 **401.5.4 Submission and acceptance.** [Fire] Except as otherwise provided in FC401.5.4.1, fire
42 and emergency preparedness plans prepared for a high-rise building or a large-area building
43 shall be submitted for department acceptance, prior to occupancy of the building or occupancy,
44 in the manner prescribed by the department. All other fire and emergency preparedness plans
45 shall be maintained on the premises and made available for review by a department
46 representative. If such plan is unavailable or determined to be deficient, the department may
47 order that a plan prepared in compliance with this chapter and the rules be submitted to the

1 department for acceptance. [Nothing contained herein shall preclude the department from
2 establishing by rule a procedure for the on-line preparation and filing of all fire and emergency
3 preparedness plans required pursuant to this chapter.]
4

5 **401.5.4.1 Submission of plans not required.** Fire and emergency preparedness plans
6 prepared for a high-rise building or a large-area building are not required to be submitted
7 for department acceptance in the following circumstances:
8

9 1. High-rise buildings and large-area buildings with a fire alarm that is programmed for
10 full, not staged, evacuation;
11

12 2. Low-rise, large-area Group I-1 buildings; and
13

14 3. Low-rise Group R-1 dormitories and low-rise Group R-2 student apartments, with
15 more than fifty rooms above street level (which are treated as large-area buildings by
16 the Building Code).
17

18 **401.5.4.2 Electronic filing of plans.** The following emergency preparedness plans and,
19 when required, building information cards, building floor plans and other supporting
20 documentation, shall be electronically filed with the department for review and approval
21 in the manner prescribed by the department:
22

23 1. Comprehensive fire safety/emergency action (Level 1) plans.
24

25 2. Fire and emergency preparedness (Level 2) plans, when filing is required by the code
26 or rules or ordered by the department for enforcement purposes.
27

28 **401.5.5 Fire and emergency preparedness staff.** The owner of any premises required by this
29 chapter to have a fire and emergency preparedness plan shall designate competent persons to
30 act as FEP staff, including a person designated to serve as the FEP coordinator pursuant to
31 FC401.5.5.1. An owner of such a premises shall not be required to employ or otherwise retain
32 staff solely for purposes of complying with the requirements of this chapter, but shall designate
33 persons employed or otherwise working at the premises to serve as FEP staff and assign them
34 the duties and responsibilities necessary to implement the fire and emergency preparedness
35 plan and otherwise comply with the requirements of this chapter and the rules.
36

37 **401.5.5.1 Fire/emergency preparedness coordinator.** A manager or other responsible
38 FEP staff member employed at the premises shall be designated in the fire and emergency
39 preparedness plan as the FEP coordinator and shall hold an FEP coordinator certificate of
40 fitness. A person holding a certificate of fitness as an FLS director may serve as the FEP
41 coordinator without obtaining a separate certificate of fitness. The FEP coordinator shall
42 have the following duties and responsibilities and such other duties and responsibilities as
43 the commissioner may prescribe by rule:
44

1 1. The FEP coordinator shall be fully familiar with the provisions of the fire and
2 emergency preparedness plan and shall conduct the FEP staff training and fire and
3 non-fire emergency drills required by FC 401.5.5.2 and 401.7.
4

5 **Exception:** FEP staff training and fire and non-fire emergency drills may be
6 conducted by a person holding a certificate of fitness as fire drill conductor under
7 the general supervision of the FEP coordinator.
8

9 2. The FEP coordinator need not be personally present on the premises during regular
10 business hours, but shall be responsible for overseeing and monitoring the
11 performance of the duties and responsibilities of the FEP staff set forth in the fire and
12 emergency preparedness plan.
13

14 3. The FEP coordinator shall endeavor to ensure that adequate FEP staff is present
15 during regular business hours, and, in the absence of designated FEP staff, shall
16 designate interim FEP staff.
17

18 **401.5.5.2 Training.** FEP staff shall be trained in the performance of their duties in
19 accordance with the fire and emergency preparedness plan.
20

21 **401.5.5.2.1 Initial training.** FEP staff shall receive 1 hour of initial training in the fire
22 and emergency preparedness plan upon their designation as FEP staff. Such training
23 shall familiarize them with:
24

25 1. their duties in the event the fire and emergency preparedness plan is
26 implemented; and
27

28 2. appropriate fire prevention measures for the occupancy.
29

30 **401.5.5.2.2 Refresher training.** With the exception of the FEP coordinator, FEP staff
31 shall receive 30-minutes quarterly refresher training.
32

33 **401.5.5.2.3 Training methods.** FEP staff training shall be provided in the manner set
34 forth in FC401.4.5.2.4.
35

36 **401.5.5.2.4 Recordkeeping.** A written record of FEP staff training shall be maintained
37 in the log book required by FC401.8. An entry shall be made in such log book for each
38 training session conducted.
39

40 **401.6 Fire and emergency preparedness guide and notices (Level 3).** Level 3 guides and notices
41 shall be in accordance with FC 401.6.1 through 401.6.5, and the rules.
42

43 **401.6.1 General.** The commissioner shall promulgate rules establishing standards, procedures
44 and requirements for a:
45

- 1 1. fire and emergency preparedness guide that serves to inform building occupants and
2 building staff about the building, fire prevention measures and fire and non-fire
3 emergency preparedness; and/or
4
- 5 2. fire and non-fire emergency notices that serve to inform building occupants, building
6 staff and visitors as to whether to shelter in place or evacuate the building, and other
7 procedures to be followed in the event of a fire or non-fire emergency.
8

9 **401.6.2 Form.** The fire and emergency preparedness guide and notices shall be in such form
10 as prescribed by the commissioner by rule.
11

12 **401.6.3 Content.** The rules promulgated by the commissioner shall specify the information to
13 be contained in the fire and emergency preparedness guide and notices, which shall include the
14 following information, and/or such other information and documentation as the commissioner
15 may prescribe:
16

17 1. Fire and Emergency Preparedness Guide.
18

19 1.1. Construction type.
20

21 1.2. Fire protection systems.
22

23 1.3. Voice communication systems.
24

25 1.4. Means of egress.
26

27 1.5. Guidance with respect to sheltering in place, evacuation and other procedures to
28 be followed in the event of fire or non-fire emergency.
29

30 1.6. Lessons learned from fires in similar occupancies.
31

32 1.7. Medical emergencies.
33

34 2. Fire and Emergency Preparedness Notices.
35

36 2.1. Construction type.
37

38 2.2. Guidance with respect to sheltering in place, evacuation and other procedures to
39 be followed in the event of fire or non-fire emergency.
40

41 **401.6.4 Distribution and posting.** The fire and emergency preparedness guide shall be
42 distributed to building occupants and building service employees as set forth in the rules. The
43 fire and emergency preparedness [guide] notice shall be posted within each dwelling unit and
44 at such other locations as set forth in the rules.
45

46 **401.6.5 Occupancy-specific requirements.** The form, content, distribution and posting of the
47 fire and emergency preparedness guide and notices may vary by occupancy. Occupancies

1 required to prepare a fire and emergency preparedness guide and/or notices shall be as set forth
2 in this chapter or the rules.
3

4 **401.7 Drills and education for fire and non-fire emergencies.** Separate [Fire] fire and non-fire
5 emergency drills and education shall be conducted, in the manner prescribed in this section and
6 the rules, and with the frequency set forth in FC Table 401.7.6, in buildings and occupancies
7 required to have an emergency preparedness plan pursuant to this chapter[, except Group R-2
8 apartment buildings and occupancies,] and in such other buildings and occupancies as provided in
9 this chapter. Group R-2 apartment buildings and occupancies are not required to conduct drills,
10 except in high-rise megastructures and student apartment buildings.

11
12 **401.7.1 Content.** Drills and other forms of education shall be conducted to enhance the fire
13 and non-fire emergency preparedness of building occupants, including building staff and
14 employees of building tenants. Drills shall serve to familiarize building occupants as to the
15 proper actions to take in the event of a fire or other emergency, the primary and secondary
16 evacuation and in-building relocation routes, and fire prevention measures appropriate to the
17 occupancy. The commissioner shall promulgate rules prescribing standards, procedures and
18 requirements for the conduct of fire and non-fire emergency drills and educational sessions,
19 including their subject matter and duration. Drills shall be in the form of live instruction, except
20 as authorized by the rules.
21

22 **401.7.2 [Combined drills and education.** A single drill or educational session shall address
23 both fire and non-fire emergency preparedness. All drills and educational sessions shall make
24 mention that different directions may be given to building occupants depending upon whether
25 there is a fire or other emergency, and the nature of the non-fire emergency.] Reserved.
26

27 **401.7.3 Timing.** Drills shall be scheduled in a manner that best assures the participation of
28 regular building occupants. Drills may be conducted on different work shifts and/or during
29 non-business hours to facilitate the participation of building occupants.
30

31 **401.7.4 Participation in drills and education.** Except as otherwise provided in this chapter,
32 all building occupants in the building or occupancy, or part thereof, wherein a fire and non-fire
33 emergency drill or educational activity is being conducted, shall participate in such drill or
34 educational activity, including building staff and FLS or FEP staff with responsibility for such
35 building or occupancy, or part thereof. Owners and employers of building occupants, including
36 lessees of tenant spaces and similar occupancies, shall require such participation.
37

38 **401.7.5 Alarm activation.** The fire alarm system shall be activated each time a fire drill or
39 non-fire emergency drill is conducted to initiate the drill and familiarize building occupants
40 with the alarm tones. Nothing in this code shall be construed to prohibit the activation of the
41 fire alarm signal for the purposes of conducting a fire drill or a non-fire emergency drill.
42

43 **Exception:** In buildings or occupancies in which all building occupants are not required
44 by this code to participate in the drill, the fire alarm system need not be activated to initiate
45 the drill, provided that, in accordance with the rules, another means is employed to
46 familiarize those building occupants participating in the drill with the fire alarm tones that
47 would be sounded in the event of an actual emergency.

1
2 **401.7.6 Frequency.** The frequency of each required [combined] fire drill and each required
3 non-fire emergency [drills] drill, for each type of occupancy, shall be in accordance with
4 FC Table 401.7.6.

5
6
7
FC TABLE 401.7.6
DRILL PARTICIPATION AND FREQUENCY

TYPE OF BUILDING OR OCCUPANCY	REQUIRED PARTICIPATION	FREQUENCY
Group A	Regular building occupants. Participation of patrons, guests and visitors not required.	Semiannually
Group M		
Group R-1, except homeless shelters and dormitories ^a	All building occupants	Monthly
Group R-1 homeless shelters and emergency shelters	All building occupants	Semiannually
Group B office ^a	All building occupants	In accordance with New York State Education Law
Group B colleges and universities		
Group E educational		
Group R-1 dormitory <u>and</u> Group R-2 student apartment buildings		
Group R-2 high-rise megastructures	All building occupants	Semi-annually
Group E day care facilities	All building occupants	Monthly
Group F	All building occupants	Monthly
Group H	All building occupants	Semiannually
Group I-1	All building occupants	Bimonthly ^b
Group I-2	Regular building occupants. Participation of patients and visitors not required.	Semiannually
Group S	Regular building occupants. Participation of visitors not required.	Semiannually

8 a. In the 2 years following acceptance of a comprehensive fire safety and emergency action plan, drills shall be conducted quarterly.

9 b. In the first year of occupancy of an I-1 building or occupancy, drills shall be conducted monthly.

10
11 **401.7.7 Non-fire emergency education.** When required by this chapter, building occupants
12 shall receive non-fire emergency education. In buildings and occupancies in which non-fire
13 emergency drills are not conducted, such education shall consist of the distribution of
14 educational materials explaining the different types of non-fire emergencies and the types of
15 responses to such emergencies, including sheltering in place, relocating within the building, or
16 evacuating the building. Such materials shall be distributed to building staff and employees of
17 building tenants prior to their commencing work at the premises.

18
19 **401.7.8 Recordkeeping.** Drills and education shall be documented by entries in the logbook
20 required to be maintained in accordance with FC401.8.

21
22 **401.8 Emergency preparedness recordkeeping.** Buildings and occupancies required to have an
23 emergency preparedness plan pursuant to this chapter, except buildings and occupancies required
24 to prepare a fire and emergency guide and notice, shall maintain a log book in accordance with
25 this section.

26
27 **401.8.1 General.** A log book or other approved system of recordkeeping shall be maintained
28 for purposes of documenting emergency preparedness.
29

1 **401.8.2 Format.** A bound log book with consecutive numbered pages, an approved electronic
2 format, or other approved form of recordkeeping, shall be maintained in accordance with the
3 requirements of FC107.7.
4

5 **401.8.3 Entries.** Entries shall be made in the log book to document drills, education, staff
6 training, plan review and amendment, plan implementation and/or such other information as
7 the commissioner may require by rule.
8

9 **401.9 Access to public emergency notification systems.** While performing the duties of such
10 position, FLS directors and FEP coordinators shall have access to NYC Notify, CorpNet or such
11 other approved public emergency notification system providing notice of New York City
12 emergencies as the commissioner may prescribe by rule. Such access may be by means of any
13 portable or desktop device readily available for use on the premises under their supervision. The
14 commissioner may prescribe by rule buildings and occupancies in which FLS directors and FEP
15 coordinators shall have access to a public emergency notification system.
16

17 **401.10 Periodic inspection.** Any building, occupancy, or part thereof required to have a
18 comprehensive fire safety and emergency action plan, fire and emergency preparedness plan,
19 and/or a public gathering site plan pursuant to the provisions of this chapter or the rules shall be
20 subject to periodic fire safety inspection by the department, including inspection of any such plan
21 to confirm that it has been prepared and/or implemented in compliance with the requirements of
22 this chapter and the rules.
23

24 **401.11 Workplace exit inspections.** In addition to any other inspections that the department may
25 conduct, the department shall inspect Group M occupancies to determine whether workplace exits
26 are locked in violation of Section 1001.3.1 of the Building Code. A minimum of fifty unannounced
27 inspections shall be conducted each year. Such inspections shall include, but not be limited to,
28 premises at which violations of such section are known or suspected to have occurred.
29

30 **SECTION FC 402**
31 **DEFINITIONS**
32

33 **402.1 Definitions.** The following terms shall, for the purposes of this chapter and as used
34 elsewhere in this code, have the meaning [shown herein] set forth in FC202.
35

36 **ASSEMBLY AREA.** [A designated area outside of a building to which building occupants are
37 directed to report upon implementation of a partial or full evacuation in accordance with a
38 comprehensive fire safety and emergency action plan or a fire and emergency preparedness plan.]
39

40 **BUILDING OCCUPANTS.** [All persons in the building, including employees, building staff and
41 visitors.]
42

43 **COVERED MALL.** [A Group M building housing separate mercantile tenant spaces and/or other
44 similar occupancies and a common pedestrian area (which may include atrium spaces) that
45 provides access to the main public entrances to such tenant spaces and/or occupancies. A covered
46 mall does not include an exterior perimeter building or tenant space (commonly referred to as an

1 anchor store or anchor building) with direct pedestrian access to the covered mall, provided that
2 such building or tenant space has a lawful means of egress independent of the covered mall.]
3

4 **EMERGENCY SHELTER.** [The temporary use and occupancy of a premises, or part thereof,
5 including but not limited to armories, auditoriums, community centers, gymnasiums, houses of
6 worship and schools, that are not designed to be occupied for emergency housing, but are
7 authorized by the Department of Buildings to be operated and/or occupied for such purposes for
8 more than fifteen persons for more than 30 consecutive days.]
9

10 **EVACUATION.** [The emptying of a building or part thereof of building occupants in response to
11 a fire or non-fire emergency.]
12

13 **FEP.** [Fire and emergency preparedness.]
14

15 **FEP STAFF.** [The individuals identified in a fire and emergency preparedness plan as responsible
16 for the implementation of such plan, including but not limited to FEP coordinators.]
17

18 **FIRE DRILL.**
19

20 **FLS.** [Fire and life safety.]
21

22 **FLS STAFF.** [The individuals required to implement a comprehensive fire safety and emergency
23 action plan, as identified in such plan, including but not limited to the FLS director, deputy FLS
24 director, members of the FLS brigade and any staff designated as critical operations staff.
25

26 **FIRE DRILL.** A training exercise by which building occupants are familiarized with and/or
27 practice the procedures for the safe, orderly and expeditious sheltering in place, in-building
28 relocation, partial or full evacuation, or any combination thereof, in the event of a fire, in
29 accordance with the emergency preparedness plan for the premises.]
30

31 **HIGH-RISE BUILDING.** [Any building designed or constructed in accordance with the 1968
32 Building Code, any prior Building Code, or other applicable laws, rules and regulations, that is
33 more than six stories or 75 feet (22 860 mm) in height, and any building designed or constructed
34 in accordance with the Building Code that has one or more occupied floors more than 75 feet (22
35 860 mm) above the lowest level of fire department vehicle apparatus access.]
36

37 **HIGH-RISE FLOOR.** [Any occupied floor in a high-rise building that is at or above the height
38 that causes such building to be classified as a high-rise building.]
39

40 **IN-BUILDING RELOCATION.** [The controlled movement of building occupants from an
41 endangered area of a building to an in-building relocation area within the same building in response
42 to a fire or non-fire emergency.]
43

44 **IN-BUILDING RELOCATION AREA.** [A designated area in a building to which building
45 occupants may be relocated in accordance with the emergency preparedness plan for the premises.]
46

1 **LARGE-AREA BUILDING.** [A building that is not a high-rise building, but is either a Group B
2 office building within the meaning of Section 907.2.2.2 of the Building Code that has a total gross
3 area of more than 100,000 square feet (9290 m²) or a building of an occupancy type other than
4 Group R-2 or Group R-3 that has a total gross area of more than 100,000 square feet (9290 m²).]
5

6 **MIXED-OCCUPANCY BUILDING.** [A building or structure housing more than one occupancy
7 or type of occupancy required by this chapter to prepare an emergency preparedness plan.]
8

9 **NON-FIRE EMERGENCY.** [A biological, chemical or nuclear incident or release; declaration
10 of emergency by a lawful authority; explosion; medical emergency; natural disaster; or other
11 emergency affecting the premises or the safety of building occupants.]
12

13 **NON-FIRE EMERGENCY DRILL.** [A training exercise by which building occupants are
14 familiarized with and/or practice the procedures for safe, orderly and expeditious sheltering in
15 place, in-building relocation, partial or full evacuation, or combination thereof, in the event of a
16 non-fire emergency, in accordance with the emergency preparedness plan for the premises.]
17

18 **OFFICE BUILDING.** [A Group B occupancy designed and arranged to provide offices and other
19 areas for the conduct of business ordinarily conducted in offices.]
20

21 **REGULAR BUSINESS HOURS.** [Times of day and days of the week during which a building
22 or occupancy is normally occupied and business is conducted, and any time when a building or
23 occupancy required to have a comprehensive fire and emergency action plan is occupied by more
24 than five hundred persons, or more than one hundred persons above or below the street level. The
25 number of persons employed in a building or occupancy during regular business hours shall be
26 computed based on the work shift or other regular work schedule during which the largest number
27 of employees or other persons working at the premises are present at the premises.]
28

29 **SHELTER IN PLACE.** [The precaution of directing building occupants to remain indoors, at
30 their present location, in response to a fire or non-fire emergency.]
31

32 **STAGED EVACUATION.**
33

34 **VOICE COMMUNICATION CAPABILITY.** [The ability to communicate to the occupants of
35 a building or occupancy by means of a fire alarm system with one-way or two-way voice
36 communication.]
37

38 **SECTION FC 403**
39 **PUBLIC GATHERINGS**
40

41 **403.1 General.** The commissioner may establish requirements to ensure fire safety at indoor and
42 outdoor public gatherings, including arcades, bazaars, cafes, carnivals, displays, entertainment,
43 exhibits, rooftop events and street fairs. Such requirements may include preparation and
44 submission to the department of a site plan, including identification of materials, operations and
45 facilities regulated by the Fire Code that will be stored, conducted or maintained in conjunction
46 with the public gathering; pre-event fire safety inspection; provision of fire guards or other
47 qualified personnel; and provision and maintenance of fire apparatus access, and of aisles and other

1 means of access to and egress from the public gathering. Persons conducting such fire watch shall
2 have the duties and responsibilities set forth in FC901.7.2.1 with respect to the areas being
3 monitored in connection with public gatherings. The commissioner may conduct periodic
4 inspections of public gathering places that are used or frequented on a regular basis.

5
6 **403.2 Overcrowding prohibited.** Overcrowding shall not be caused, maintained or allowed in
7 any indoor or outdoor area or space used for public gatherings.

8
9 **403.3 Limitations on standing.** Where the Building Code, certificate of occupancy or approved
10 seating plan allows audience members to stand at performing arts or other indoor or outdoor events
11 at which seating is provided for the audience, standing areas shall be maintained in accordance
12 with FC407.5.

13
14 **SECTION FC 404**
15 **OFFICE BUILDINGS**

16
17 **404.1 General.** Group B office buildings and occupancies shall comply with the emergency
18 preparedness requirements set forth in FC 401, 416 and this section.

19
20 **404.2 Emergency preparedness in office buildings and occupancies with comprehensive fire**
21 **safety/emergency action plans.** Group B office buildings and occupancies required by FC404.2.1
22 to have a comprehensive fire safety and emergency action plan shall comply with the emergency
23 preparedness requirements of this section.

24
25 **404.2.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
26 safety and emergency action plan in accordance with FC401.4 shall be prepared for:

- 27
28 1. a high-rise or large-area Group B office building occupied or designed to be occupied
29 by more than five hundred persons, or more than one hundred persons above or below
30 the street level.
31
32 2. a Group B office occupancy occupied or designed to be occupied by a total of more than
33 one hundred persons on one or more high-rise floors.
34
35 3. any other Group B office building, and any other Group B office occupancy, occupied
36 or designed to be occupied by more than five hundred persons, or more than one hundred
37 persons above or below the street level, that was required to have a fire safety director
38 under the New York City Fire Prevention Code or this code prior to the effective date of
39 this section.
40
41 4. any other Group B office building or occupancy as to which the commissioner
42 determines that preparation of such a plan is in the interest of public safety given the
43 location, use or occupancy of the building.

44
45 **Exception:** Office buildings and occupancies subject to FC404.2.1(1), [and] (2) and (3)
46 that have lawfully installed [an interior] a fire alarm system without voice communication
47 capability.

1
2 **404.2.2 Fire and life safety staff.** The comprehensive fire safety and emergency action plan
3 required by FC401.4 shall designate FLS staff consisting of an FLS director, deputy FLS
4 directors, FLS building evacuation supervisors, FLS wardens, deputy FLS wardens, FLS
5 brigade members and searchers, to exercise the authority and perform the duties of their
6 respective FLS assignments. FLS staff shall be provided with initial and refresher FLS staff
7 training in accordance with FC401.4.5.2. FLS brigade members shall be trained in the use of
8 portable fire extinguishers.
9

10 **404.3 Emergency preparedness in office buildings and occupancies with fire and emergency**
11 **preparedness plans.** Group B office buildings and occupancies required by FC404.3.1 to have a
12 fire and emergency preparedness plan shall comply with the emergency preparedness requirements
13 of this section.
14

15 **404.3.1 Fire and emergency preparedness plan (Level 2).** A fire and emergency
16 preparedness plan in accordance with FC401.5 shall be prepared for a Group B office building
17 or occupancy occupied or designed to be occupied by more than five hundred persons, or more
18 than one hundred persons above or below street level, other than buildings and occupancies
19 subject to FC404.2.
20

21 **404.3.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
22 that, in Group B office buildings and occupancies that are provided with voice communication
23 capability (other than buildings and occupancies subject to FC404.2), there shall be present
24 during regular business hours one or more members of the FEP staff required pursuant to
25 FC401.5.5 who hold a certificate of fitness for emergency announcements and other fire safety
26 duties.
27

28 **SECTION FC 405**
29 **HOTELS, MOTELS AND OTHER TRANSIENT**
30 **RESIDENTIAL OCCUPANCIES**
31

32 **405.1 General.** Group R-1 buildings and occupancies, including any hotel, motel, boarding house,
33 hostel and single room occupancy, shall comply with the emergency preparedness requirements
34 set forth in FC 401, 405.2, 405.3, 405.5 and 416.
35

36 Exceptions:

- 37
- 38 1. Homeless shelters and emergency shelters, which shall comply with FC 401, 405.4,
39 405.5 and 416.
40
 - 41 2. Dormitories operated by or affiliated with educational institutions, which shall comply
42 with the requirements of FC 401, 410 and 416.
43

44 **405.2 Emergency preparedness in transient residential buildings and occupancies with**
45 **comprehensive fire safety/emergency action plans.** Group R-1 residential buildings and
46 occupancies required by FC405.2.1 to have a comprehensive fire safety and emergency action plan
47 shall comply with the emergency preparedness requirements of this section.

1
2 **405.2.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
3 safety and emergency action plan in accordance with FC401.4 shall be prepared for:

- 4
5 1. a high-rise Group R-1 residential building, including hotels and club houses providing
6 similar accommodation.
7
8 2. a Group R-1 residential building or occupancy with a total of more than fifty sleeping
9 rooms above street level, or communal sleeping facilities above street level occupied or
10 designed to be occupied by a total of more than fifty lodgers, and which is provided with
11 voice communication capability.
12

13 **405.2.2 Fire and life safety staff.** The comprehensive fire safety and emergency action plan
14 required by FC405.2.1 shall designate FLS staff consisting of an FLS director, deputy FLS
15 directors and a sufficient number of FLS [brigade] staff members to exercise the authority and
16 perform the duties of their respective FLS assignments. FLS staff shall be provided with initial
17 and refresher FLS staff training in accordance with FC401.4.5.2. FLS [brigade] staff members
18 shall be trained in the use of portable fire extinguishers.
19

20 **405.3 Emergency preparedness in transient residential buildings and occupancies with fire
21 and emergency preparedness plans.** Group R-1 residential buildings and occupancies required
22 by FC405.3.1 to have a fire and emergency preparedness plan shall comply with the emergency
23 preparedness requirements of this section.
24

25 **405.3.1 Fire and emergency preparedness plan (Level 2).** A fire and emergency
26 preparedness plan in accordance with FC401.5 shall be prepared for a Group R-1 residential
27 building or occupancy (other than buildings and occupancies subject to FC405.2) with a total
28 of more than thirty sleeping rooms, or more than fifteen sleeping rooms above street level, or
29 communal sleeping facilities occupied or designed to be occupied by a total of more than thirty
30 lodgers, or more than fifteen lodgers above the street level.
31

32 **405.3.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
33 that in Group R-1 buildings and occupancies provided with voice communication capability
34 (other than buildings and occupancies subject to FC405.2) there shall be present during regular
35 business hours one or more members of the FEP staff required pursuant to FC401.5.5 who hold
36 a certificate of fitness for emergency announcements and other fire safety duties.
37

38 **Exception:** Any Group R-1 residential building or occupancy [provided with voice
39 communication capability] with staged evacuation that was required by the New York City
40 Fire Prevention Code or this code prior to the effective date of this section to have a fire
41 safety director present in the building during regular business hours shall retain such
42 staffing.
43

44 **405.4 Emergency preparedness in homeless shelters and emergency shelters.** Group R-1
45 residential buildings or occupancies operated or occupied as a homeless shelter, and any
46 emergency shelter, shall comply with the emergency preparedness requirements of this section.
47

1 **405.4.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
2 safety and emergency action plan in accordance with FC401.4 shall be prepared for[
3

4 1.] a high-rise Group R-1 or high-rise Group I-1 homeless shelter.
5

6 [2. a Group R-1 homeless shelter that is provided with voice communication capability,
7 and either has a total of more than fifty rooms above street level or has communal
8 sleeping facilities above street level occupied or designed to be occupied by a total of
9 more than fifty lodgers.]
10

11 **405.4.2 Fire and life safety staff.** The comprehensive fire safety and emergency action plan
12 required by FC405.4.1 shall designate fire and life safety staff in accordance with FC405.2.2.
13

14 **405.4.3 Fire and emergency preparedness plan (Level 2).** A fire and emergency
15 preparedness plan in accordance with FC401.5 shall be prepared for a Group R-1 and Group I-
16 1 building or occupancy operated or occupied as a homeless shelter (other than buildings and
17 occupancies subject to FC405.4.1), and any emergency shelter.
18

19 **405.4.4 Fire and emergency preparedness staff.** The fire and emergency preparedness plan
20 required by FC405.4.3 shall designate an FEP [shelter] coordinator and a sufficient number of
21 [deputy FEP] shelter coordinators, with such qualifications, duties and authority as set forth in
22 the rules.
23

24 **405.4.4.1 FEP coordinator and shelter coordinators.** The FEP [shelter] coordinator and
25 [deputy FEP] shelter coordinators designated in the fire and emergency preparedness plan
26 shall hold [an FEP shelter coordinator certificate] the respective certificates of fitness for
27 said duties, and shall have the following duties and responsibilities and such other duties
28 and responsibilities as prescribed by rule:
29

30 1. The FEP coordinator shall have the duties and responsibilities set forth in FC401.5.
31

32 2. The FEP coordinator or a shelter coordinator shall be present in the building at all
33 times while the building is occupied. When the FEP [shelter] coordinator is absent, a
34 [deputy] FEP shelter coordinator shall be present in the building and shall perform
35 the emergency preparedness duties [of the FEP shelter coordinator] designated in the
36 rules and the fire and emergency preparedness plan.
37

38 [2]3. In the event of a fire, a medical emergency or other non-fire emergency, the FEP
39 coordinator or the shelter coordinator on duty shall report to the fire command center
40 or designated alternative location, and, if appropriate, implement the fire and
41 emergency preparedness plan in accordance with its terms and the provisions of the
42 rules, and notify arriving emergency response personnel and incident commander of
43 the fire or non-fire emergency, the building response thereto, and the building's fire
44 protection systems.
45

46 [3]4. The FEP [shelter] coordinator and [deputy FEP] shelter coordinators designated
47 in the FEP plan shall be fully familiar with the provisions of the fire and emergency

1 preparedness plan. The FEP [shelter] coordinator shall conduct staff training and fire
2 and non-fire emergency drills required by FC401.
3

4 **405.4.5 Fire guard patrols in emergency shelters.** Buildings or parts thereof occupied or
5 operated to be occupied by emergency shelters shall be continuously patrolled by a fire guard.
6 Every area of the building shall be patrolled at least once every hour.
7

8 **405.5 Fire and emergency notice.** There shall be posted on or immediately adjacent to the main
9 entrance door of guest rooms in Group R-1 buildings and occupancies and any emergency shelter
10 a notice that provides the following information and guidance to building occupants, and/or such
11 other information as the commissioner may prescribe by rule:
12

- 13 1. A visual representation of the location to each exit stairwell, the route thereto, and the
14 number of doors opening onto the public corridor that must be passed to reach each such
15 stairwell.
16
- 17 2. Location of manual fire alarm boxes.
18
- 19 3. A written description and/or visual representation of the procedures to be followed in the
20 event of a fire, smoke condition or other emergency.
21

22 **SECTION FC 406** 23 **APARTMENT BUILDINGS** 24

25 **406.1 General.** Apartment buildings and other Group R-2 buildings and occupancies shall comply
26 with the emergency preparedness requirements set forth in FC 401, 416 and this section.
27

28 **406.2 Emergency preparedness in apartment buildings.** Apartment buildings and other Group
29 R-2 buildings and occupancies shall comply with the following emergency preparedness
30 requirements:
31

32 **406.2.1 Fire emergency preparedness guide and notices (Level 3).** Fire and emergency
33 preparedness guide and notices in accordance with [FC401.7] FC401.6 and the rules shall be
34 prepared, and periodically reviewed and amended, for a Group R-2 building or occupancy.
35

36 **406.2.2 Non-sequential or non-standard floor numbering.** The [commissioner] department
37 shall promulgate rules establishing requirements for the electronic submission of floor
38 numbering lists to the department by owners of Group R-2 buildings or occupancies that are
39 [150] 125 feet ([45 720] 38 100 mm) or more in height, and such other occupancies as the
40 [commissioner] department may designate by rule. Such rules shall provide that each owner of
41 a building with non-sequential or non-standard floor numbering, as defined by rule, shall
42 submit to the department a floor numbering list indicating the floor numbers assigned to each
43 floor, and submit an amended floor numbering list within 2 business days of a change in any
44 floor numbering designation.
45

46 **406.2.3 Hurricane evacuation notices.** The owner of any Group R-2 building or occupancy
47 within a hurricane evacuation zone, as designated by the commissioner of the office of

1 emergency management, shall cause a hurricane evacuation notice to be posted within the
2 building or occupancy. Such notice shall serve to inform building occupants of the current
3 hurricane evacuation zone designation for that building and the methodology for determining
4 their closest hurricane evacuation centers, through 311 or the online Hurricane Evacuation
5 Zone finder. Such notice shall be in such form as prescribed by the commissioner by rule and
6 shall be posted within a common area of the building and such other locations as set forth in
7 the rules.
8

9 **406.2.4 Fire and emergency preparedness plan (Level 2) and fire and emergency**
10 **preparedness staff.** A fire and emergency preparedness plan in accordance with FC401.5 shall
11 **be prepared for Group R-2 high-rise megastructure buildings and occupancies, in addition to**
12 **compliance with the requirements of FC401.6. There shall be present during regular business**
13 **hours one or more members of the FEP staff required pursuant to FC401.5.5 who hold a**
14 **certificate of fitness for emergency announcements and other fire safety duties.**
15

16 **406.3 Responsibility of cooperative or condominium apartment owners.** In Group R-2
17 buildings and occupancies with a cooperative or condominium form of ownership and
18 management, the board of directors, condominium association or other party generally responsible
19 for maintenance of common areas shall be responsible for the preparation and distribution of the
20 fire and emergency preparedness guide, the posting and maintenance of fire and emergency
21 preparedness notices in common areas, and the preparation and distribution to individual dwelling
22 unit owners or proprietary lessees of fire and non-fire emergency notices for dwelling unit doors,
23 including instructions and the means for affixing the notice. The owners or proprietary lessees of
24 the individual units in such residential buildings or parts thereof shall be responsible for the posting
25 and maintenance of the fire and non-fire emergency notice on their respective dwelling unit doors.
26 Such owners and proprietary lessees shall allow representatives of the building's management access
27 to their individual dwelling units, upon reasonable notice, for purposes of confirming such owners and
28 proprietary lessees' compliance with this section.
29

30 SECTION FC 407

31 ASSEMBLY OCCUPANCIES

32

33 **407.1 General.** Group A occupancies and public gathering places, other than Group A occupancies
34 operated or occupied exclusively for purposes of religious worship that have an occupant load less
35 than two thousand, shall comply with the emergency preparedness requirements set forth in FC
36 401, 416 and this section. Such occupancies and places shall additionally comply with fire safety
37 precautions required pursuant to FC403.1.
38

39 **407.2 Emergency preparedness in assembly occupancies with comprehensive fire**
40 **safety/emergency action plans.** Group A occupancies required by FC407.2.1 to have a
41 comprehensive fire safety and emergency action plan shall comply with the emergency
42 preparedness requirements of this section.
43

44 **407.2.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
45 safety and emergency action plan in accordance with FC401.4 shall be prepared for a Group
46 A building with an occupancy of five thousand or more persons, or any other building or

1 structure that houses one or more Group A occupancies where the combined occupancy of
2 such Group A occupancies is five thousand or more persons.

3
4 **407.2.2 Fire and life safety staff.** The comprehensive fire and emergency action plan required
5 by FC407.2.1 shall designate FLS staff consisting of an FLS director and such other FLS staff
6 as the commissioner may prescribe by rule as appropriate for such building or occupancy. FLS
7 staff shall be provided with initial and refresher FLS staff training in accordance with
8 FC401.4.5.2. The commissioner may prescribe by rule that there be present during regular
9 business hours one or more members of the FLS staff who hold a certificate of fitness for place
10 of assembly fire safety.

11
12 **407.3 Emergency preparedness in assembly occupancies with fire and emergency**
13 **preparedness plans.** Group A buildings or occupancies and public gathering places that are
14 required by FC407.3.1 to have a fire and emergency preparedness plan shall comply with the
15 emergency preparedness requirements of this section.

16
17 **407.3.1 Fire and emergency preparedness plan (Level 2).** A fire and emergency
18 preparedness plan in accordance with FC401.5 shall be prepared for a Group A building or
19 occupancy or public gathering place not subject to FC407.2 that:

- 20
21 1. is designed to be occupied by three hundred or more persons;
22
23 2. is provided with voice communication capability;
24
25 3. has a stage or in which entertainment or other activities that are the focus of attention
26 are regularly conducted;
27
28 4. is occupied or designed to be occupied as a ballroom, dance hall or night club; or
29
30 5. is occupied or designed to be occupied as a bar, catering hall, restaurant or similar
31 establishment, on one or more high-rise floors, including any rooftop area.

32
33 **407.3.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
34 that in Group A buildings or occupancies and public gathering places that there be present
35 during regular business hours one or more members of the FEP staff required pursuant to
36 FC401.5.5 who hold a certificate of fitness for place of assembly fire safety.

37
38 **407.3.3 Assembly spaces without staff.** Halls or other assembly spaces that are rented or
39 otherwise made available for events without dedicated staff, such as social halls in houses of
40 worship and community organizations, are not required to prepare a fire and emergency
41 preparedness plan pursuant to FC407.3.1.

42
43 **407.4 Seating plan.** A copy of the seating plan required for Group A occupancies by the Building
44 Code shall be electronically submitted to the department prior to occupancy. A seating plan
45 depicting the arrangement of seating in a place of assembly, location of aisles and such other
46 information as may be required by rule shall be submitted [to the Department for its review and

1 approval] in a manner prescribed by the department. A copy of the approved seating plan shall be
2 maintained on the premises and made available for inspection by any department representative.

3
4 **407.5 Limitations on standing in Group A occupancies and public gatherings.** Where the
5 Building Code, certificate of occupancy or approved seating plan allows audience members to
6 stand at performing arts or other indoor or outdoor events at which seating is provided for the
7 audience, standing areas shall be maintained in accordance with FC 407.5.1 through 407.5.4.

8
9 **407.5.1 Standing areas to be indicated.** The space to be occupied by standing audience
10 members shall be separated from the space to be left clear for passage by a rope, tape or other
11 thin material at a height of not less than 3 feet (914 mm) nor more than 4 feet (1219 mm) above
12 the floor, supported by lightweight posts, all to be constructed and placed so as not to constitute
13 an obstruction in case of panic or emergency. Such standing areas shall be clearly demarcated
14 by durable markings on the floor indicating the boundaries of the standing area.

15
16 **Exception:** A single row of standees in an approved or other lawful area designated for
17 such purpose in a performing arts theater, where the location for each such standee is
18 durably marked in an approved manner.

19
20 **407.5.2 Standing in aisles.** It shall be unlawful to stand, or allow any person to stand, in or at
21 the head of an aisle.

22
23 **407.5.3 Standing in passageways.** Standing is authorized in Group A occupancies and public
24 gathering places in accordance with the following requirements.

25
26 1.1. If the passageway is more than 6 feet (1829 mm) and less than 16 feet (4877 mm)
27 deep, persons may stand therein, provided an unobstructed passageway of at least 6 feet
28 (1829 mm) in depth is left open, and there are no more than four rows of persons
29 standing.

30
31 2.2. If the passageway is more than 16 feet (4877 mm) deep, any number of persons or
32 rows of persons may stand therein, provided that an unobstructed passageway of at
33 least 10 feet (3048 mm) in depth is left open.

34
35 3. In places of assembly having a passageway to the rear of the seats, 6 feet (1829 mm) or
36 less in depth, and having in addition an outer passageway in the rear thereof, to which all
37 aisle heads have straight and direct access, a maximum of two rows of persons may be
38 permitted to stand in the passageway to the rear of such seats.

39
40 **407.5.4 Standing in balconies.** Only one row of persons shall be allowed to stand in balconies.

41
42 **407.6 Announcements.** In performing arts theaters or motion picture theaters, and in any other
43 Group A occupancy in which there is a non-continuous performance or program, other than an
44 occupancy regularly attended by the same audience, an audible announcement shall be made not
45 more than 10 minutes prior to the start of each performance or program informing the occupants
46 of the location of the exits to be used in the event of a fire or other emergency, provided, however,
47 that in any theater the announcement may be projected upon a screen or other surface approved by

1 the commissioner in a manner approved by the commissioner. Notwithstanding the foregoing, the
2 commissioner may grant an exception from such requirement upon a determination that the
3 occupancy has at least one exit clearly visible from every seat or standing area from which
4 members of the audience are authorized to view the performance.

5
6 **407.7 Trade shows.** The owner of any Group A occupancy wherein a trade show or other similar
7 temporary exhibition is to be conducted shall, at least one month before the date of such exhibition,
8 submit to the department a written notice and a plan containing the following information and such
9 other information and documentation as the commissioner may prescribe:

- 10
11 1. The dates, times, location, and nature of the trade show or other exhibition, and whether
12 the event will be open to the public or restricted to the trade.
- 13
14 2. The design and arrangement of the trade show or other exhibition, including aisles, display
15 booths, decorations and drapes, and equipment using any hazardous material or open flame.

16
17 **SECTION FC 408**
18 **ASSISTED LIVING FACILITIES**
19 **AND SIMILAR OCCUPANCIES**
20

21 **408.1 General.** Assisted living facilities, adult homes, community residences, congregate care
22 facilities, enriched housing, halfway houses, intermediate care facilities, residential care facilities,
23 social rehabilitation facilities, substance abuse rehabilitation centers and other Group I-1 buildings
24 and occupancies in which building occupants are capable of self-preservation and capable of
25 responding to a fire or other emergency without assistance from others shall comply with the
26 emergency preparedness requirements set forth in FC 401, 416 and this section.

27
28 **408.2 Emergency preparedness in assisted living facilities and similar occupancies with fire**
29 **and emergency preparedness plans (Level 2).** A fire and emergency preparedness plan in
30 accordance with FC401.5 shall be prepared for a Group I-1 building or occupancy with more than
31 twenty-five persons above or below street level.

32
33 **408.3 Fire and emergency preparedness staff.** The commissioner may prescribe by rule that in
34 Group I-1 buildings or occupancies provided with voice communication capability there shall be
35 present during regular business hours one or more members of the FEP staff required pursuant to
36 FC401.5.5 who hold a certificate of fitness for emergency announcements and other fire safety
37 duties.

38
39 **408.4 Special drill requirements.** In addition to the requirements of FC401.7, persons residing in
40 Group I-1 occupancies shall:

- 41
42 1. participate in a full building evacuation on an annual basis.
 - 43
44 2. if capable of participating in an evacuation or in-building relocation without assistance, be
45 trained to provide assistance to other such residents to the extent that their physical and
46 mental abilities permit them to do so without additional personal risk.
- 47

1 **408.5 Fire and emergency notice.** A fire and emergency notice in accordance with FC405.5 shall
2 be posted within each dwelling unit in the building or occupancy, on or immediately adjacent to
3 the main entrance door to the dwelling unit.
4

5 **SECTION FC 409**
6 **CORRECTIONAL FACILITIES AND OTHER**
7 **SECURED FACILITIES**
8

9 **409.1 General.** Correctional facilities, secure psychiatric hospitals and other Group I-3 buildings
10 and occupancies (including prisons, detention centers and pre-release centers) regulated by New
11 York State Department of Correctional Services or the New York State Education Department,
12 shall maintain the emergency preparedness staff and conduct the drills required by the regulations
13 of the New York State Department of Correctional Services, and otherwise comply with the
14 requirements of such regulations.
15

16 **409.2 Staffing and staff training.** The following staffing and staff training shall be provided in
17 Group I-3 buildings and occupancies:
18

19 **409.2.1 Staffing.** In Group I-3 occupancies, staff trained in emergency preparedness
20 procedures shall be in the building at all times, and within three floors or 300 feet (91 440 mm)
21 horizontal distance of the access door of each resident housing area. Keys necessary for
22 unlocking doors installed in a means of egress shall be individually identifiable by both touch
23 and sight. When movement of occupants from one smoke compartment to another or egress
24 from the building is impeded by staff-controlled manual releases, the staff responsible for
25 controlling such movement or egress must be continuously available to initiate emergency
26 procedures within 2 minutes of an alarm.
27

28 **Exception:** Staff shall not be required to be located within three floors or 300 feet (91 440
29 mm) of areas in which all locks may be unlocked automatically in accordance with Section
30 408.4 of the Building Code.
31

32 **409.2.2 Staff training.** The staff responsible for emergency preparedness procedures in Group
33 I-3 occupancies shall be trained in the use of portable fire extinguishers and other manual fire
34 extinguishing equipment.
35

36 **409.2.3 Notification.** Provision shall be made to promptly notify emergency preparedness staff
37 of a fire or non-fire emergency.
38

39 **SECTION FC 410**
40 **EDUCATIONAL OCCUPANCIES**
41

42 **410.1 General.** Schools, colleges, universities and other Group B and Group E educational
43 buildings and occupancies; Group R-1 dormitories operated by or on behalf of educational
44 institutions; and Group E day care facilities shall comply with the emergency preparedness
45 requirements set forth in FC 401, 416 and this section.
46

1 **410.2 Day care plans.** Group E educational buildings and occupancies regulated by the New York
2 City Department of Health and Mental Hygiene shall prepare and maintain a written safety plan
3 addressing fire safety, medical emergencies and evacuation procedures, in compliance with the
4 rules or other requirements of that agency.

5
6 **410.3 Emergency preparedness in Group B educational occupancies with comprehensive fire
7 safety/emergency action plans.** Group B educational buildings and occupancies required by
8 FC410.3.1 to have a comprehensive fire safety and emergency action plan shall comply with the
9 emergency preparedness requirements of this section.

10
11 **410.3.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
12 safety and emergency action plan in accordance with FC401.4 shall be prepared for:

- 13
14 1. a high-rise Group B educational building [that is provided with voice communication
15 capability] with staged evacuation.
16
17 2. a [Group B educational occupancy occupied or designed to be occupied by a total of
18 more than one hundred persons on one or more high-rise floors, that is provided with
19 voice communication capability] high-rise Group R-1 dormitory, or high-rise Group R-
20 2 student apartment building, with staged evacuation.
21

22 **410.3.2 Fire and life safety staff.** The comprehensive fire and life safety plan required
23 pursuant to FC410.3.1 shall designate an FLS director and such other FLS staff as the
24 commissioner may prescribe by rule as appropriate for the manner in which the building or
25 occupancy, or floors thereof, is used or staffed.
26

27 **410.4 Emergency preparedness in educational occupancies and dormitories with fire and
28 emergency preparedness plans.** Educational and dormitory buildings and occupancies required
29 by FC410.4.1 to have a fire and emergency preparedness plan shall comply with the emergency
30 preparedness requirements of this section.

31
32 **410.4.1 Fire and emergency preparedness plan (Level 2).** A fire and emergency
33 preparedness plan in accordance with FC401.5 shall be prepared for the following buildings
34 and occupancies (other than buildings [and occupancies] subject to FC410.3):
35

- 36 1. a high-rise and large-area Group B educational building.
37
38 2. a low-rise and high-rise Group E educational building.
39
40 3. a Group B educational occupancy occupied or designed to be occupied by a total of more
41 than one hundred persons on one or more high-rise floors.
42
43 4. a Group E educational occupancy occupied or designed to be occupied by a total of more
44 than one hundred persons on one or more high-rise floors.
45
46 5. a high-rise Group R-1 dormitory, or high-rise Group R-2 student apartment building,
47 without staged evacuation.

1
2 6. a low-rise Group R-1 dormitory building or occupancy, or low-rise Group R-2 student
3 apartment building or occupancy, with a total of more than fifty sleeping rooms above
4 street level, or communal sleeping facilities above street level occupied or designed to
5 be occupied by a total of more than fifty lodgers.
6

7 **410.4.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
8 that in a Group B, E, [or] Group R-1 dormitory building or occupancy and/or Group R-2
9 student apartment building subject to FC410.4.1 that is provided with voice communication
10 capability there shall be present during regular business hours one or more members of the
11 FEP staff required pursuant to FC401.5.5 who hold a certificate of fitness for emergency
12 announcements and other fire safety duties.
13

14 **410.4.3 Fire and emergency notice.** In Group R-1 dormitory buildings or occupancies subject
15 to FC410.4.1, a fire and emergency notice in accordance with FC405.5 shall be posted within
16 each dwelling unit in the building or occupancy, on or immediately adjacent to the main
17 entrance door to the dwelling unit.
18

19 **410.5 Emergency preparedness in dormitories without fire and emergency preparedness**
20 **plans.** Group R-1 dormitory buildings and occupancies, and Group R-2 buildings and occupancies,
21 other than buildings and occupancies subject to FC410.4, shall comply with the following
22 emergency preparedness requirements:
23

24 **410.5.1 Fire and emergency preparedness guide and notices (Level 3).** Fire and emergency
25 preparedness guide and notices in accordance with FC401.6 and the rules shall be prepared,
26 and periodically reviewed and amended, for a Group R-1 dormitory.
27

28 **410.6 Special drill requirements.** Fire and non-fire emergency drills shall be conducted in all
29 educational buildings and occupancies and dormitories in accordance with FC401.7 and the rules.
30 The frequency and timing of drills in educational occupancies shall be in accordance with the New
31 York State Educational Law. Group E occupancies shall establish procedures for accounting for
32 students after they have been relocated or evacuated during a drill.
33

34 **SECTION FC 411**
35 **FACTORIES**
36

37 **411.1 General.** Group F buildings and occupancies shall comply with the emergency preparedness
38 requirements set forth in FC 401, 416 and this section, except that Group F buildings and
39 occupancies regulated by New York State Labor Law §279 shall maintain the emergency
40 preparedness staff and conduct the drills required by the rules of the New York City Board of
41 Standards and Appeals, as set forth in 2 RCNY [§9-01] §3-05, and otherwise comply with the
42 requirements of such rules, and, if located in a mixed-occupancy building, shall additionally
43 comply with the requirements of FC416.
44

45 **411.2 Emergency preparedness in factories with fire and emergency preparedness plans**
46 **(Level 2).** A fire and emergency preparedness plan in accordance with FC401.5 shall be prepared

1 for a Group F building and occupancy with more than twenty-five persons above or below street
2 level during regular business hours.

3
4 **SECTION FC 412**
5 **HIGH HAZARD OCCUPANCIES**
6

7 **412.1 General.** Group H buildings and occupancies shall comply with the emergency
8 preparedness requirements set forth in FC 401, 416 and this section, except that such
9 requirements shall not apply to Group H buildings and occupancies that have prepared one or
10 more of the following plans in compliance with applicable requirements:

- 11 1. An emergency action plan in accordance with the regulations of the United States
12 Department of Labor, as set forth in 29 CFR Section 1910.119.
- 13 2. A contingency plan and emergency procedures in accordance with the regulations of the
14 New York State Department of Environmental Conservation, as set forth in 6 NYCRR Part
15 373.
- 16 3. A risk management plan in accordance with the rules of the New York City Department of
17 Environmental Protection, as set forth in 15 RCNY §41-08.

18
19 **412.2 Emergency preparedness in high-hazard buildings and occupancies with fire and**
20 **emergency preparedness plans (Level 2).** A fire and emergency preparedness plan in accordance
21 with FC401.5 shall be prepared for a Group H building and occupancy with more than twenty-five
22 persons above or below street level during regular business hours, excluding Group H buildings
23 and occupancies required to comply with FC412.1(1), (2) or (3).
24
25

26
27 **412.3 Group H-5 occupancies.** Group H-5 occupancies shall additionally comply with the
28 requirements of Sections 412.3.1 through 412.3.4.
29

30 **412.3.1 Plans and diagrams.** Plans and diagrams shall be maintained in an approved location
31 on the premises indicating the plan for each area, the amount and type of HPM stored, handled
32 and used, locations of shutoff valves for HPM supply piping, emergency telephone locations
33 and locations of exits.
34

35 **412.3.2 Periodic review and revision.** The plans and diagrams required by FC412.3.1 shall
36 be maintained up to date and the department shall be notified of all changes in use or
37 occupancy, and design and arrangement of the premises.
38

39 **412.3.3 Emergency response team.** On-site emergency response personnel shall be familiar
40 with the HPM stored, handled or used on the premises. Responsible persons shall be designated
41 to an on-site emergency response team. An emergency response team shall be staffed for each
42 workshift to coordinate their emergency response activities with emergency response
43 personnel, and shall cooperate with the department in planning emergency responses.
44

45 **412.3.4 Emergency response drills.** Emergency drills of the on-site emergency response team
46 shall be conducted on a regular basis but not less than once every 3 months. Records of
47

1 emergency drills conducted shall be maintained in the same manner as records of fire and non-
2 fire emergency drills.

3
4 **SECTION FC 413**
5 **HOSPITALS, NURSING HOMES AND**
6 **OTHER PATIENT AND RESIDENTIAL CARE FACILITIES**
7

8 **413.1 General.** Hospitals, nursing homes, adult homes, ambulatory care facilities, community
9 residences, enriched housing, intermediate care facilities and other Group I-2 buildings and
10 occupancies and ambulatory care facilities classified as Group B occupancies, caring for or
11 housing more than three persons not capable of self-preservation and not capable of responding to
12 a fire or other emergency without assistance from others shall comply with the emergency
13 preparedness requirements set forth in FC 401, 416 and this section.
14

15 **413.2 Emergency preparedness in patient and residential care facilities with fire and**
16 **emergency preparedness plans (Level 2).** A fire and emergency preparedness plan in accordance
17 with FC401.5 shall be prepared for a hospital, nursing home[, ambulatory care facility] or other
18 Group I-2 building or occupancy, and any ambulatory care facility.
19

20 **413.3 Fire and emergency preparedness staff.** The commissioner may prescribe by rule that in
21 all Group I-2 buildings or occupancies, and Group B ambulatory care facilities, provided with
22 voice communication capability there shall be present during regular business hours one or more
23 members of the FEP staff required pursuant to FC401.5.5 who hold a certificate of fitness for
24 emergency announcements and other fire safety duties.
25

26 **413.4 Drills.** Fire and non-fire emergency drills in Group I-2 buildings and occupancies and Group
27 B ambulatory care facilities may be conducted in accordance with the provisions of FC 413.4.1
28 and 413.4.2.
29

30 **413.4.1 Coded alarm signal.** During drills, coded announcements may be made in lieu of an
31 audible alarm to alert medical and other fire and emergency preparedness staff of such drill.
32

33 **413.4.2 Relocation of patients.** During drills, the in-building relocation of patients to safe
34 areas or to the exterior of the building is not required.
35

36 **413.5 FEP staff training.** FEP staff training may be conducted throughout the entire building or
37 occupancy or in specific areas thereof, but training shall be conducted in all areas of the building
38 or occupancy within each 1 year period. Such training shall be conducted at least once each month
39 for a total of not less than twelve training drills per year, as follows: at least three drills during the
40 day shift; at least six drills during the evening shift, and at least three drills during the night shift.
41

42 **SECTION FC 414**
43 **MERCANTILE OCCUPANCIES AND COVERED MALLS**
44

45 **414.1 General.** Department stores, retail and wholesale stores and other Group M buildings and
46 occupancies, including covered malls, shall comply with the emergency preparedness
47 requirements set forth in FC 401, 416 and this section.

1
2 **414.2 Emergency preparedness in mercantile occupancies with comprehensive fire**
3 **safety/emergency action plans.** Group M occupancies that are required by FC414.2.1 to have a
4 comprehensive fire safety and emergency action plan shall comply with the emergency
5 preparedness requirements of this section.
6

7 **414.2.1 Comprehensive fire safety/emergency action plan (Level 1).** A comprehensive fire
8 safety and emergency action plan in accordance with FC401.4 shall be prepared for:
9

- 10 1. a high-rise Group M building.
- 11
- 12 2. a building with one or more Group M occupancies with an aggregate area of more than
13 300,000 square feet (27 870 m²) on high-rise floors.
- 14
- 15 3. a covered mall of more than 300,000 square feet (27 870 m²).
16

17 **414.2.2 Fire and life safety staff.** The comprehensive fire safety and emergency action plan
18 required by FC414.2.1 shall designate FLS staff consisting of an FLS director and such other
19 FLS staff as the commissioner may prescribe by rule as appropriate for such building or
20 occupancy, including building occupants designated by lessees of tenant spaces and similar
21 occupancies. FLS staff shall be provided with initial and refresher FLS staff training in
22 accordance with FC401.4.5.2.
23

24 **414.3 Emergency preparedness in mercantile buildings and occupancies with fire and**
25 **emergency preparedness plans.** Group M buildings and occupancies required by FC414.3.1 to
26 have a fire and emergency preparedness plan shall comply with the emergency preparedness
27 requirements of this section.
28

29 **414.3.1 Fire and emergency preparedness plan (Level 2).** A fire and emergency
30 preparedness plan in accordance with FC401.5 shall be prepared for the following buildings
31 and occupancies (other than buildings and occupancies subject to FC414.2):
32

- 33 1. a Group M occupancy of more than 30,000 square feet (2787 m²), in which more than
34 twenty-five persons are employed during regular business hours.
- 35
- 36 2. a building with one or more Group M occupancies with an aggregate area of more than
37 30,000 square feet (2787 m²) in which more than twenty-five persons are employed
38 during regular business hours.
- 39
- 40 3. a covered mall of more than 30,000 square feet (2787 m²).
41

42 **414.3.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
43 that in a Group M building or occupancy provided with voice communication capability, other
44 than buildings and occupancies subject to FC414.2, there shall be present during regular
45 business hours one or more members of the FEP staff required pursuant to FC401.5.5 who hold
46 a certificate of fitness for emergency announcements and other fire safety duties.
47

1 **414.4 Special circumstances.** The commissioner shall, under circumstances prescribed by rule,
2 modify the emergency preparedness requirements for any Group M building or covered mall where
3 the configuration of such building or covered mall, including its pedestrian areas and means of
4 egress, is such that the purposes of this section would be better served by requiring a different type
5 of emergency preparedness plan or reducing the level of the emergency preparedness plan and/or
6 staffing. The owner may request guidance from the department as to the appropriate emergency
7 preparedness plan to be prepared for such a building or covered mall prior to preparation of the
8 emergency preparedness plan required by this section. Such request shall be accompanied by a
9 floor plan and other appropriate documentation of the configuration of the building or covered
10 mall.

11
12 **SECTION FC 415**
13 **WAREHOUSES AND OTHER STORAGE OCCUPANCIES**
14

15 **415.1 General.** Warehouses and other Group S buildings shall comply with the emergency
16 preparedness requirements set forth in FC401, FC416, and this section.

17
18 **415.1.1 Emergency preparedness in buildings and occupancies with fire and emergency**
19 **preparedness plans (Level 2).** A fire and emergency preparedness plan in accordance with
20 FC401.5 shall be prepared for:

- 21
22 1. a high-rise or large-area Group S building in which more than twenty-five persons are
23 employed during regular business hours.
24
25 2. a non-high-rise Group S building with an aggregate of more than 20,000 square feet
26 (1858 m²) of high-piled combustible storage.
27

28 **415.1.2 Fire and emergency preparedness staff.** The commissioner may prescribe by rule
29 that in a Group S building or occupancy provided with voice communication capability there
30 shall be present during regular business hours one or more members of the FEP staff required
31 pursuant to FC401.5.5 who hold a certificate of fitness for emergency announcements and
32 other fire safety duties.
33

34 **SECTION FC 416**
35 **MIXED OCCUPANCY BUILDINGS**
36

37 **416.1 General.** The owners of a mixed-occupancy building and each occupancy within such
38 building required to have an emergency preparedness plan pursuant to this chapter shall comply
39 with the emergency preparedness requirements of this section with respect to such building and
40 occupancies.
41

42 **416.2 Single plan.** In lieu of a separate Level 1 or 2 emergency preparedness plan for each
43 occupancy, a single emergency preparedness plan may be developed for the entire building or
44 multiple occupancies within a single building, provided that it meets or exceeds the level of
45 emergency preparedness required for each occupancy.
46

1 **416.3 Coordination of plans.** The owner preparing an emergency preparedness plan for an
2 occupancy in a mixed-occupancy building shall consult the owner responsible for preparing the
3 emergency preparedness plan for each other occupancy within such building with respect to
4 evacuation and in-building relocation procedures, including use of stairwells and elevators and
5 designation of in-building relocation areas and assembly areas.
6

7 **416.4 Coordination of drills.** The owner of a mixed-occupancy building and the owner of each
8 occupancy within such a building required to conduct emergency preparedness drills pursuant to
9 this chapter shall conduct a coordinated drill at least once every 2 years.
10

11 **416.5 Communications.** The owner of a mixed-occupancy building and the owner of each
12 occupancy within such a building required to have emergency preparedness plan pursuant to this
13 chapter shall arrange for a means of communication between their respective FLS directors, FEP
14 coordinators and/or designated FEP staff, in the event of a fire or other emergency. Such
15 communications may be by telephone (other than a telephone requiring a coin to operate), text
16 message, e-mail, walkie-talkie, or other approved means.
17

18 **416.6 Notification of fires and non-fire emergencies and coordination of responses.** In the
19 event of a fire or other emergency in a mixed-occupancy, notification shall be made to the other
20 occupancies and, if necessary, the emergency preparedness staffs of the respective occupancies
21 shall coordinate their responses to the emergency, as follows:
22

23 **416.6.1 Fires.** An FLS director, FEP coordinator and/or a designated emergency preparedness
24 staff member who becomes aware of fire on the premises shall promptly notify the FLS
25 director, FEP coordinator and/or designated staff in the other occupancies in the mixed-
26 occupancy building. The staffs shall coordinate the evacuation, in-building relocation and/or
27 sheltering in place of their respective building occupants, and other matters requiring
28 coordination pursuant to their emergency preparedness plans.
29

30 **416.6.2 Non-fire emergencies.** An FLS director, FEP coordinator and/or a designated
31 emergency preparedness staff member who becomes aware of a non-fire emergency shall
32 promptly notify the FLS director, FEP coordinator and/or designated emergency preparedness
33 staff for any other occupancy that could be affected by such emergency, or who is situated in
34 the building's entrance lobby and who would be first encountered by firefighters or other
35 emergency personnel responding to the emergency.
36

37
38 **CHAPTER 5**
39 **FIRE OPERATIONS FEATURES**
40

41 **SECTION FC 501**
42 **GENERAL**
43

44 **501.1 Scope.** This chapter shall govern the design, installation, operation and maintenance of
45 buildings, structures and premises with respect to requirements designed to ensure safe and
46 effective firefighting operations.
47

1 **501.2 Permits.** Permits shall be required as set forth in FC105.6.
2

3 **501.3** Reserved.
4

5 **501.4 General.** Buildings, structures and premises shall be designed, installed, operated and
6 maintained in accordance with this chapter.
7

8 **501.4.1 Newly-constructed buildings and structures.** When fire apparatus access roads,
9 frontage spaces, private hydrants or yard hydrants are required to be installed in connection
10 with a newly constructed building or structure, such roads, frontage spaces and hydrants shall
11 be installed and made serviceable prior to and during the time of construction, except that, in
12 connection with a phased development, the provision of fire apparatus access and water supply
13 shall be as set forth in design and installation documents approved by the department. Interim
14 access and water supply arrangements will be considered pending completion of heavy
15 construction that would damage the roads or piping, provided that such arrangements would
16 not unduly impair firefighting operations. Temporary signs shall be installed at each street
17 intersection when construction of new roadways allows passage by motor vehicles in
18 accordance with FC505.2.
19

20 **501.4.2 Lawfully existing fire department access.** Fire department access to buildings,
21 structures and premises not fronting on a public street may be continued in compliance with
22 the provisions of FC 102.3, 102.4, and 102.5, when such fire department access was lawfully
23 existing as of June 30, 2008 or the date of an amendment to this code relating to fire department
24 access. The private roads providing such lawfully existing fire department access shall be
25 deemed to constitute fire apparatus access roads pursuant to this chapter.
26

27 **501.4.3 Alterations and change of occupancy.** A building or structure undergoing alteration
28 or a change of occupancy under the circumstances set forth in FC 501.4.3.1 and 501.4.3.2 shall
29 comply with the requirements set forth in said sections.
30

31 **501.4.3.1 Provision of sprinkler protection in altered buildings on substandard width
32 public streets and fire apparatus access roads.** An existing building or structure that
33 undergoes alteration or a change in use or occupancy and which is located on a public street
34 or fire apparatus access road that has a substandard road width as set forth in FC 503.2.10
35 or 503.3.2 shall install a sprinkler system throughout such building, when:
36

- 37 1. The cost of making alterations to the building (other than alterations made to Group
38 R-3 occupancies) in any 12-month period exceeds 60 percent of the value of the
39 building, as set forth in New York City Administrative Code §27-115; or
40
- 41 2. By reason of alteration or otherwise, there is a change in the “main use or dominant
42 occupancy” of the building, as determined by the New York City Department of
43 Buildings for purposes of assigning a single occupancy classification to the building,
44 including any change from a Group R-3 occupancy to a Group R-2 occupancy, but
45 excluding a change in use or occupancy that is limited to restoring a building that
46 was originally constructed as a one-family or two-family dwelling to its original one-
47 family or two-family use and occupancy; or

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3. There is an increase of more than 125 percent in the square footage of the floor area of a building (excluding attic, basement and cellar space, as those terms are defined in Section 202 of the Building Code); or
 4. There is a change constituting an alteration under the Building Code (excluding rooftop equipment installations) to a building of combustible (non-fireproof) construction with a height of 35 feet (10 668 mm) or less above the grade plane, that increases the height of such building to more than 35 feet (10 668 mm) above the grade plane (with the terms “grade plane” and “building height” having the meanings set forth in Section 502.1 of the Building Code); or
 5. A one-family Group R-3 occupancy is being altered to a two-family Group R-3 occupancy, except where:
 - 5.1. the alteration involves converting a basement space to a separate dwelling unit, and the new basement dwelling unit is protected throughout by a sprinkler system; or
 - 5.2. the alteration does not involve converting a basement space to a separate dwelling unit, and either at least two lawful accessory off-street parking spaces are provided on the premises, or sufficient space exists to park two motor vehicles on a common driveway shared exclusively with an adjoining Group R-3 occupancy.

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29

501.4.3.2 Compliance with rooftop access requirements on altered rooftops. The rooftop of an existing building or structure that undergoes alteration shall comply with the requirements of FC504.4.

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31
32

SECTION FC 502 DEFINITIONS

33
34
35

502.1 Definitions. The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

36
37
38
39
40

CITYWIDE STANDARD KEY. [A key of special or controlled design, also known as a “2642” key, approved by the commissioner which serves to operate elevator emergency recall and emergency in-service operation service switches and other devices or locks as required by the construction codes, including the Building Code, this code or the rules.]

41
42
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45

FIRE APPARATUS ACCESS ROAD. [A road that serves to provide access for fire apparatus from a public street to the frontage space of one or more buildings not directly fronting on a public street. A fire apparatus access road includes any road that serves such purpose whether denominated as a driveway, parking lot lane, private road or private street.]

46
47

FIRE DEPARTMENT STANDARD KEY. [A key of special or controlled design, also known as a “1620” key, for the use of department personnel and others specifically authorized by the

1 commissioner, which serves to operate all switches, locks and other devices required to be operable
2 by a citywide standard key.]

3
4 **FIRE LANE.** [A public or private road, roadway lane, parking lot lane or other surface designed
5 to allow vehicular access, that has been specifically designated by means of signs or roadway
6 markings as a priority thoroughfare for fire apparatus.]

7
8 **FRONTAGE SPACE.** [A street or an open space in front of and adjoining the main front entrance
9 to the building and not less than 30 feet (9144 mm) in any dimension that is accessible from a
10 public street or fire apparatus access road, provides access to the building, and serves as a staging
11 area for firefighting and other emergency operations. It shall be designed and constructed to allow
12 operation of department apparatus on the front side of the building and shall be maintained free of
13 obstructions that may interfere with its use by the department.]

14
15 **HIGH-RISE MEGASTRUCTURE.**

16
17 **KEY BOX.** [A secure device with a lock operable only by a citywide standard key or other
18 approved key.]

19
20 **MULTI-FLOOR DWELLING UNIT.** [A dwelling unit or other residential occupancy with
21 living space on a floor other than the floor upon which the entrance door to such room, unit or
22 occupancy is located, or which is accessed by means of an interior stair or passageway from an
23 entrance door on another floor.]

24
25 **PRIVATE ROAD.** [A private driveway, lane or street, or other means of vehicular access to one
26 or more buildings, structures or premises not directly fronting on a public street. A private road
27 does not include a public street.]

28
29 **PUBLIC STREET.** [All streets, including mapped streets, record streets, marginal streets and
30 restricted use streets, established on the city map maintained pursuant to Section 198 of the New
31 York City Charter or dedicated for general public use and accepted for such purposes by the City
32 of New York.]

33
34 **[SPEED BUMP.** Any raised roadway designed to reduce the speed of traffic to 20 miles per hour
35 (32.2 kilometers per hour) or less, including any speed hump, speed table or other raised speed
36 reducer, commonly referred to as “speed bumps.”]

37
38 **TRAFFIC CALMING DEVICES.**

39
40 **SECTION FC 503**
41 **FIRE APPARATUS ACCESS**

42
43 **503.1 General.** Buildings shall be accessible to department fire apparatus by way of a public street
44 or approved fire apparatus access road. The public street or fire apparatus access road shall provide
45 access to the frontage space of the building.

1 **503.2 Fire apparatus access roads.** Fire apparatus access roads shall be provided, designed,
2 installed and maintained in accordance with this section.

3
4 **503.2.1 Where required.** Where the frontage space to a building does not directly front on a
5 public street, a fire apparatus access road shall be provided from the public street to the frontage
6 space of such building.

7
8 **503.2.2 Design and construction.** Except as otherwise provided in FC503.2.4, a fire apparatus
9 access road shall be designed and constructed in accordance with the standards of the New
10 York City Department of Transportation and in compliance with the following requirements:

11
12 **503.2.2.1 Surface.** Fire apparatus access roads shall have an all-weather driving surface
13 constructed of asphalt, concrete or other approved permeable or impermeable material.

14
15 **503.2.2.2 Load-bearing capacity.** Fire apparatus access roads shall be capable of
16 supporting the imposed load of department apparatus weighing at least 80,000 pounds (36
17 320 kg) and the operational load of department apparatus outrigger of 52,000 pounds (23
18 608 kg) over a 2 foot (610 mm) by 2 foot (610 mm) area.

19
20 **503.2.2.3 Grade.** The grade of the fire apparatus access road shall not exceed 10 percent
21 unless approved by the commissioner.

22
23 **503.2.2.4 Turning radius.** The required turning radius of a fire apparatus access road shall
24 be determined by the commissioner.

25
26 **503.2.2.5 Bridges and elevated surfaces.** Any bridge or elevated surface on a fire
27 apparatus access road shall be designed for a live load sufficient to carry the imposed loads
28 of fire apparatus. Signs shall be posted at both entrances to any bridge or elevated surfaces
29 not capable of carrying such a load. Roadways or surfaces not capable of carrying such
30 load that adjoin fire apparatus roads shall be separated by approved barriers and/or marked
31 by approved signs.

32
33 **503.2.2.6 Angles of approach.** The angles of approach and departure for fire apparatus
34 access roads shall be within the limits established by the department based on the
35 department's fire apparatus.

36
37 **503.2.3 Roadway width and vertical clearance.** Fire apparatus access roads shall have an
38 unobstructed width of not less than 34 feet (10 363 mm) excluding shoulders, except as
39 provided in FC 503.2.3.1 through 503.2.3.4, and an unobstructed vertical clearance of not less
40 than 14 feet (4267 mm).

41
42 **503.2.3.1 Special zoning districts.** In Special Hillside Preservation Districts complying
43 with the requirements of Section 119-214 of the Zoning Resolution, or other special zoning
44 district regulation restricting the width of streets or private roads to less than 34 feet (10
45 363 mm), a fire apparatus access road shall have an unobstructed width of not less than 30
46 feet (9144 mm), excluding shoulders.

1 **503.2.3.2 Small residential developments.** Where access is being provided to residential
2 developments of not more than five dwelling units, and all buildings to which the road
3 provides access are protected throughout by a sprinkler system, a fire apparatus access road
4 shall have an unobstructed width of not less than 30 feet (9144 mm), excluding shoulders.
5

6 **503.2.3.3 Buildings set back from street.** Where the main front entrance to a building is
7 set back more than 40 feet (12 192 mm) from the curb line, a fire apparatus access road
8 shall have the unobstructed width and comply with the other requirements set forth in
9 FC503.2.4.
10

11 **503.2.3.4 Special conditions.** Where the commissioner determines that the nature and
12 location of the building served by the fire apparatus road or other site conditions render
13 such roadway width or vertical clearance inadequate for firefighting or other emergency
14 response operations, the commissioner may require that the roadway width or vertical
15 clearance be increased.
16

17 **503.2.4 Buildings set back from street.** Where the main front entrance to a building is set
18 back more than 40 feet (12 192 mm) from the curb line, a fire apparatus access road with the
19 unobstructed roadway width required by FC503.2.3 shall be provided to the frontage space of
20 the building, except as otherwise provided in FC 503.2.4.1 through 503.2.4.3.
21

22 **503.2.4.1 Group R-3 occupancies set back 100 feet or less.** The fire apparatus access
23 road to a Group R-3 building with any main front entrance located more than 40 feet (12
24 192 mm) but not more than 100 feet (30 480 mm) from the street line (as measured along
25 the route of the fire apparatus access road) may be designed and constructed in compliance
26 with the requirements of the Building Code for driveways where:
27

- 28 1. The driveway is designed and is used exclusively to provide access only to a single
29 Group R-3 building, and to no other buildings; and
30
- 31 2. The height of the Group R-3 building does not exceed 35 feet (10 668 mm) above
32 the grade plane (with the terms “building height” and “grade plane” having the
33 meanings set forth in Section BC502.1 of the Building Code); and
34
- 35 3. The driveway provides access to the frontage space of each occupancy, except as
36 otherwise provided in FC504.1.2; and
37
- 38 4. The dwelling units are equipped with interconnected smoke alarms, in accordance
39 with Section 907.2.10 of the Building Code.
40

41 **503.2.4.2 Group R-3 occupancies set back more than 100-150 feet.** The fire apparatus
42 access road to a Group R-3 building with any main front entrance located more than 100
43 feet (30 480 mm) but not more than 150 feet (45 720 mm) from the street line (as measured
44 along the route of the fire apparatus access road) shall be designed and constructed with an
45 unobstructed width of not less than 20 feet (6096 mm) in accordance with FC503.2.2
46 where:
47

- 1 1. The fire apparatus access road is designed and is used exclusively to provide access
2 only to a single Group R-3 building, and to no other buildings; and
3
- 4 2. The height of the Group R-3 building does not exceed 35 feet (10 668 mm) above
5 the grade plane (with the terms “building height” and “grade plane” having the
6 meanings set forth in Section 502.1 of the Building Code); and
7
- 8 3. The fire apparatus access road provides access to the frontage space of each
9 occupancy, except as otherwise provided in FC504.1.2; and
10
- 11 4. The dwelling units are equipped with interconnected smoke alarms, in accordance
12 with Section 907.2.10 of the Building Code; and
13
- 14 5. The dwelling units are protected throughout by a sprinkler system; and
15
- 16 6. At least two off-street parking spaces for a one-family dwelling, and at least three
17 such spaces for a two-family dwelling are provided on the premises separate from the
18 fire apparatus access road; and
19
- 20 7. Parking is prohibited on the fire apparatus access road, and a “No Parking” sign
21 conforming to the requirements of FC503.2.7.2 is conspicuously posted at the
22 entrance to the access road.
23

24 **503.2.4.3 Group R-3 occupancies set back more than 150 feet.** The fire apparatus access
25 road to a Group R-3 building with any main front entrance located more than 150 feet (45
26 720 mm) from the street line (as measured along the route of the fire apparatus access road)
27 shall be designed and constructed in compliance with FC503.2.2, except as approved by
28 the commissioner and subject to such conditions as the commissioner may require.
29

30 **503.2.5 Obstruction.** Fire apparatus access roads shall not be obstructed in any manner that
31 impedes vehicular access, except for lawful parking and [speed bumps] approved traffic
32 calming devices. The minimum widths and clearances required by FC503.2.3 shall be
33 maintained at all times, except with prior department approval.
34

35 [Speed bumps] **503.2.5.1. Traffic calming device signage.** Traffic calming devices shall
36 be identified by approved signage or roadway markings.
37

38 **503.2.6 Secondary fire apparatus access.** The commissioner may require more than one fire
39 apparatus access road to one or more buildings where fire apparatus access is impeded to or on
40 the primary access road as a result of substandard width public streets, substandard width fire
41 apparatus access roads, traffic patterns, traffic calming devices, railroad crossings, and other
42 conditions that would significantly delay an emergency response.
43

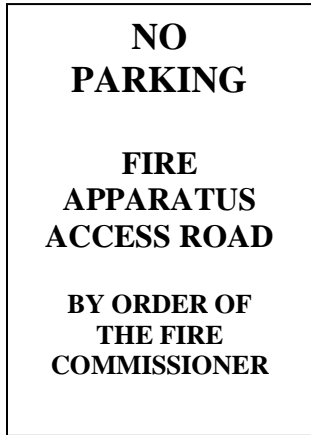
44 **503.2.7 Parking.** Motor vehicles shall not be parked on fire apparatus access roads except in
45 lawful parking spaces that do not obstruct fire apparatus access. Curbside street parking that is
46 lawfully established in accordance with the Zoning Resolution, Building Code and/or other
47 applicable laws, rules and regulations is allowed on any fire apparatus access road if such

1 curbside street parking does not reduce the usable roadway width to less than 18 feet
2 (5486 mm). This requirement shall not be applicable to fire apparatus access roads whose
3 design and use for parking was lawfully existing prior to the effective date of this section. For
4 purposes of this usable roadway width determination, the dimensions of each parking space
5 shall not be less than established by the department, consistent with the regulations of the New
6 York City Department of Transportation for vehicles intended to be parked in such spaces, or,
7 in the absence of such standard, as approved by the department.
8

9 **503.2.7.1 Parking regulations necessitated by roadway configuration.** The
10 commissioner may restrict parking on fire apparatus roads where the angle of approach,
11 curvature of the road, or other roadway configuration or site conditions impede the ability
12 of fire apparatus to make turns or otherwise navigate the fire apparatus access road. Such
13 restrictions shall constitute an operational requirement of this code.
14

15 **503.2.7.2 Signage and roadway markings.** On any fire apparatus access road upon which
16 parking is prohibited, or upon which there are both lawful curbside street parking and
17 parking restrictions, appropriate signage and/or roadway markings shall be provided in
18 accordance with this section.
19

20 **503.2.7.2.1 Signage.** Fire apparatus access roads subject to parking restrictions shall
21 be marked with permanent NO PARKING—FIRE APPARATUS ACCESS ROAD
22 signs complying with FC Figure 503.2.7.2.1. Signs shall have a minimum dimension
23 of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white
24 reflective background. Signs shall be posted on the sides of the fire apparatus access
25 road upon which parking is prohibited.



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**FC FIGURE 503.2.7.2.1
NO PARKING SIGN
FIRE APPARATUS ACCESS ROAD**

26 **503.2.7.2.2 Roadway markings.** Where required by the commissioner, approved
27 roadway markings that include the words NO PARKING—FIRE APPARATUS
28 ACCESS ROAD shall be provided for fire apparatus access roads to identify them as
29 fire apparatus access roads.
30
31

1 **503.2.8 Gates.** The design of gates across a fire apparatus access road shall be in accordance
2 with this section.
3

4 **503.2.8.1 Design requirements.** Gates across a fire apparatus access road shall comply
5 with the following requirements:
6

- 7 1. The gates shall not encroach upon or otherwise reduce the required or approved
8 width of a fire apparatus access road.
9
- 10 2. Gates shall be of the swinging or sliding type.
11
- 12 3. Manually-operated gates shall be designed to allow for operation by one person.
13
- 14 4. Only approved locking devices shall be used.
15
- 16 5. Manually-operated gates shall not be locked with a padlock or chain and padlock
17 unless the padlock and chain are capable of being cut with standard bolt cutters.
18
- 19 6. Automatically-operated gates shall be designed and installed in accordance with
20 ASTM F 2200 and UL 325, as applicable, and shall have an approved means of
21 manual operation for emergency access by firefighters and other emergency response
22 personnel.
23

24 **503.2.8.2 Use to restrict access.** The commissioner may require the installation of locked
25 gates where access to a road is to be restricted for fire apparatus use. It shall be unlawful
26 to operate or park a motor vehicle on a fire apparatus access road restricted in this manner
27 unless authorized by the commissioner.
28

29 **503.2.9 Dead-end [turnarounds] roads.** Dead-end fire apparatus access roads more than 150
30 feet (45 720 mm) in length, as measured from the curb line of the nearest public street which
31 is not itself a dead-end, shall be provided with an approved [turnaround area for fire apparatus
32 in accordance with FC Table 503.2.9. Such roads more than 150 feet (45 720 mm) but not
33 more than 400 feet (121 920 mm) in length shall not require a turnaround if all buildings served
34 by the road that are further than 150 feet (45 720 mm) from the curb line of the nearest public
35 street that is not a dead-end are protected throughout by a sprinkler system, excluding buildings
36 in which the lack of a sprinkler system is a lawfully existing condition pursuant to FC 102.3,
37 102.4 and 102.5.] means by which fire apparatus can turn around or otherwise exit the area in
38 accordance with FC 503.2.9.1 or 503.2.9.2. Dead-end fire apparatus roads shall not exceed 400
39 feet (121 920 mm) in length unless approved by the commissioner.
40

41 **503.2.9.1 Dead-end turnarounds.** Dead-end fire apparatus access roads shall be provided
42 with a turnaround, as set forth in FC Table 503.2.9.1, unless the department accepts an
43 alternative means for fire apparatus egress, as set forth in FC503.2.9.2.
44

45 **FC TABLE 503.2.9.1**
46 **REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS**

LENGTH (feet)	WIDTH (feet) ^{[b]a}	[TURNAROUNDS] TURNAROUND REQUIRED
0-150	34	None required

> 150 and ≤ 400 ^[a]	34	90-foot hammerhead, or 76-foot-diameter unobstructed turnaround, 90-foot-diameter turnaround with a 15-foot-diameter island, or other approved means. ^[c] _b
> 400	As approved	[Such roads are allowed only where approved by the commissioner] <u>As approved by the department.</u>

For SI: 1 foot = 304.8 mm.

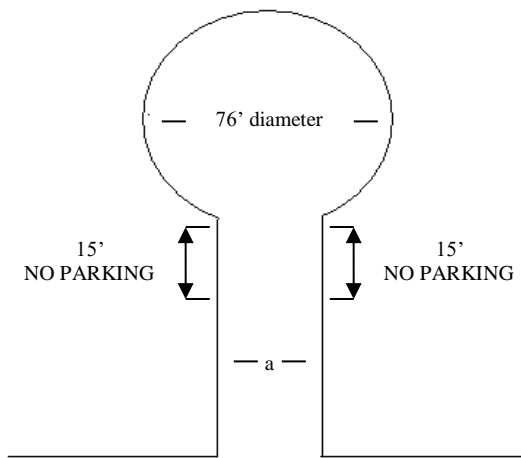
a. [A turnaround shall not be required if all buildings served by the road are protected throughout by a sprinkler system.

b.]Except as otherwise provided in FC503.2.3.

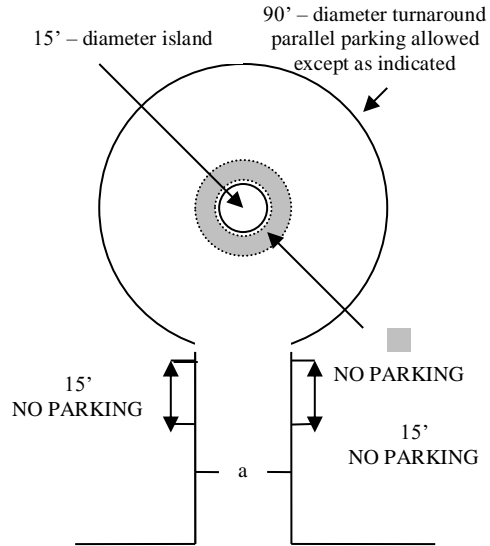
[c.]_b. See FC Figure 503.2.9.

503.2.9.2 Alternative dead-end solutions. Where the configuration of the site makes provision of a turnaround complying with FC503.2.9.1 impracticable, the department may allow alternative means of fire apparatus egress, including use of a building entrance driveway; garage or loading dock entrance driveway; open plaza; planted open space utilizing vehicle load-bearing permeable paving materials; parking lot lane; or other driveway or lane leading to a separate through road. Any such alternative means of fire apparatus egress shall be capable of accommodating fire apparatus operation, including load-bearing construction, grades, clearances, and, if required, provision of mountable curbs.

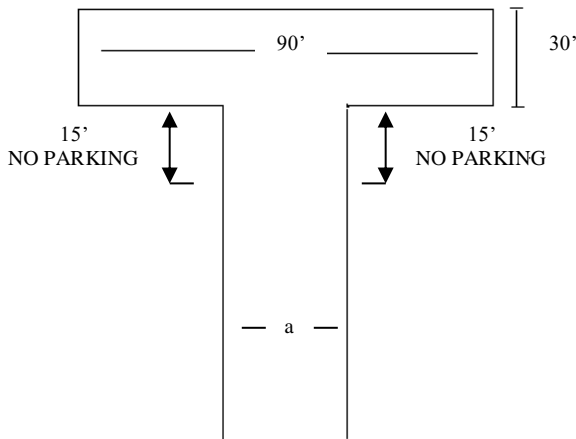
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1. 76-Foot-Diameter Turnaround



2. 90-Foot-Diameter Turnaround with up to 15-Foot-Diameter Island



3. 90-Foot Hammerhead

a. 34 feet (10 363 mm) except as otherwise provided in FC503.2.3.

FC FIGURE 503.2.9 DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

503.2.10 Substandard width roads. Buildings on fire apparatus access roads that have an unobstructed roadway width of less than 34 feet (10 363 mm) shall be protected throughout by a sprinkler system. Buildings served by a substandard width fire apparatus access road that is a lawfully existing condition pursuant to FC 102.3, 102.4 and 102.5 shall comply with this requirement when undergoing alteration or a change of occupancy in accordance with FC501.4.3. This requirement shall not apply to any detached, unheated[,] carport, garden shed,

1 greenhouse, private parking garage for not more than three motor vehicles, tower or other
2 accessory building, that is:

- 3
- 4 1. Classified by the Building Code as a Group U occupancy;
- 5
- 6 2. Not occupied or designed to be occupied for residential, commercial or office purposes;
- 7 and
- 8
- 9 3. Accessory to a Group R-2 or Group R-3 occupancy.

10
11 **503.3 Public streets.** Buildings fronting on public streets shall comply with the requirements of
12 FC 503.3.1 and 503.3.2.

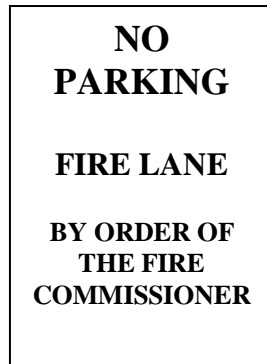
13
14 **503.3.1 Dead-end turnarounds.** Dead-end public streets in excess of 150 feet (45 720 mm)
15 in length, as measured from the curb line of the nearest public street that is not a dead-end,
16 shall be provided with an approved [turnaround area for fire apparatus that complies with the
17 requirements of] means by which fire apparatus can turn around or otherwise exit the street, in
18 accordance with FC503.2.9.

19
20 **[Exception:** A turnaround shall not be required for dead-end public streets more than 150
21 feet (45 720 mm) in length if all buildings on such street further than 150 feet (45 720 mm)
22 from the curb line of the nearest street that is not a dead-end are protected throughout by a
23 sprinkler system, excluding buildings in which the lack of a sprinkler system is a lawfully
24 existing condition pursuant to FC 102.3, 102.4 and 102.5.]

25
26 **503.3.2 Substandard width.** Buildings on public streets that have an unobstructed width of
27 less than 34 feet (10 363 mm) shall be protected throughout by a sprinkler system. Buildings
28 on substandard width public streets that were not required prior to the effective date of this
29 section to be protected throughout by a sprinkler system shall comply with this requirement
30 when undergoing alteration or a change of occupancy subject to FC501.4.3. This requirement
31 shall not apply to any Group U occupancy complying with the requirements of FC503.2.10.

32
33 **503.4 Fire lanes.** It shall be unlawful to park on a fire lane. Where other vehicular traffic is allowed
34 on a fire lane, such traffic shall yield to fire apparatus or other department emergency response
35 vehicles.

36
37 **503.4.1 Signage.** Fire lanes subject to parking restriction shall be marked with permanent NO
38 PARKING-FIRE LANE signs complying with FC Figure 503.4.1, and/or approved roadway
39 markings. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches
40 (457 mm) high and have red letters on a white reflective background. Signs shall be posted on
41 the sides of the fire lane upon which parking is prohibited.



FC FIGURE 503.4.1 FIRE LANE SIGN

1
2 **503.5 Outdoor parking lots.** Outdoor parking lot lanes between rows of parking spaces and aisle
3 space between motor vehicles shall comply with the requirements of the Building Code and Zoning
4 Resolution, except that parking lot lanes that serve as the fire apparatus access road to the main
5 front entrances of buildings situated in parking lots shall comply with the fire apparatus access
6 requirements set forth in this code or such other roadway width requirements established by the
7 Fire Department by rule.

8
9 **SECTION FC 504**
10 **BUILDING AND ROOFTOP ACCESS**

11
12 **504.1 Frontage space.** Buildings shall be provided with a frontage space in compliance with the
13 requirements of this chapter and the Building Code. The term “frontage space” shall have the
14 meaning set forth in [FC502] FC202 for purposes of this code. For purposes of the Building Code,
15 “frontage space” shall have the meaning set forth in Section 502 thereof.

16
17 **Exception:** Accessory buildings or structures classified by the Building Code as a Group U
18 occupancy.

19
20 **504.1.1 Main front entrance.** The main front entrance of a building is the entrance that is
21 designed to serve as the primary means of ingress and egress to the building, and which is
22 located on a side of the building that contains windows, emergency escape and rescue
23 openings, outdoor building corridors or other building openings that serve to afford firefighters
24 access to the upper floors of the building. Where a building has more than one entrance that is
25 so designed and situated, the owner may designate one such entrance as the main front entrance
26 of the building, provided, however, that if such entrance does not provide an appropriate
27 location for firefighting operations, the commissioner may require that another entrance be
28 designated the main front entrance.

29
30 **504.1.2 Occupancies with separate entrances.** When a building contains more than one
31 occupancy and separate entrances are provided for individual occupancies, there shall be a
32 main front entrance for each such occupancy, and a separate frontage space shall be provided
33 for each main front entrance, except that a second frontage space is not required for a two-
34 family Group R-3 occupancy if unobstructed access, 5 feet (1524 mm) in width, is provided to

1 the rear yard and to the main front entrance of any dwelling unit from either side of the building
2 that is not directly accessible from the public street, fire apparatus access road, or driveway.
3 An open accessory parking area not less than 5 feet (1524 mm) in width shall be sufficient to
4 constitute unobstructed access to the rear yard, regardless of the presence of parked vehicles
5 in such parking area.

6
7 **504.1.3 Building access.** An approved access walkway leading from the fire apparatus access
8 road or driveway to the main front entrance of each occupancy or other exterior openings shall
9 be provided when required by the commissioner.

10
11 **504.1.4 Frontage space obstructions.** Obstructions, such as planters, fences and bollards,
12 shall not be placed in the required frontage space unless they have been approved by the
13 Commissioner of Buildings, the Commissioner of Transportation, or the commissioner, as
14 applicable.

15
16 **504.2 Maintenance of exterior doors and openings.** Exterior doors and openings required by
17 this code or the construction codes, including the Building Code, shall be maintained in a manner
18 that affords access by firefighting personnel in accordance with the requirements of this section,
19 FC Chapter 10, and the Building Code. Exterior doors and their function shall not be eliminated
20 without prior approval of the Department of Buildings. Exterior doors that have been rendered
21 nonfunctional and that retain a functional door exterior appearance shall have a sign affixed to the
22 exterior side of the door with the words THIS DOOR BLOCKED. The sign shall consist of letters
23 having a principal stroke of not less than 0.75 inch (19.1 mm) wide and at least 6 inches (152 mm)
24 high on a contrasting background. Required department access doors shall not be obstructed or
25 eliminated. Exit and exit access doors shall comply with the requirements of FC Chapter 10 and
26 the construction codes, including the Building Code. Access doors for high-piled combustible
27 storage shall comply with the requirements of [FC2306.6.1] FC3206.6.1.

28
29 **504.3 Stairway access to roof.** Stairway access to the roof shall be in accordance with FC Chapter
30 10 and the construction codes, including the Building Code. Such stairway shall be marked at
31 street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs
32 are used for rooftop gardens or for other lawful purposes, stairways shall be provided as required
33 for such occupancy classification.

34
35 **504.4 Rooftop access and obstructions.** The rooftops of buildings 100 feet (30 480 mm) or less
36 in height, except rooftops with a slope exceeding 20 degrees (0.35 rad) from the horizontal, shall
37 be designed, installed, operated and maintained in accordance with this section and in a manner
38 that avoids or minimizes obstructions that impede firefighting operations such as vertical
39 ventilation of heat and smoke, surveillance of rear yards and courtyards, and rooftop-aided rescues.
40 For purposes of this section only, “rooftop” shall include rooftops of building setbacks, and
41 “obstruction” shall mean any fixture or other item that is not readily movable by one person
42 without the use of tools or equipment, including air conditioning systems, billboards and other
43 signs, cellular antenna equipment, columns and girders, cooling towers, fuel oil storage tanks,
44 generators, heating systems, planters, solar panels, ventilation system ducts, intakes and exhausts,
45 and window cleaning equipment, but shall not include nonmetallic decking that is readily cut by
46 standard power tools.

1 **504.4.1 Rooftop access.** Access to building rooftops shall be provided for fire operations by
2 providing unobstructed access to the rooftop, including unobstructed passage across the
3 building parapet, perimeter fence or other obstructions, and a safe landing. Such rooftop access
4 shall be provided in compliance with the following required clearances:
5

- 6 1. For each 12 linear feet (3658 mm) of building perimeter accessible from the frontage
7 space of the building and from any other exposure accessible to fire apparatus, a
8 minimum clearance of 6 feet (1829 mm) in width and 6 feet (1829 mm) in depth from
9 any obstruction shall be provided at the parapet wall or other perimeter of the rooftop.
10
- 11 2. Where such building perimeter is 24 linear feet (7315 mm) or greater, but less than 36
12 linear feet (10 973 mm), the required clearance openings shall be separated by a distance
13 of not less than 12 linear feet (3658 mm).
14
- 15 3. Where such building perimeter is 36 linear feet (10 973 mm) or greater, the required
16 clearance openings may be contiguous, provided, however, that such contiguous
17 openings shall not exceed 12 linear feet (3658 mm) and shall be separated from other
18 required clearance openings by a distance of not less than 12 linear feet (3658 mm).
19
- 20 4. Each exposure accessible by fire apparatus [may] shall be treated separately for purposes
21 of locating clearance openings and otherwise complying with the requirements of this
22 provision.
23
- 24 5. Awnings, sun control devices, solar panels or other structures affixed to an exterior
25 building wall below the roof line shall not obstruct fire apparatus aerial ladder access to
26 the rooftop perimeter access locations.
27
- 28 6. Scaffolding obstructing rooftop access locations shall be designed to provide secure
29 landings at such locations in an approved manner.
30
- 31 7. The rooftop parapet or other perimeter railing or barrier shall be designed to facilitate
32 the safe dismounting of a firefighter from an aerial ladder. Any such parapet, railing or
33 barrier on a building constructed after the effective date of this section, or installed
34 pursuant to a work permit issued by the Department of Buildings after such date, shall
35 be of substantial construction capable of supporting a minimum of 350 pounds (159 kg)
36 and shall be designed with a level surface at least 5 inches in width (127 mm) so as to
37 allow a firefighter to safely step on it, as prescribed by the department, or other approved
38 design. Where the height of the rooftop parapet, railing or other enclosure is more than
39 48 inches (1219 mm), an approved landing platform and steps or ladder shall be provided
40 to allow a firefighter to safely dismount and descend to the rooftop. Design and
41 installation documents shall be submitted to the department for approval.
42
- 43 8. To the maximum extent practicable, wind turbines or other equipment with moving
44 components shall be installed at rooftop location where they do not impede access or
45 encroach up rooftop access landings, clear path, or required clearances, but in no case
46 shall fan blades or other moving component operate within 3 feet (914 mm) of the rooftop
47 access required by this section, including the 9-foot (2743 mm) height above the parapet

1 or other rooftop perimeter railing or barrier and rooftop access landings. The tips of the
2 fan blades and the edges of other moving components shall bear reflective markings and
3 identified by caution warning signs or other means, to ensure that persons on the rooftop
4 are aware of the presence of such equipment.
5

6 **504.4.2 Rooftop access signs and markings.** Where required by the department, a sign, decal
7 or approved marking shall be provided on the exterior wall of a building, at an approved
8 location on a lower story, directly below the rooftop perimeter access landings, to identify the
9 location of such rooftop access. The department may require such signs or markings when
10 rooftop conditions not apparent from the street make rooftop access unsafe at locations other
11 than the approved building perimeter access landings, or do not allow for access to the roof.
12

13 **504.4.3 Rooftop access landings.** At each rooftop perimeter access location, there shall be a
14 safe landing area not less than 6 feet (1829 mm) in any dimension, and 9 feet (2743 mm) in
15 height above the parapet or other rooftop perimeter railing or barrier. The access landing shall
16 be connected to the clear path required by FC504.4.4. The landing shall not be obstructed by a
17 fence, except as approved. If approved, such fence shall be provided with a standard 3-foot-
18 wide (914 mm) gate that swings inward. Such gate may be secured by a padlock and chain
19 capable of being cut by standard bolt cutters from either side of the gate, or secured by other
20 approved device.
21

22 **504.4.4 Rooftop clear path.** A clear path of not less than 6 feet (1829 mm) horizontal width
23 and 9 feet (2743 mm) in height shall be provided from the front of the building to the rear of
24 the building[and]; from one side of the building to the other for each 100 linear feet
25 (30 480 mm) of rooftop width and depth such that the maximum distance between clear paths
26 is 100 feet (30 480) mm. Such path shall comply with the following requirements:
27

- 28 1. Such clear path shall be accessible from each rooftop perimeter access landing required
29 pursuant to FC504.4.3.
30
- 31 2. Such clear path shall afford reasonable access to bulkhead doors, fire escapes, access
32 ladders, cockloft vents, skylights, scuttles, [and]shafts and rooftop stationary energy
33 storage systems. Such access shall include, to the maximum extent practicable, 3-foot
34 (914 mm) clearance on three sides of the skylight or scuttle. On buildings constructed
35 after the effective date of this section, the clear path shall afford reasonable access, to the
36 maximum extent practicable, to windowed areas on any side of the building that is not
37 fire apparatus accessible.
38
- 39 3. A conduit or pipe may cross such clear path in accordance with FC504.4.7.
40
- 41 4. Any lawful fence obstructing such clear path shall be provided with a standard 3-foot-
42 wide (914 mm) gate, which may be secured by padlock or chain capable of being cut by
43 standard bolt cutters, or secured by other approved device.
44
- 45 5. When the main building rooftop has more than one level, a fixed ladder or other approved
46 means shall be provided to afford access along the clear path from one roof level to the
47 next, excluding any height differential between levels exceeding one story or 16 feet

1 (4077 mm), and any level with a rooftop area that is less than 6 feet (1829 mm) in any
2 dimension.

3
4 6. On an “H”-shaped building or other building whose irregular configuration renders a
5 single clear path inadequate to provide access to each wing of the building or other
6 rooftop area, the commissioner may require one or more additional clear paths to provide
7 adequate access to such rooftop areas.

8
9 7. The rooftop surface serving as the clear path shall not be constructed of glass or other
10 transparent or translucent material, nor shall it require a firefighter to walk upon any
11 flush-mounted solar panels or other energized equipment.

12
13 8. Rooftop stationary energy storage systems shall be designed and installed in accordance
14 with FC608 and the rules, including ensuring that the deflagration zone is not in the clear
15 path and the exhaust system does not vent into the clear path.

16
17 9. The requirements for wind turbines and other equipment with moving components set
18 forth in FC504.4.1(8) shall be applicable to the rooftop clear path.

19
20 **504.4.5 Rooftop clear path protection.** Adequate protection, in the form of a securely affixed
21 protective railing or barrier that is at least 42 inches (1067 mm) above the roof surface in height
22 along the clear path, shall be provided for any shaft, building perimeter or elevation adjoining
23 the clear path or rooftop perimeter access landing (except the rooftop access landing itself).

24
25 **Exception:** Height differentials of 6 feet (1829 mm) or less.

26
27 **504.4.6 Required rooftop clearances.** A minimum clearance of 6 feet (1829 mm) in all
28 directions shall be provided from each door opening onto a rooftop from a dwelling unit,
29 stairway, bulkhead, or other occupied space or means of egress, as measured from the door
30 hinge. A minimum clearance of 3 feet (914 mm) in all directions shall be provided from any
31 fire escape or rooftop access ladder, as measured from each side of the ladder or landing.

32
33 **504.4.7 Rooftop conduits and piping.** To the maximum extent practicable, conduits,
34 including cable trays, and piping, shall be installed at rooftop locations where they do not
35 obstruct rooftop access landings, clear path or required clearances. If it is impracticable to
36 avoid these areas, conduits and piping shall be designed and installed to facilitate access and
37 minimize tripping hazards. Steps or ramps (or platforms with steps, ramps or ladders) shall be
38 provided that are constructed of noncombustible material, equipped with railings, and designed
39 to allow any conduit or piping installations that exceed 1 foot (305 mm) in height above the
40 roof surface, or more than 24 inches (610 mm) in width, to be readily traversed. Steps, ramps,
41 platforms and ladders shall not be placed in areas or in a manner that would obstruct any door
42 or means of egress. All conduits and piping installations shall be color-coded with continuous,
43 durable and weatherproof reflective or luminescent markings as follows, and for conduit and
44 piping installed after July 1, 2014, shall be continuously labeled in an approved manner to
45 indicate its contents:

46
47 1. High voltage wiring – Red.

2. Low voltage wiring – Orange.
3. Natural gas piping – Yellow.
4. Other compressed gas piping – Yellow, labeled at regular intervals with the type of gas.
5. Fuel oil piping – Yellow with black stripes.

504.4.8 Rooftop access underneath cantilevered or overhead buildings. Where a building is constructed directly above another building, including a building cantilevered over another building, a vertical clearance from the rooftop of the building below shall be provided for firefighting operations in accordance with the following requirements. Design and installation documents documenting compliance with this section, including the fire analysis filed with the Department of Buildings, shall be submitted for Fire Department review and approval. Such vertical clearance:

- 1 shall be at least 12 feet (3658 mm); and
2. shall be at least 9 feet (2743 mm) above the highest building feature on the rooftop when the building feature is 25 feet (7620 mm) or less from the closest exterior surface of the building constructed above; but
3. shall not apply to rooftop areas above which a noncombustible screen wall or other similar structure has been constructed for purposes of zoning compliance, provided that such structure extends below the cantilever from the side wall of the new building facing a street for a width not to exceed 8 feet (2438 mm) and a depth not to exceed 12 feet (3658 mm).

504.4.9 Group R-3 occupancies with shallow-pitched roofs. A Group R-3 occupancy that is primarily a building with a roof pitch of less than 9.5 degrees shall comply with FC504.4, notwithstanding the presence of a pitched roof element such as a mansard or a penthouse with a pitched roof. A Group R-3 occupancy with a roof pitch of 9.5 degrees or more shall comply with FC512.3, not FC504.4.

504.4.10 Rooftop telecommunications installations. Telecommunications installations on building rooftops, including cellular antenna installations, shall additionally comply with the following requirements:

1. Transmitting antennas shall be identified by affixing to the antenna, the antenna mounting, or a conspicuous location near the antenna, continuous, durable and weatherproof reflective or luminescent markings and not less than 3-inch (76-mm) lettering that reads, “TRANSMITTER.” If the antenna is enclosed or screened, such marking shall be placed on the exterior of the enclosure or screening.
2. A durable sign shall be conspicuously posted near the main building electrical panel, on the side of the bulkhead or rooftop hatch, and on or near any equipment closet, roof base

1 station or similar telecommunications antenna installation, identifying the owner of the
2 installation, providing a 24-hour/7-day per week telephone number by which such owner
3 can be contacted, and identifying the installation, including antennas and other powered
4 equipment associated with the installation, by number or other unique designation.
5

6 3. Transmitting antennas and other rooftop installations subject to radiofrequency exposure
7 limits, as set forth in the regulations of the Federal Communications Commission, shall
8 be installed in a manner that complies with the applicable exposure limits, including
9 those applicable to rooftop access, landing, clear path and clearance areas and other
10 rooftop areas to which the general population has uncontrolled access. Certification of
11 compliance, in an approved format, by a qualified person trained and knowledgeable in
12 the measurement of Federal Communications Commission radiofrequency exposure
13 limits shall be submitted to the department with rooftop access applications and upon
14 request in connection with rooftop access inspections.
15

16 **[504.4.9] 504.4.11 Rooftop gardens.** Rooftop gardens and landscaping, including living walls,
17 shall be designed, installed, operated and maintained in compliance with the requirements of
18 the construction codes, including the Building Code and this section.
19

20 **[504.4.9.1] 504.4.11.1 Perimeter and clear path access.** Rooftop gardens and landscaping
21 shall not obstruct any rooftop area access to which is required pursuant to this section,
22 including rooftop perimeter access and landings, clear path and clearances.
23

24 **[504.4.9.2] 504.4.11.2 Landscaped rooftops.** Rooftop access landings, clear paths and
25 other areas access to which is required pursuant to FC 504.3 and 504.4.4 may be landscaped
26 in compliance with the following requirements:
27

- 28 1. The earth or other landscaping material in such areas shall be securely contained and
29 compacted in such a manner as to ensure a stable, continuous surface with a slope
30 not exceeding the slope of the rooftop.
31
- 32 2. Vegetation in such areas shall be limited to grass or other plants that do not exceed
33 12 inches (305 mm) in height and do not constitute a tripping hazard or pitfall.
34

35 **[504.4.9.3] 504.4.11.3 Maintenance and water supply.** Rooftop gardens and landscaping
36 shall be maintained and provided with a water supply in accordance with FC318.
37 Equipment used for the maintenance of rooftop gardens and landscaping shall be stored in
38 accordance with FC318.
39

40 **[504.4.10] 504.4.12 Rooftop solar installations.** Rooftop solar installations shall be designed,
41 installed, operated and maintained in accordance with FC512.
42

43 **504.4.13 Maintenance of rooftop building features.** Rooftop installations shall not obstruct
44 the function, use or accessibility of any rooftop building features, including those listed in
45 FC504.4.4(2). Such rooftop building features shall be maintained in good working order to
46 facilitate firefighting operations.
47

1 **504.5 Rooftop access on buildings more than 100 feet in height.** To the maximum extent
2 practicable, a clear path complying with FC504.4.4 shall be provided on all buildings more than
3 100 feet (30 480 mm) in height constructed after the effective date of this section from the bulkhead
4 or other point of rooftop access to the rooftop perimeter on any side of the building that has
5 windows.
6
7

8 **SECTION FC 505**
9 **PREMISES IDENTIFICATION**
10

11 **505.1 Address numbers.** Buildings and structures shall have their lawful address numbers,
12 building numbers and/or other approved building identification placed at a location on or near a
13 building that allows such building identification to be plainly discernible from the public street or
14 frontage space. These numbers shall contrast with their background. Address numbers shall be
15 Arabic numerals or alphabet letters. Numbers shall be a minimum of 4 inches (102 mm) high with
16 a minimum stroke width of ½ inch (12.7 mm). Address numbers shall additionally comply with
17 the requirements of the Building Code, New York City Housing Maintenance Code and the
18 borough president of the borough in which such building is located.
19

20 **505.1.1 Identification of buildings in developments.** Buildings located within outdoor
21 shopping malls, office parks, housing complexes or other developments shall be identified in
22 compliance with the requirements of FC505.1. Where required by the commissioner, approved
23 signage identifying the street address of each building in the development and, in outdoor
24 shopping malls, each tenant space or similar occupancy, and the direction to such building or
25 tenant space, shall be provided. Such signage shall be clearly visible at the intersection of the
26 public street and any fire apparatus access road that provides access to buildings in the
27 development. In any development in which one or more buildings does not have a separate
28 street address, or in any outdoor shopping mall in which one or more tenant spaces or similar
29 occupancies does not have a separate street address, the commissioner may require approved
30 signage indicating the location and direction to each such building or tenant space upon a
31 determination that such signage is necessary to enable firefighting or other emergency response
32 personnel to expeditiously locate such buildings or tenant spaces within the development.
33

34 **505.2 Street or road signs.** Streets and roads within developments shall be identified with
35 approved signs in accordance with the requirements of the New York City Department of
36 Transportation. Temporary signs shall be installed at each street intersection when construction of
37 new roadways allows passage by motor vehicles. Signs shall be of an approved size, weather
38 resistant and be maintained until replaced by permanent signs.
39

40 **505.3 Identification of apartment and guest rooms.** The location of, and entrance to, each
41 dwelling unit (guest room or sleeping room) in a Group R-1 building or occupancy, and each
42 dwelling unit in a Group R-2 building or occupancy, shall be identified in accordance with this
43 section and the rules to assist emergency response personnel responding to fires, medical
44 emergencies and other emergencies at the premises.
45

1 **505.3.1 Apartment and guest room numbers.** Each dwelling unit shall be identified on the
2 public corridor side of the door by a room number and/or letter marking or sign conspicuously
3 and durably printed or posted on or adjacent to at least one entrance door.
4

5 **505.3.2 Public entry and corridor signage.** In a Group R-1 or R-2 building or occupancy
6 with more than eight dwelling units on a floor, a sign shall be conspicuously posted in the
7 elevator lobby or other public entry on each floor, and in the public corridor opposite each
8 stairwell entrance, identifying by directional arrows and dwelling unit numbers and/or letters,
9 the direction to each dwelling unit. Such signage need not be provided in the public entry or
10 opposite any stairwell entrance in any building or on any floor where the entrances to dwelling
11 units are located in a single direction from such entry or stairwell entrance.
12

13 **505.3.3 Existing installations.** Existing buildings and occupancies shall comply with the
14 operational requirements for marking and signage set forth in FC 505.3.1 and 505.3.2 within
15 2 years of the effective date of this section.
16

17 **505.4 Apartment, guest room and stairwell fire emergency markings.** Dwelling units
18 (apartments, guest rooms and sleeping rooms) and stairwell entrances in Group R-1 and Group R-
19 2 buildings and occupancies shall be marked in accordance with this section and the rules to
20 facilitate firefighting and emergency rescue operations at the premises.
21

22 **505.4.1 Multi-floor dwelling units.** The entrance door to a multi-floor dwelling unit in a
23 Group R-1 or Group R-2 building or occupancy shall be identified on the door jamb on the
24 public corridor side of the door by an approved fire emergency marking, not more than 12
25 inches (305 mm) from the bottom of the door, indicating the dwelling unit number and/or letter.
26 In addition, every door of each such multi-floor dwelling unit that opens to a public corridor
27 or other means of egress shall be identified on the public corridor side of the door by one or
28 more upward or downward-pointing arrows indicating the direction(s) of the other floor(s) to
29 which the multi-floor dwelling unit is connected.
30

31 **505.4.2 Apartment and sleeping rooms.** Except as otherwise provided in FC505.4.1, and
32 except in buildings protected throughout by a sprinkler system, in a Group R-1 or R-2 building
33 or occupancy with more than eight dwelling units on a floor, each dwelling unit shall be
34 identified on the door jamb on the public corridor side of the door by an approved fire
35 emergency marking, not more than 12 inches (305 mm) from the bottom of the door, indicating
36 the dwelling unit number and/or letter.
37

38 **505.4.3 Stairwell signage.** Except in buildings protected throughout by a sprinkler system,
39 each stairwell door in a building or occupancy subject to compliance with the requirements of
40 FC505.4.1 or FC505.4.2 shall be identified as a stairwell door on the door jamb on the public
41 corridor side of the door with an approved marking or sign not more than 12 inches (305 mm)
42 from the bottom of the door, unless such stairwell entrance has been marked in compliance
43 with Section [1026.11] 1024 of the Building Code.
44

45 **505.4.4 Design and materials.** The fire emergency markings for dwelling unit entrance doors
46 shall be of photoluminescent, retroreflective or other approved material, durable, water-
47 resistant and securely affixed and shall use Arabic numerals and/or English alphabet letters.

1 The fire emergency marking on multi-floor dwelling units shall be a minimum of 3 inches (76
2 mm) high and 1½ inches (38 mm) wide with a stroke width of ½ inch (12.7 mm) and the fire
3 emergency markings required by FC 505.4.2 and 505.4.3 shall be in accordance with the rules.
4 Any approved fire emergency marking may be used provided that the same type of marking is
5 consistently used throughout the building. Photoluminescent markings and signs shall comply
6 with the Building Code requirements for photoluminescent exit path markings.
7

8 **505.4.5 Existing installations.** Existing buildings and occupancies shall comply with the
9 operational requirements for marking and signage set forth in FC505.4.1 within 2 years of the
10 effective date of this section, and with the operational requirements for marking and signage
11 as set forth in FC 505.4.2 and 505.4.3 within 3 years of the effective date of this section.
12

13 **505.5 Covered mall exterior door signage.** Each exterior door that provides access directly to a
14 tenant space in a covered mall or to a corridor serving as an exit passageway from one or more
15 such tenant spaces shall be provided with signage or markings identifying the business occupying
16 such space or spaces. Such identification shall be durably and conspicuously posted or marked on
17 or adjacent to the outdoor side of the exterior door such that the business name is readily
18 discernible from nearby parking lot lanes.
19

20 SECTION FC 506 21 KEYS AND KEY ACCESS 22

23 **506.1 General.** This section shall govern the use and possession of keys required for firefighter
24 service elevator operation, key boxes, gates and barriers, and other locked areas, boxes or cabinets
25 to which the department requires access for firefighting operations.
26

27 **506.2 Citywide-standard keys.** Citywide-standard keys shall be used to operate firefighter service
28 elevators, and to provide access to key boxes, gates and barriers, and other locked areas, boxes or
29 cabinets to which the department requires access for firefighting operations, in accordance with
30 this section. All locks required to be operable by the citywide-standard key shall also be operable
31 by the fire department standard key. Access to a fire department standard key shall be in
32 accordance with FC506.4.
33

34 **506.2.1 Elevator keys.** Firefighter service elevator key switches shall be operable by a
35 citywide standard key.
36

37 **506.2.2 Key boxes.** Where access to or within a building, structure or premises is restricted
38 because of locked doors or other building openings, or where immediate access would be
39 needed for lifesaving or firefighting purposes in the event of a fire or other emergency, the
40 department may require that keys be kept in a key box installed in an approved location. The
41 owner shall ensure that the key kept in the lock box is replaced whenever a lock securing the
42 area, box or cabinet is changed or rekeyed.
43

44 **506.2.3 Gates and barriers.** Wherever a gate or similar barrier obstructs fire department
45 access or fire apparatus access to a premises, and a lock is installed on such gate or barrier, the
46 lock shall be of an approved type and operable by a citywide standard key.
47

1 **506.2.4 First responder box.** The department may require that a locked box operable by a
2 citywide standard key be provided in a designated area in a building, structure or premises to
3 store plans, building information cards or other materials that will assist firefighting personnel
4 responding to a fire or other emergency at the premises.
5

6 **506.3 Access to citywide standard keys.** It shall be unlawful to possess a citywide standard key
7 except for persons authorized to possess such key in connection with the following purposes:
8

- 9 1. Owners of buildings equipped with firefighter service elevators, or their authorized
10 representatives, including FLS directors and FEP coordinators.
11
- 12 2. Elevator contractors.
13
- 14 3. Elevator inspectors of the Department of Buildings.
15
- 16 4. Persons authorized to conduct testing and other maintenance or servicing of fire alarm
17 systems.
18
- 19 5. Authorized department personnel.
20
- 21 6. New York City police officers and other approved law enforcement personnel.
22
- 23 7. Building owners required to have key boxes, locked boxes or locked gates or barriers
24 pursuant to this code, or their authorized representatives.
25
- 26 8. Building owners with locked gates and barriers that block required fire department and fire
27 apparatus access.
28
- 29 9. Building owners, impairment coordinators, and persons authorized to install or maintain
30 in-building auxiliary radio communication systems.
31
- 32 10. Locksmiths or other authorized key suppliers when in connection with their lawful business
33 operations.
34

35 **506.4 Access to fire department standard keys.** It shall be unlawful to possess a fire department
36 standard key, except for authorized department personnel and other approved persons. The right
37 to possess and use a citywide-standard key pursuant to FC506.2 does not confer the right to possess
38 or use a fire department standard key. Licensed locksmiths are authorized to use the fire department
39 standard key to verify the operability by such key as required by FC506.2 of locks and devices
40 required to be operable by a citywide-standard key, but are not authorized to provide a fire
41 department standard key to any unauthorized person for the purpose of complying with FC506.2.
42

43 **SECTION FC 507**
44 **[RESERVED] FIRE PROTECTION WATER SUPPLIES**
45

1 **507.1 Required water supply.** For premises requiring the installation of private fire hydrant
2 systems or yard hydrant systems, an approved water supply capable of supplying the required
3 design capacity for fire protection shall be provided.
4

5 **507.2 Type of water supply.** A water supply shall consist of pressure tanks, gravity tanks, water
6 mains or other approved fixed systems capable of providing the required design capacity.
7

8 **507.2.1 Private fire service mains.** Private fire service mains and appurtenances shall be
9 installed in accordance with NFPA 24 and the requirements of the New York City Department
10 of Environmental Protection.
11

12 **507.2.2 Water tanks.** Water tanks for private hydrant systems and yard hydrant systems shall
13 be installed in accordance with NFPA 22.
14

15 **507.2.3 Yard hydrant systems.** Outdoor amusement parks, bulk plants or terminals, lumber
16 yards, trailer camps, industrial parks, and similar occupancies shall be provided with a yard
17 hydrant system installed in compliance with the requirements of the construction codes,
18 including the Building Code, this section and FC914. Yard hydrants shall be installed such that
19 the entire area may be reached by 250 feet (76.2 m) of hose from a yard hydrant or a street
20 hydrant supplied from a direct connection to a city water main or other approved water supply.
21

22 **507.3 Design capacity.** The design capacity of the water supply shall be determined by an
23 approved method.
24

25 **507.4 Water supply test.** Upon completion of the installation of a private fire hydrant system and
26 yard hydrant system, a flow test shall be conducted to verify that the system provides the minimum
27 design capacity required by FC507.3. Certification of the water supply test shall be submitted to
28 the commissioner by a registered design professional.
29

30 **507.5 Private fire hydrant systems.** Private fire hydrant systems shall comply with the
31 requirements of FC 507.5.1 through 507.5.6.
32

33 **507.5.1 Where required.** Where the front entrance of a building is more than 250 feet (76.2
34 m) from a hydrant on a public street, as measured by an approved route, private fire hydrants
35 and mains shall be provided as required by the commissioner.
36

37 **507.5.2 Inspection, testing and maintenance.** Private fire hydrant systems shall be subject to
38 periodic tests as required by the commissioner. Private fire hydrant systems shall be maintained
39 in good working order at all times and shall be repaired when defective. Additions, repairs,
40 alterations and servicing shall comply with approved standards.
41

42 **507.5.2.1 Department flow tests.** The department may periodically inspect and test private
43 fire hydrant systems, at the risk of the owner, for proper operation and unobstructed flow
44 of such hydrant system.
45

1 **507.5.3 Private fire service mains and water tanks.** Private fire service mains and water
2 tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 at
3 the following intervals:

- 4
- 5 1. Private fire hydrants (all types): Inspection annually and after each operation; flow test
6 and maintenance annually.
 - 7
 - 8 2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
 - 9
 - 10 3. Fire service main piping strainers: Inspection and maintenance after each use.

11

12 **507.5.4 Obstructions.** Posts, fences, vegetation, rubbish containers, vehicles and other items
13 shall not be installed, planted, placed, parked or stored near fire hydrants, fire department
14 connections or fire protection system control valves in a manner that would obscure the
15 location of such fire hydrants, connections or valves, or that would hinder immediate access
16 thereto by firefighting personnel.

17

18 **507.5.5 Clear space around hydrants.** A 3-foot (914 mm) radius clear space shall be
19 maintained around the circumference of fire hydrants to allow unobstructed operation of the
20 hydrant operating nut, except as otherwise required or approved.

21

22 **507.5.6 Physical protection.** Where fire hydrants are subject to impact by motor vehicles,
23 posts that comply with the requirements of the New York City Department of Environmental
24 Protection shall be installed. Notwithstanding the requirements of FC507.5.5, these posts may
25 be installed no less than 2 feet (610 mm) from the hydrant if they do not obstruct the use of a
26 24-inch (610-mm) wrench on the hydrant operating nut.

27

28 **SECTION FC 508**

29 **[FIRE PROTECTION WATER SUPPLIES] RESERVED**

30

31 **[508.1 Required water supply.** For premises requiring the installation of private fire hydrant
32 systems or yard hydrant systems, an approved water supply capable of supplying the required
33 design capacity for fire protection shall be provided.

34

35 **508.2 Type of water supply.** A water supply shall consist of pressure tanks, gravity tanks, water
36 mains or other approved fixed systems capable of providing the required design capacity.

37

38 **508.2.1 Private fire service mains.** Private fire service mains and appurtenances shall be
39 installed in accordance with NFPA 24 and the requirements of the New York City Department
40 of Environmental Protection.

41

42 **508.2.2 Water tanks.** Water tanks for private hydrant systems and yard hydrant systems shall
43 be installed in accordance with NFPA 22.

44

45 **508.2.3 Yard hydrant systems.** Outdoor amusement parks, bulk plants or terminals, lumber
46 yards, trailer camps, industrial parks, and similar occupancies shall be provided with a yard
47 hydrant system installed in compliance with the requirements of the construction codes,

1 including the Building Code, this section and FC914. Yard hydrants shall be installed such that
2 the entire area may be reached by 250 feet (76.2 m) of hose from a yard hydrant or a street
3 hydrant supplied from a direct connection to a city water main or other approved water supply.
4

5 **508.3 Design capacity.** The design capacity of the water supply shall be determined by an
6 approved method.
7

8 **508.4 Water supply test.** Upon completion of the installation of a private fire hydrant system and
9 yard hydrant system, a flow test shall be conducted to verify that the system provides the minimum
10 design capacity required by FC508.3. Certification of the water supply test shall be submitted to
11 the commissioner by a registered design professional.
12

13 **508.5 Private fire hydrant systems.** Private fire hydrant systems shall comply with the
14 requirements of FC 508.5.1 through 508.5.6.
15

16 **508.5.1 Where required.** Where the front entrance of a building is more than 250 feet (76.2
17 m) from a hydrant on a public street, as measured by an approved route, private fire hydrants
18 and mains shall be provided as required by the commissioner.
19

20 **508.5.2 Inspection, testing and maintenance.** Private fire hydrant systems shall be subject to
21 periodic tests as required by the commissioner. Private fire hydrant systems shall be maintained
22 in good working order at all times and shall be repaired when defective. Additions, repairs,
23 alterations and servicing shall comply with approved standards.
24

25 **508.5.2.1 Department flow tests.** The department may periodically inspect and test private
26 fire hydrant systems, at the risk of the owner, for proper operation and unobstructed flow
27 of such hydrant system.
28

29 **508.5.3 Private fire service mains and water tanks.** Private fire service mains and water
30 tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 at
31 the following intervals:
32

- 33 1. Private fire hydrants (all types): Inspection annually and after each operation; flow test
34 and maintenance annually.
35
- 36 2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years.
37
- 38 3. Fire service main piping strainers: Inspection and maintenance after each use.
39

40 **508.5.4 Obstructions.** Posts, fences, vegetation, rubbish containers, vehicles and other items
41 shall not be installed, planted, placed, parked or stored near fire hydrants, fire department
42 connections or fire protection system control valves in a manner that would obscure the
43 location of such fire hydrants, connections or valves, or that would hinder immediate access
44 thereto by firefighting personnel.
45

1 **508.5.5 Clear space around hydrants.** A 3-foot (914 mm) radius clear space shall be
2 maintained around the circumference of fire hydrants to allow unobstructed operation of the
3 hydrant operating nut, except as otherwise required or approved.
4

5 **508.5.6 Physical protection.** Where fire hydrants are subject to impact by motor vehicles,
6 posts that comply with the requirements of the New York City Department of Environmental
7 Protection shall be installed. Notwithstanding the requirements of FC508.5.5, these posts may
8 be installed no less than 2 feet (610 mm) from the hydrant if they do not obstruct the use of a
9 24-inch (610-mm) wrench on the hydrant operating nut.]
10

11 **SECTION FC 509**
12 **[RESERVED] FIRE PROTECTION AND UTILITY EQUIPMENT**
13 **IDENTIFICATION AND ACCESS**
14

15 **509.1 Identification.** Fire protection equipment shall be identified in an approved manner. Rooms
16 containing controls for ventilation systems, sprinkler risers and valves, or other fire detection,
17 extinguishing or control elements shall be identified for the use of the department. Approved signs
18 required to identify fire protection equipment and equipment location, shall be constructed of
19 durable materials, permanently installed and conspicuously posted.
20

21 **509.2 Safe access.** Fire protection devices, equipment and systems, including fire detection
22 systems and fire extinguishing systems, shall be readily accessible for inspection, operation and
23 maintenance. Combustible materials, combustible waste and other items shall not be placed or
24 stored in a manner that would obstruct or impede access to such equipment. Sprinkler and
25 standpipe system control valves located at a height of 7 feet (2134 mm) or more above the floor
26 shall be provided with fixed ladders, chains and wheels, or other approved means to provide ready
27 access.
28

29 **509.3 Natural gas shutoff tools.** Natural gas utilities shall provide the department with suitable
30 tools for the operation of outdoor gas service line valves for a building or structure or other outdoor
31 emergency shutoff device or equipment. The number of such tools required to supply the
32 department's needs shall be determined by the commissioner.
33

34 **509.4 Utility identification.** Where required by the department, water, natural gas, electric or other
35 utility service shutoff valves and disconnect switches to a building, structure, premises, device,
36 equipment or system shall be provided with a durable and conspicuous marking that identifies the
37 building, structure, premises, device, equipment or system such shutoff valve or disconnect switch
38 serves.
39

40 **SECTION FC 510**
41 **[FIRE PROTECTION AND UTILITY EQUIPMENT**
42 **IDENTIFICATION AND ACCESS] IN-BUILDING AUXILIARY RADIO**
43 **COMMUNICATION SYSTEMS**
44

45 **[510.1 Identification.** Fire protection equipment shall be identified in an approved manner. Rooms
46 containing controls for ventilation systems, sprinkler risers and valves, or other fire detection,
47 extinguishing or control elements shall be identified for the use of the department. Approved signs

1 required to identify fire protection equipment and equipment location, shall be constructed of
2 durable materials, permanently installed and conspicuously posted.

3
4 **510.2 Safe access.** Fire protection devices, equipment and systems, including fire detection
5 systems and fire extinguishing systems, shall be readily accessible for inspection, operation and
6 maintenance. Combustible materials, combustible waste and other items shall not be placed or
7 stored in a manner that would obstruct or impede access to such equipment. Sprinkler and
8 standpipe system control valves located at a height of 7 feet (2134 mm) or more above the floor
9 shall be provided with fixed ladders, chains and wheels, or other approved means to provide ready
10 access.

11
12 **510.3 Natural gas shutoff tools.** Natural gas utilities shall provide the department with suitable
13 tools for the operation of outdoor gas service line valves for a building or structure or other outdoor
14 emergency shutoff device or equipment. The number of such tools required to supply the
15 department's needs shall be determined by the commissioner.

16
17 **510.4 Utility identification.** Where required by the department, water, natural gas, electric or other
18 utility service shutoff valves and disconnect switches to a building, structure, premises, device,
19 equipment or system shall be provided with a durable and conspicuous marking that identifies the
20 building, structure, premises, device, equipment or system such shutoff valve or disconnect switch
21 serves.]

22
23 **510.1 General.** The design, installation, operation and maintenance of in-building auxiliary radio
24 communication systems dedicated for fire department use, whether required by the Building Code
25 or installed voluntarily, shall comply with this section and the rules.

26
27 **510.2 Design and installation.** In-building auxiliary radio communication systems for fire
28 department use shall be designed and installed in accordance with the construction codes,
29 including the Building Code, and the Electrical Code.

30
31 **510.2.1 Installer qualifications.** In-building auxiliary radio communication systems for fire
32 department use shall be installed by a master electrician licensed by the Department of
33 Buildings and such other qualifications as may be prescribed by rule.

34
35 **510.2.2 Installation acceptance.** In-building auxiliary radio communication systems for fire
36 department use shall be tested for department acceptance in compliance with the requirements
37 of this section and the rules.

38
39 **510.2.2.1 Commissioning test.** Upon completion of installation of an in-building auxiliary
40 radio communication system for fire department use, a commissioning test shall be
41 conducted in accordance with the rules by a person holding a Federal Communications
42 Commission general radiotelephone operator license and such other qualifications as may
43 be prescribed by rule.

44
45 **510.2.2.2 Department acceptance test.** Upon successful completion of the
46 commissioning test, the owner shall submit to the department a detailed report of the results
47 of the commissioning test and request a department acceptance test. The department

1 acceptance test shall serve to demonstrate the system is functioning satisfactorily and is
2 ready for department use. The in-building auxiliary radio communication system shall be
3 demonstrated in the presence of a department representative by a representative of the
4 owner. Upon satisfactory completion of the department acceptance test, the department
5 shall issue a permit for such system.

6
7 **510.3 Operation and maintenance.** The operation and maintenance of in-building auxiliary radio
8 communication systems for fire department use shall be in accordance with this section and the
9 rules.

10
11 **510.3.1 General.** In-building auxiliary radio communication systems for fire department use
12 shall be maintained in good working order.

13
14 **510.3.2 Out-of-service systems.** The department shall be notified immediately if an in-
15 building auxiliary radio communication system for fire department use, or part thereof, is out
16 of service. A tag identifying the system as out of service shall be placed on the fire command
17 center or other approved location when the system is out of service.

18
19 **SECTION FC 511**
20 **[IN-BUILDING AUXILIARY RADIO COMMUNICATION SYSTEMS] HIGH-RISE**
21 **MEGASTRUCTURE FIRE OPERATIONS**
22

23 **[511.1 General.** The design, installation, operation and maintenance of in-building auxiliary radio
24 communication systems dedicated for fire department use, whether required by the Building Code
25 or installed voluntarily, shall comply with this section and the rules.

26
27 **511.2 Design and installation.** In-building auxiliary radio communication systems for fire
28 department use shall be designed and installed in accordance with the construction codes,
29 including the Building Code, and the Electrical Code.

30
31 **511.2.1 Installer qualifications.** In-building auxiliary radio communication systems for fire
32 department use shall be installed by a master electrician licensed by the Department of
33 Buildings and such other qualifications as may be prescribed by rule.

34
35 **511.2.2 Installation acceptance.** In-building auxiliary radio communication systems for fire
36 department use shall be tested for department acceptance in compliance with the requirements
37 of this section and the rules.

38
39 **511.2.2.1 Commissioning test.** Upon completion of installation of an in-building auxiliary
40 radio communication system for fire department use, a commissioning test shall be
41 conducted in accordance with Annex O of NFPA 1 by a person holding a Federal
42 Communication Commission general radio telephone operator license and such other
43 qualifications as may be prescribed by rule.

44
45 **511.2.2.2 Department acceptance test.** Upon successful completion of the
46 commissioning test, the owner shall submit to the department a detailed report of the results
47 of the commissioning test and request a department acceptance test. The department

1 acceptance test shall serve to demonstrate the system is functioning satisfactorily and is
2 ready for department use. The in-building auxiliary radio communication system shall be
3 demonstrated in the presence of a department representative by a representative of the
4 owner. Upon satisfactory completion of the department acceptance test, the department
5 shall issue a permit for such system.
6

7 **511.3 Operation and maintenance.** The operation and maintenance of in-building auxiliary radio
8 communication systems for fire department use shall be in accordance with this section and the
9 rules.
10

11 **511.3.1 General.** In-building auxiliary radio communication systems for fire department use
12 shall be maintained in good working order.
13

14 **511.3.2 Out-of-service systems.** The department shall be notified immediately if an in-
15 building auxiliary radio communication system for fire department use, or part thereof, is out
16 of service. A tag identifying the system as out of service shall be placed on the fire command
17 center or other approved location when the system is out of service.]
18

19 **511.1 General.** High-rise megastructures shall be designed, installed, operated and maintained in
20 accordance with this section to facilitate firefighting operations.
21

22 **511.2 Supervision.** A person holding a certificate of fitness for emergency announcements shall
23 be present on the premises at all times when the building is occupied except in a high-rise
24 megastructure required to be staffed by an FLS director. In a mixed-occupancy high-rise
25 megastructure, each occupancy with its own voice communication capability shall be staffed with
26 such a certificate of fitness holder or FLS director.
27

28 **511.3 Building information card.** A building information card complying with FC401.3.4 shall
29 be prepared and maintained at the fire command center or other approved location in all high-rise
30 megastructures, including apartment buildings and other Group R-2 occupancies.
31

32 **511.4 Emergency preparedness.** Emergency preparedness plans shall be prepared when required
33 by FC Chapter 4, provided, however, that a fire and emergency preparedness (Level 2) plan shall
34 be prepared for Group R-2 occupancies in a high-rise megastructure. All emergency preparedness
35 plans in a mixed-occupancy high-rise megastructure shall be coordinated in accordance with
36 FC416.
37

38 **511.5 Fire command center.** The fire alarm system control panel shall be installed in accordance
39 with fire command center requirements, as set forth in FC907.4.
40

41 **511.6 Standpipe elevation markings.** The elevation above grade of each floor level shall be
42 conspicuously marked in accordance with FC905 on or adjacent to the standpipe hose outlets on
43 each floor of a high-rise megastructure.
44

45 **511.7 Storage space for pre-positioned department equipment.** Space shall be provided in a
46 storage room, mechanical room or other approved, enclosed, secure storage location in a high-rise

1 megastructure for the sole purpose of storing department equipment, in accordance with the
2 following requirements:

- 3
- 4 1. A storage space shall be provided for every 150 feet (45 720 mm) in elevation more than
5 420 feet (128 016 mm) above the lowest level of fire apparatus access, at a location near the
6 fire service access elevator or a stairwell.
- 7
- 8 2. Each such storage space shall be not less than 8 feet (2438 mm) in length, 8 feet (2438 mm)
9 in width, and 8 feet (2438 mm) in height, and openable only by fire department standard key
10 or as otherwise approved by the department. Upon reasonable notice to the department, the
11 owner shall be afforded access to such storage spaces for inspection, building maintenance
12 or other legitimate business purpose.
- 13
- 14 3. Each such storage space shall be protected by a sprinkler system, except as otherwise
15 approved by the department.
- 16
- 17 4. Each storage space shall be identified by a sign or marking in accordance with the rules
18 identifying it as a department equipment room.
- 19
- 20 5. This constitutes an operational requirement of this code; however, in a building constructed
21 prior to the effective date of this section that lacks storage spaces in compliance with this
22 section, suitable storage spaces (including spaces not protected by a sprinkler system) may
23 be provided at alternative locations, as approved by the department.
- 24

25 **511.8 Access to elevator shafts.** The department, in coordination with the Department of
26 Buildings, may adopt rules requiring additional access to elevator cabs, installation of elevator
27 location technology, or other design, installation or operational measures designed to facilitate
28 rescue operations in blind hoistways 36 feet (10 973 mm) or more in height in high-rise
29 megastructures.

30

31 **SECTION FC 512**

32 **ROOFTOP SOLAR PANEL INSTALLATIONS**

33

34 **512.1 General.** The design, installation, operation and maintenance of solar panel systems,
35 including photovoltaic and thermal systems, on the rooftops of buildings and structures, shall be
36 in accordance with this section, the Electrical Code and the construction codes, including the
37 Building Code, Mechanical Code and Plumbing Code.

38

39 **512.2 Flat-roofed buildings and structures 100 feet or less in height.** Solar panel installations
40 shall not obstruct any rooftop area access to which is required pursuant to FC504.4, except that
41 solar panel installations may obstruct the clear path required by FC504.4.4 as follows:

- 42
- 43 1. if the installation is provided with a hinged mechanism or other device for which a certificate
44 of approval has been issued that enables the installation to be safely swung, slid, lifted,
45 collapsed or otherwise moved out of the clear path, and that is designed to allow for operation
46 by one person, without the use of a tool; or
- 47

1 2. on any building with a rooftop width or depth of 25 feet (7620 mm) or less, where the design
2 of a solar panel installation necessitates coverage of all or substantially all of the rooftop
3 across the full width or length thereof, the commissioner may authorize permanent
4 obstructions that encroach upon and thereby reduce the clear path width within such area
5 when necessary to accommodate the presence of [hatches; scuttles and skylights; bulkheads;
6 attic ventilators; chimneys and plumbing vents; and heating, ventilation and air conditioning
7 equipment or other rooftop building service equipment] building features and building
8 service equipment that constitute permanent obstructions, including attic ventilators,
9 bulkheads, chimneys, hatches, plumbing ventilations pipes, scuttles, skylights, and roof-
10 mounted heating, ventilation and air conditioning equipment. Such permanent obstructions
11 may encroach upon and, for the distance of the obstruction, reduce the clear path width up
12 to 2 feet (610 mm). Such permanent obstructions shall not reduce the width of clear path at
13 any point to less than 4 feet (1219 mm) and shall not encroach upon the rooftop landing areas
14 required by FC504.4.3.
15

16 **512.3 Pitched-roofed buildings and structures 100 feet or less in height.** Solar panel
17 installations shall be designed, installed, operated and maintained in accordance with this section
18 on rooftops of buildings and structures 100 feet (30 480 mm) or less in height with a slope
19 exceeding 20 degrees, except detached Group U buildings and structures.
20

21 **512.3.1 Hip roofs.** Solar panel installations shall provide a 3 foot (914 mm) wide clear access
22 area along the ridge on each roof slope upon which solar panels are installed.
23

24 **512.3.2 Ventilation.** Solar panels shall not be installed closer than 3 feet (914 mm) to the ridge
25 line.
26

27 **512.4 Photovoltaic solar panel installations.** Photovoltaic solar panel installations shall be
28 designed, installed, operated and maintained in compliance with the requirements of this section.
29

30 **512.4.1 Location of photovoltaic solar panel installations on pitched roofs.** Direct current
31 conduit, wiring systems, and raceways for photovoltaic circuits installed on pitched roofs
32 subject to the requirements of FC512.3 shall be located along hips and valleys, away from the
33 ridge, and on outside walls, to maximize ventilation opportunities. Conduit runs between sub-
34 arrays and to direct current combiner boxes shall be installed in a manner that minimizes the
35 total amount of conduit on the roof by taking the shortest path from the array to the direct
36 current combiner box, except as necessary to minimize the tripping hazard. The direct current
37 combiner boxes shall be located such that conduit runs are minimized in the pathways between
38 arrays.
39

40 **512.4.2 Photovoltaic solar panel installation markings.** Indoor and outdoor direct current
41 conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes, and main
42 service and other disconnects shall have durable, retroreflective and, if outdoors, weatherproof,
43 markings, in white capital letters with a height of not less than 3/8 inch (9.5 mm) on a red
44 background, reading “WARNING: PHOTOVOLTAIC POWER SOURCE.” Continuous
45 installations, including conduit, raceways, enclosures and cable assemblies, shall be marked
46 every 10 feet (3048 mm), within 1 foot (305 mm) of all turns or bends, and within 1 foot
47 (305 mm) above and below all penetrations of roof or ceiling assemblies and all walls.

1
2
3 **CHAPTER 6**
4 **BUILDING SERVICES AND SYSTEMS**

5
6 **SECTION FC 601**
7 **GENERAL**
8

9 **601.1 Scope.** This chapter shall govern the design, installation, operation and maintenance of
10 selected devices, equipment and systems used or designed to be used to provide building services,
11 including battery, commercial cooking, elevator recall, emergency power, heating and
12 refrigerating systems.

13
14 **601.2 Permits.** Permits shall be required as set forth in FC105.6.
15

16 **601.3 General.** Fuel-fired appliances, devices, equipment and systems, emergency power systems,
17 electrical systems and equipment, refrigerating systems, elevator recall, [battery] stationary energy
18 storage systems and commercial cooking systems shall be designed, installed, operated and
19 maintained in accordance with this chapter.
20

21 **601.4 Supervision.** Fuel oil storage systems, refrigerating systems and [battery] stationary energy
22 storage systems shall be supervised in accordance with FC 601.4.1 through 601.4.4.
23

24 **601.4.1 Fuel oil storage and transfer.** A stationary fuel oil storage tank, and related piping,
25 that is installed on the lowest floor of a building and that transfers fuel oil through piping to
26 another stationary fuel oil storage tank, or to fuel-oil burning equipment, installed above such
27 floor, shall be under the general supervision of a certificate of fitness holder. The periodic
28 inspection and testing of such tanks and piping pursuant to FC603.1.9 shall be conducted under
29 the personal supervision of such certificate of fitness holder.
30

31 **601.4.2 Refrigerating systems.** Refrigerating systems shall be supervised by a person holding
32 a certificate of qualification in accordance with FC606.1.1 and FC Table 606.1.1.
33

34 **601.4.3 [Battery] Stationary energy storage systems.** [Battery] Stationary energy storage
35 systems subject to compliance with the requirements of FC608 shall be [under the general
36 supervision of] supervised by a person holding a certificate of fitness in accordance with
37 FC608.7.
38

39 **601.4.4 Commercial cooking systems.** Commercial cooking systems subject to compliance
40 with requirements of FC609 shall be supervised by a person holding a certificate of fitness
41 in accordance with FC609.3.
42

43 **SECTION FC 602**
44 **DEFINITIONS**
45

46 **602.1 Definitions.** The following terms shall, for the purposes of this chapter and as used
47 elsewhere in this code, have the meanings [shown herein] set forth in FC202.

1
2 **APPROVED TESTING LABORATORY.**

3
4 **[BATTERY SYSTEM, STATIONARY LEAD ACID.** A system which consists of three
5 interconnected subsystems:

- 6
7 1. A lead-acid battery.
8
9 2. A battery charger.
10
11 3. A collection of rectifiers, inverters, converters, and associated electrical equipment as
12 required for a particular application.
13

14 **BATTERY TYPES**

15
16 **Lithium-ion battery.** A storage battery in which an electrical current is generated by lithium
17 ions embedded in a carbon graphite or nickel metal-oxide substrate placed in a
18 high-viscosity carbonate mixture or gelled polymer electrolyte.
19

20 **Lithium metal polymer battery.** A storage battery in which an electrical current is generated by
21 the interaction between lithiated positive active material electrically separated from metallic
22 lithium or lithiated negative active material, and nonaqueous liquid or polymerized
23 electrolytes.
24

25 **Nickel cadmium (Ni-Cd) battery.** An alkaline storage battery in which the positive active
26 material is nickel oxide, the negative active material contains cadmium, and the electrolyte is
27 potassium hydroxide.
28

29 **Nonrecombinant battery.** A storage battery in which, under conditions of normal use,
30 hydrogen and oxygen gases created by electrolysis are vented into the air outside of the
31 battery.
32

33 **Recombinant battery.** A storage battery in which, under conditions of normal use, hydrogen
34 and oxygen gases created by electrolysis are converted into water inside the battery instead of
35 venting into the air outside of the battery.
36

37 **Stationary storage battery.** A storage battery designed for use in a stationary installation, in
38 which electrochemical cells are interconnected to supply a nominal voltage of direct current
39 power. The nominal voltage rating of a stationary storage battery is a function of the number
40 of cells connected in a series, and the discharge capacity is a function of the size of the cells.
41 Stationary storage batteries are characterized by their ability to be restored to a fully charged
42 condition by reversing the flow of the electric current after discharge.
43

44 **Valve-regulated lead-acid (VRLA) battery.** A lead-acid battery consisting of sealed cells
45 furnished with a valve that opens to vent the battery whenever the internal pressure of the
46 battery exceeds the ambient pressure by a set amount. In VRLA batteries, the liquid electrolyte

1 in the cells is immobilized in an absorptive glass mat (AGM cells or batteries) or by the
2 addition of a gelling agent (gel cells or gelled batteries).

3
4 **Vented (flooded) lead-acid battery.** A lead-acid battery consisting of cells that have electrodes
5 immersed in liquid electrolyte. Flooded lead-acid batteries have a provision for the user to add
6 water to the cell and are equipped with a flame-arresting vent which permits the escape of
7 hydrogen and oxygen gas from the cell in a diffused manner such that a spark, or other ignition
8 source, outside the cell will not ignite the gases inside the cell.]
9

10 **CERTIFICATE OF QUALIFICATION.** [A written statement issued by the commissioner
11 certifying that the person to whom it is issued has passed an examination as to his or her
12 qualifications to direct, control and supervise the operation of a refrigerating system, for which
13 such certificate is required by this code or the rules.
14

15 **CITYWIDE-STANDARD] CITYWIDE STANDARD KEY.** [See FC502.1.]
16

17 **COMMERCIAL COOKING APPLIANCES.** [Appliances used in a commercial food service
18 establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke
19 or odors that are required to be removed through a local exhaust ventilation system. Such
20 appliances shall include deep fat fryers; upright broilers; griddles; broilers; steam-jacketed kettles;
21 hot-top ranges; under-fired broilers (charbroilers); ovens; barbecues; rotisseries; and similar
22 appliances. For the purpose of this definition, a food service establishment shall include any
23 building or structure used for the preparation and serving of food, other than commercial cooking
24 appliances in carts or other mobile stands operated by street vendors.]
25

26 **COMMERCIAL COOKING SYSTEM.**
27

28 **COMMERCIAL KITCHEN.**
29

30 **COOKING OIL.**
31

32 **DEDICATED USE BUILDING**
33

34 **DUCTLESS HOOD.**
35

36 **ENERGY STORAGE SYSTEM, STATIONARY.**
37

38 **Indoor System.**
39

40 **Mobile system.**
41

42 **Outdoor System**
43

44 **HOOD.** [An air-intake device used to capture by entrapment, impingement, adhesion or similar
45 means, grease and similar contaminants before they enter a duct system.]
46

47 **Type I.** [A kitchen hood for collecting and removing grease vapors and smoke.]

1
2 **KILOWATT HOURS (kWh).**

3
4 **MEGAWATT HOURS (MWh).**

5
6 **PROOF OF COMPLIANCE.**

7
8 **REFRIGERANT.** [The fluid used for heat transfer in a refrigerating system; the refrigerant
9 absorbs heat and transfers it at a higher temperature and a higher pressure, usually with a change
10 of state.]

11
12 **REFRIGERATING SYSTEM.** [A combination of interconnected refrigerant-containing parts
13 constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of
14 extracting then expelling heat.]

15
16 **STORAGE BATTERY.**

17
18 **Types of storage batteries include:**

19
20 **Flow Battery.**

21
22 **Lead-Acid battery.**

23
24 **Lithium-Ion battery.**

25
26 **Lithium Metal Polymer Battery.**

27
28 **Nickel-Cadmium (Ni-Cd) Battery.**

29
30 **Nickel Metal Hydride (NiMH) Battery.**

31
32 **Nonrecombinant Battery.**

33
34 **Recombinant Battery.**

35
36 **Valve-Regulated Lead-Acid (VRLA) Battery.**

37
38 **Vented (flooded) Lead-Acid Battery.**

39
40 **STORAGE BATTERY UNIT.**

41
42 **SECTION FC 603**
43 **FUEL-FIRED APPLIANCES AND EQUIPMENT**
44

45 **603.1 Installation.** Nonportable fuel-fired appliances, devices, equipment and systems shall be
46 designed, installed, operated and maintained in accordance with the construction codes, including
47 the Fuel Gas Code and the Mechanical Code.

1
2 **603.1.1 Manufacturer's instructions.** In addition to the requirements of this code and other
3 applicable laws, rules and regulations, the installation shall be made in accordance with the
4 manufacturer's instructions. Where it becomes necessary to change, modify, or alter a
5 manufacturer's instructions in any way, written approval shall first be obtained from the
6 manufacturer.

7
8 **603.1.2 Approval.** The design, construction and installation of fuel-fired appliances, devices,
9 equipment and systems shall be in accordance with the construction codes, including the Fuel
10 Gas Code and the Mechanical Code.

11
12 **603.1.3 Electrical wiring and equipment.** Electrical wiring and equipment used in connection
13 with oil-burning equipment shall be installed and maintained in accordance with FC605 and
14 the Electrical Code.

15
16 **603.1.4 Fuel oil.** The grade of fuel oil used in a burner shall be that for which the burner is
17 approved and as stipulated by the burner manufacturer and approved by the Department of
18 Buildings. Oil containing gasoline shall not be used. Waste crankcase oil shall not be used,
19 except when such waste oil is mixed with number six fuel oil in bulk or waste oil recovery
20 plants, the resultant mixture meets the minimum specifications for number six fuel oil set forth
21 in the Building Code, and the use of such waste oil complies with all laws, rules and regulations
22 relating to smoke and other emissions and is approved by the Department of Environmental
23 Protection.

24
25 **603.1.5 Access.** The installation shall be readily accessible for cleaning hot surfaces; removing
26 burners; replacing motors, controls, air filters, chimney connectors, draft regulators, and other
27 working parts; and for adjusting, cleaning and lubricating parts.

28
29 **603.1.6 Testing, diagrams and instructions.** After installation of the oil-burning equipment,
30 operation and combustion performance tests shall be conducted to determine that the burner is
31 in proper operating condition and that all accessory equipment, controls, and safety devices
32 function properly in accordance with the requirements of the Department of Buildings and the
33 Department of Environmental Protection.

34
35 **603.1.6.1 Diagrams.** Contractors installing industrial oil-burning systems shall furnish not
36 less than two copies of diagrams showing the main oil lines and controlling valves, one
37 copy of which shall be posted at the oil-burning equipment and another at an approved
38 location that will be accessible in case of emergency.

39
40 **603.1.6.2 Instructions.** After completing the installation, the installer shall instruct the
41 owner or operator in the proper operation of the equipment. The installer shall also furnish
42 the owner or operator with the name and telephone number of persons to contact for
43 technical information or assistance and routine or emergency services.

44
45 **603.1.7 Clearances.** Working clearances between oil-fired appliances and electrical
46 panelboards and equipment shall be in accordance with the Electrical Code. Clearances

1 between oil-fired equipment and oil supply tanks shall be in accordance with the construction
2 codes, including the Building Code and the Mechanical Code.
3

4 **603.1.8 Supervision of operation.** Every stationary oil-fired device, equipment or system that
5 is not fully automatic or requires preheating of the oil shall be operated by or under the personal
6 supervision of a person holding a certificate of fitness or a person holding a high-pressure
7 boiler operating engineer's license issued by the Department of Buildings. In addition to
8 providing personal supervision, such person shall be present at the device, equipment or system
9 during startup. A stationary oil-fired device, equipment or system that is subject to annual
10 inspection pursuant to Article 303 of Title 28 of the Administrative Code may be operated
11 under the general supervision of a certificate of fitness holder or a high-pressure boiler
12 operating engineer license holder.
13

14 **603.1.9 Fuel oil transfer maintenance.** The fuel oil storage tanks and piping systems in which
15 fuel oil is transferred from a stationary fuel oil storage tank installed on the lowest floor of a
16 building to another stationary fuel oil storage tank, or to fuel-oil burning equipment, installed
17 above such floor, shall be inspected for evidence of leaks, and stationary tank float switches
18 shall be tested to ensure that they are in good working order, on not less than a weekly basis.
19

20 **603.2 Chimneys.** Masonry chimneys shall be constructed in accordance with the construction
21 codes, including the Building Code. Factory-built chimneys shall be installed in accordance with
22 the construction codes, including the Mechanical Code. Metal chimneys shall be constructed and
23 installed in accordance with the construction code, including the Building Code and the
24 Mechanical Code.
25

26 **603.3 Fuel oil storage systems.** Fuel oil storage and piping systems shall be installed in
27 accordance with the construction codes, including the Mechanical Code. Fuel oil storage shall be
28 subject to the permit requirements set forth in FC105.6.
29

30 **603.3.1 Portable fire extinguisher.** In all occupancies other than Group R-3 occupancies,
31 stationary fuel oil-burning equipment, including boilers, emergency generators, furnaces, hot
32 water heaters and space heaters, shall be provided with a dry chemical type portable fire
33 extinguisher with at least a 20-B:C rating, or a carbon dioxide type portable fire extinguisher
34 with at least a 2-B:C rating. Such portable fire extinguisher shall be located not more than 30
35 feet (9144 mm) from the fuel oil fired equipment, except that such travel distance may be
36 increased to a maximum of 50 feet (15 240 mm) if a dry chemical portable fire extinguisher
37 with at least a 40-B:C rating, or a carbon dioxide portable fire extinguisher with at least a 4-
38 B:C rating, is provided.
39

40 **603.4 Reserved.**
41

42 **603.5 Heating appliances and equipment.** Heating appliances and equipment shall be listed and
43 shall comply with the requirements of this section.
44

45 **603.5.1 Protection of heating element.** The heating element or combustion chamber shall
46 have a permanent device to prevent accidental contact by persons or material.
47

1 **603.5.2 Heating appliance and equipment installation.** Heating appliances and equipment
2 shall be installed in accordance with the manufacturer’s instructions, the Electrical Code, and
3 the construction codes, including the Building Code, the Mechanical Code and the Fuel Gas
4 Code.

5
6 **603.6 Chimney installation.** Chimneys, smokestacks or similar devices for conveying smoke or
7 hot gases to the outer air and the incinerators, stoves, furnaces, fireboxes or boilers to which such
8 devices are connected, shall be maintained so as not to create a fire hazard.

9
10 **603.6.1 Masonry chimneys.** Masonry chimneys that, upon inspection, are found to have open
11 mortar joints which will permit smoke or gases to be discharged into the building or structure,
12 or which are cracked as to be dangerous, shall be repaired or relined with a listed chimney liner
13 system installed in accordance with the manufacturer’s installation instructions or a flue lining
14 system installed in accordance with the construction codes, including the Building Code and
15 the Mechanical Code, and appropriate for the intended class of chimney service.

16
17 **603.6.2 Metal chimneys.** Metal chimneys which are corroded or improperly supported shall
18 be repaired or replaced.

19
20 **603.6.3 Decorative shrouds.** Decorative shrouds installed at the termination of factory-built
21 chimneys shall be removed except where such shrouds are listed and labeled for use with the
22 specific factory-built chimney system and are installed in accordance with the chimney
23 manufacturer’s installation instructions.

24
25 **603.6.4 Factory-built chimneys.** Existing factory-built chimneys that are damaged, corroded
26 or improperly supported shall be repaired or replaced.

27
28 **603.6.5 Connectors.** Existing chimney and vent connectors that are damaged, corroded or
29 improperly supported shall be repaired or replaced.

30
31 **603.6.6 Incinerator requirements.** Incinerators shall be maintained and operated in
32 accordance with FC 603.6.6.1 and 603.6.6.2.

33
34 **603.6.6.1 Spark arrestor.** Incinerators shall be equipped with an effective means for
35 arresting sparks.

36
37 **603.6.6.2 Time of burning.** Burning shall take place only during approved hours.

38
39 **603.6.7 Discontinuance.** The commissioner may require the operation of an incinerator or
40 other device connected to a chimney to be discontinued immediately upon a determination that
41 the use of the incinerator or other device constitutes an undue fire hazard because of conditions
42 in the surrounding environment.

43
44 **603.7 Discontinuing operation of unsafe heating appliances and equipment.** The
45 commissioner may order that measures be taken to prevent the operation of any existing stove,
46 oven, furnace, incinerator, boiler or any other heat-producing appliance, device, equipment or
47 system found to be defective or in violation of code requirements for existing appliances, devices,

1 equipment or systems after giving notice to this effect to any person, owner, firm or agent or
2 operator in charge of the same. The commissioner may take measures to prevent the operation of
3 any appliance, device, equipment or system without notice upon a determination of the existence
4 of an immediate fire hazard or imminent peril to public safety. The defective appliance, device,
5 equipment or system shall remain out of service until all necessary repairs or alterations have been
6 made.

7
8 **603.7.1 Unauthorized operation.** It shall be a violation of this code for any person, user, firm
9 or agent to continue the utilization of any appliance, device, equipment or system (the
10 operation of which has been discontinued or ordered discontinued in accordance with
11 FC603.7), unless written authority to resume operation is given by the department. Removing
12 or breaking the means by which operation of the appliance, device, equipment or system is
13 prevented shall be a violation of this code.

14
15 **603.8 Reserved.**

16
17 **603.9 Gas meters.** Gas meters shall be installed in accordance with FC 603.9.1 and 603.9.2.

18
19 **603.9.1 Protection of outdoor aboveground installations.** Aboveground gas meters,
20 regulators and piping subject to damage shall be protected by a barrier complying with the
21 requirements of FC312 or otherwise protected in an approved manner.

22
23 **603.9.2 Gas meter identification.** Where more than one gas meter is installed at a single
24 indoor or outdoor location, each gas meter shall be identified by a durable sign or marking
25 identifying the dwelling unit or other occupancy or area that such meter serves. Where more
26 than 12 gas meters are installed at a single location in a non-sequential manner, each meter
27 shall be numbered for identification in a sequential manner (starting with number 1) and a
28 durable sign shall be posted at a conspicuous location in the form of a table listing in sequential
29 order the apartment/room numbers served by the meter with a cross-reference to the sequential
30 meter identification number.

31
32 **SECTION FC 604**
33 **EMERGENCY POWER SYSTEMS**
34

35 **604.1 Installation.** Emergency power systems shall be designed, installed, operated and
36 maintained in accordance with the Electrical Code and the construction codes, including the
37 Building Code.

38
39 **604.2 Where required.** Emergency power systems shall be maintained in accordance with NFPA
40 110, as modified by FC Appendix B, and NFPA 111, such that the system is capable of supplying
41 service within the time specified for the type and duration of emergency power required by the
42 Electrical Code and the construction codes, including the Building Code.

43
44 **604.3 Maintenance.** Emergency power systems shall be maintained such that the system is
45 capable of supplying service within the time specified for the type and duration of emergency
46 power required by the Electrical Code and the construction codes, including the Building Code.
47

1 **604.3.1 Schedule.** Inspection, testing and other maintenance of emergency power systems
2 shall be conducted in accordance with an approved schedule established upon completion and
3 approval of the system installation.
4

5 **604.3.2 Written record.** Written records of the inspection, testing and other maintenance of
6 emergency power systems shall include the date of service, name of the servicing technician,
7 a summary of conditions noted and a detailed description of any conditions requiring correction
8 and what corrective action was taken.
9

10 **604.3.3 Switch maintenance.** Emergency power system transfer switches shall be included in
11 the maintenance schedule required by FC604.3.1. Transfer switches shall be maintained free
12 from accumulated dust and dirt. Inspection shall include examination of the transfer switch
13 contacts for evidence of deterioration. When evidence of contact deterioration is detected, the
14 contacts shall be replaced in accordance with the transfer switch manufacturer's instructions.
15

16 **604.4 Inspection and testing.** Emergency power systems, including all appurtenant components,
17 shall be periodically inspected and tested under load in accordance with NFPA 110, as modified
18 by FC Appendix B, and NFPA 111.
19

20 **Exception:** Where the emergency power system is used for standby power or peak load
21 shaving, such use shall be recorded and may substitute for scheduled testing of the emergency
22 power system, provided that appropriate records are maintained of such use.
23

24 **604.4.1 Transfer switch test.** The test of the transfer switch shall consist of electrically
25 operating the transfer switch from the normal position to the alternate position and then
26 returning back to the normal position.
27

28 **604.5 Supervision.** Inspection, testing and other maintenance shall be conducted under the
29 personal supervision of a person who possesses the required knowledge and training to conduct
30 such maintenance, and who has at least one of the following qualifications:
31

- 32 1. An electrician licensed by the Department of Buildings.
- 33
- 34 2. An electrician holding a special license issued by the Department of Buildings.
- 35
- 36 3. A person holding a stationary engineer license, or high-pressure boiler operating engineer's
37 license, issued by the Department of Buildings.
- 38
- 39 4. A person holding a certificate of qualification.
- 40
- 41 5. A person holding a certificate of fitness as an FLS director.
- 42
- 43 6. A person holding a certificate of fitness as an FEP coordinator.
- 44
- 45 7. A registered design professional.
46
47

SECTION FC 605

ELECTRICAL EQUIPMENT, WIRING AND HAZARDS

605.1 Abatement of electrical hazards. Defective devices, equipment or systems shall not be used and the hazardous conditions shall be corrected or the device, equipment or system shall be removed from the premises. Electrical wiring, devices and other equipment that is damaged or otherwise constitutes an electrical or fire hazard shall not be used, and the hazardous condition shall be corrected or the equipment removed from the premises.

605.2 Illumination. Illumination shall be provided for service equipment areas, motor control centers and electrical panelboards.

605.3 Working space and clearance. A working space of not less than 30 inches (762 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided in front of electrical service equipment. Where the electrical service equipment is wider than 30 inches (762 mm), the working space shall not be less than the width of the equipment. No storage of any materials shall be located within the designated working space.

Exceptions:

1. Where other dimensions are required or allowed by the Electrical Code.
2. Access openings into attics or under-floor areas which provide a minimum clear opening of 22 inches (559 mm) by 30 inches (762 mm).

605.3.1 Labeling. Doors into electrical control panel rooms shall be marked with a plainly visible and legible sign stating ELECTRICAL ROOM or similar approved wording. The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such purpose is clearly evident.

605.4 Multiplug adapters. Multiplug adapters, such as cube adapters, unfused plug strips or any other device not complying with the requirements of the Electrical Code shall be prohibited.

605.4.1 Power tap design. Portable power taps shall be of the polarized or grounded type, equipped with overcurrent protection, and shall be listed in accordance with UL 1363.

605.4.2 Power supply. Portable power taps shall be directly connected to a permanently installed receptacle.

605.4.3 Installation. Portable power tap cords shall not extend through walls, ceilings, floors, under doors or floor coverings, or be subject to environmental or physical damage.

605.5 Extension cords. Extension cords and flexible cords shall not be a substitute for permanent wiring. Extension cords and flexible cords shall not be affixed to buildings or structures, extended through walls, ceilings or floors, or under doors or floor coverings, nor shall such cords be subject to environmental damage or physical impact. Extension cords shall be used only with portable devices.

1
2 **605.5.1 Power supply.** Extension cords shall be plugged directly into an approved receptacle,
3 power tap or multiplug adapter and, except for approved multiplug extension cords, shall serve
4 only one portable device.
5

6 **605.5.2 Ampacity.** The ampacity of the extension cords shall not be less than the rated capacity
7 of the portable appliance supplied by the cord.
8

9 **605.5.3 Maintenance.** Extension cords shall be maintained in good condition without splices,
10 deterioration or damage.
11

12 **605.5.4 Grounding.** Extension cords shall be grounded when serving grounded portable
13 devices.
14

15 **605.6 Unapproved conditions.** Open junction boxes and open-wiring splices shall be prohibited.
16 Approved covers shall be provided for all switch and electrical outlet boxes.
17

18 **605.7 Electrical devices and equipment.** Electrical devices and equipment shall be listed or
19 labeled and installed in accordance with the construction codes and the Electrical Code.
20

21 **605.8 Electrical motors.** Electrical motors shall be maintained free from excessive accumulations
22 of oil, dirt, waste and debris.
23

24 **605.9 Temporary wiring.** Temporary wiring for electrical power and lighting installations is
25 allowed for a period not to exceed 90 calendar days. Temporary wiring methods shall meet the
26 applicable provisions of the Electrical Code.
27

28 **Exception:** Temporary wiring for electrical power and lighting installations is allowed during
29 periods of construction, remodeling, repair or demolition of buildings, structures, equipment
30 or similar activities.
31

32 **605.9.1 Attachment to structures.** Temporary wiring attached to a building or structure shall
33 be attached in an approved manner.
34

35 **605.10 Portable electric space heaters.** The use of portable electric space heaters shall be in
36 accordance with this section.
37

38 **605.10.1 Listed and labeled.** Portable electric space heaters shall be listed and labeled.
39 Portable electric space heaters shall be operated only in locations for which they are listed.
40

41 **605.10.2 Power supply.** Portable electric space heaters shall be plugged directly into a
42 receptacle. Extension cords shall not be used for electrical connections for portable electric
43 space heaters.
44

45 **605.10.3 Prohibited use.** It shall be unlawful to use portable electric space heaters in the
46 following locations:
47

- 1 1. In any building or occupancy, where the power requirements for the portable electric
2 space heater exceed the rating of the electrical circuit or receptacle from which the heater
3 will draw current.
- 4
- 5 2. In any occupancy, within 3 feet (914 mm) of any combustible material.
- 6
- 7 3. In Group I-2 occupancies, except that a portable electric space heater with a heating
8 element designed not to exceed a temperature of 212°F (100°C) may be used in
9 nonsleeping staff and employee areas.
- 10
- 11 4. In Group R-1 college and university dormitories.
- 12
- 13 5. In any location considered to be a hazardous location in accordance with the Electrical
14 Code, unless listed for such use.
- 15

16 **605.11 Portable halogen floor lamps.** Portable halogen floor lamps shall be designed, operated
17 and maintained in compliance with the requirements of this section.

18 **605.11.1 Prohibitions.** It shall be unlawful to:

- 19 1. store or use portable halogen floor lamps in Group I-2 occupancies and Group R-1
20 college and university dormitories.
- 21 2. use portable halogen floor lamps for any purpose other than lighting.
- 22 3. store or use portable halogen floor lamps that are not designed with an approved glass
23 or wire bulb guard or when such guard is not in place.
- 24
- 25
- 26
- 27
- 28

29 **605.11.2 Manufacturer instructions.** Portable halogen floor lamps shall be used in
30 accordance with the manufacturer's instructions.

31 **605.11.3 Placement.** Portable halogen floor lamps shall be placed in locations where the risk
32 of the lamp being tipped over by occupant traffic or activities, or of igniting curtains,
33 furnishings or other combustible materials, is minimized.

34 **605.11.4 Bulb replacement and disposal.** Portable halogen floor lamp bulbs shall be replaced
35 and discarded only when the bulb is cool to the touch.

36 **SECTION FC 606**

37 **REFRIGERATING SYSTEMS**

38 **606.1 General.** Refrigerating systems shall be designed, installed, operated and maintained in
39 accordance with this code and the construction codes, including the Mechanical Code, and
40 ASHRAE 15. Refrigerating systems using ammonia refrigerant shall comply with the applicable
41 IIAR standards for system design, installation, operation and maintenance, except as modified by
42 the Mechanical Code.

1 **606.1.1 Supervision.** It shall be unlawful to operate any refrigerating system for which a
2 permit is required and which is a system described in FC Table 606.1.1, unless such operation
3 is under either the personal supervision or general supervision, as set forth in FC Table 606.1.1,
4 of a person who has obtained a certificate of qualification for refrigerating system operating
5 engineer. For purposes of this section, personal supervision shall mean that such person is
6 present in the building at all times while the system is in operation and that the operation of
7 such system is under his or her personal direction and control, and general supervision shall
8 mean that such person is responsible at all times for the safe operation of such system when
9 such system is in operation and that such system is operated under his or her general direction
10 and control. Persons providing general or personal supervision as required by this section shall
11 register their work location with the department.
12

13 **606.1.2 Operator inspection after repairs.** After any repairs are made to a refrigerating
14 system the operation of which requires supervision by a certificate of qualification holder, the
15 certificate of qualification holder shall check the repairs, together with the functioning of all
16 control devices and the positioning of all valves. Such certificate of qualification holder shall
17 also be present when the system is restarted after repairs.
18

19 **606.1.3 Operator logbook.** A logbook or other form of approved recordkeeping shall be
20 maintained for all refrigerating systems whose operation requires either personal or general
21 supervision by a certificate of qualification holder. For systems requiring personal supervision
22 the logbook shall, at a minimum, contain an entry for each shift the system is in operation. For
23 systems requiring general supervision the logbook shall, at a minimum, contain an entry for
24 each day during which the system is in operation.
25

26 **606.1.3.1 Logbook entries.** The logbook shall provide information relevant to the
27 operation of the system, including any operating problems or deficiencies and required
28 periodic tests. The signature of the certificate of qualification holder shall appear next to
29 each entry.
30

31 **606.2 Refrigerants.** The use and purity of new, recovered, and reclaimed refrigerants shall be in
32 accordance with the construction codes, including the Mechanical Code.
33

34 **606.3 Refrigerant classification.** Refrigerants shall be classified in accordance with the
35 construction codes, including the Mechanical Code.
36

37 **606.4 Change in refrigerant type.** Any change in the type of refrigerant in a refrigerating system
38 shall be made in accordance with the construction codes, including the Mechanical Code.
39

40 **606.5 Access.** Refrigerating systems having a refrigerant circuit containing more than 200 pounds
41 (91 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant shall be accessible to the
42 department at all times as required by the commissioner. Refrigerating systems requiring a permit
43 shall be accessible at all times, and shall, where practicable, be made accessible for department
44 inspection without the use of portable ladders or other portable equipment.
45

46 **606.6 Testing of equipment.** Refrigerating equipment and systems having a refrigerant circuit
47 containing more than 200 pounds (91 kg) of Group A1 or 30 pounds (14 kg) of any other group

1 refrigerant shall be subject to periodic testing in accordance with FC606.6.1. Tests of emergency
 2 devices or systems required by this chapter shall be conducted by a person holding a certificate of
 3 qualification.

4
 5 **606.6.1 Periodic testing.** The following emergency devices or systems shall be tested at least
 6 monthly in accordance with the manufacturer’s instructions.

- 7
- 8 1. Treatment and flaring systems.
- 9
- 10 2. Valves and appurtenances necessary to the operation of emergency refrigerating system
- 11 control boxes.
- 12
- 13 3. Fans and associated equipment intended to operate emergency ventilation systems.
- 14
- 15 4. Detection and alarm systems.
- 16
- 17

FC TABLE 606.1.1 REFRIGERATING SYSTEM OPERATING ENGINEER

Installation Date	Refrigerant Group Or Name ^a	Occupancy Type ^b	Application	Pounds Of Refrigerant In System	System Horsepower	System Design ^c	Supervision Required
Prior to June 1, 1957	A1	Industrial	Human comfort	More than 50	NA	Not fully automatic	Personal
	A1	Industrial	Human comfort	More than 200	NA	Fully automatic	Personal
	A1	Industrial	Human comfort	More than 50 up to 200	NA	Fully automatic	General
	A1	All except Industrial	All	More than 50	NA	Not fully automatic	Personal
	A1	All except Industrial	All	More than 200	NA	Fully automatic	Personal
	A1	All except Industrial	All	More than 50 up to 200	NA	Fully automatic	General
On or after June 1, 1957	A1	Industrial	Human comfort	NA	More than 50 (or kilowatt equivalency)	NA	Personal
	A1	All except Industrial	All	NA	More than 50 (or kilowatt equivalency)	NA	Personal
Regardless of when installed	A2, A3, B1, B2, B3 and carbon dioxide	All	All	More than 50	NA	Not fully automatic	Personal
	A2, A3, B1, B2, B3 and carbon dioxide	All	All	More than 200	NA	Fully automatic	Personal
	A1	Industrial	All except human comfort	More than 50	NA	Not fully automatic	Personal
	A1	Industrial	All except human comfort	More than 200	NA	Fully automatic	Personal
	A1 and carbon dioxide	Industrial	All except human comfort	More than 50 up to 200	NA	Fully automatic	General
	A1	All	Human comfort	NA	Aggregate exceeds 100 ^d	NA	Personal

18
 19 a. For purposes of this table, refrigerant R-123 shall be treated as a group A1 refrigerant, and carbon dioxide shall not be treated as a group A1
 20 refrigerant.
 21 b. For purposes of this table, “industrial” occupancy refers to occupancy groups F, H and S. For installations constructed under the 1968 Building
 22 Code, “industrial” occupancy refers to occupancy groups A, B and D. For installations constructed prior to such 1968 code, “industrial”
 23 occupancy refers to that portion of a building used for manufacturing, processing, or storage of materials or products, including, among others,

1 chemical, food, candy, and ice cream factories, ice making plants, meat packing plants, refineries, perishable food warehouses, and similar
2 occupancies.

3 c. A fully automatic refrigerating system is one whose regulating and safety devices are automatically activated once the system is in operation.

4 d. This aggregate provision applies only to systems within a single building which are under the sole direct control of a single occupant, lessee or
5 owner. Systems with a rating of 15 horsepower or less or the kilowatt equivalency thereof are excluded from the aggregate.
6

7 **606.7 Emergency signs.** Emergency signs shall be provided in accordance with the construction
8 codes, including the Mechanical Code.
9

10 **606.8 Refrigerant detector.** Machinery rooms shall contain a refrigerant detector with an audible
11 and visual alarm as required by the construction codes, including the Mechanical Code for the
12 refrigerant classification.
13

14 **606.9 Remote controls.** Remote control of the mechanical equipment and appliances located in
15 the machinery room and the emergency ventilation system shall be provided in accordance with
16 the construction codes, including the Mechanical Code.
17

18 **606.10 Storage, handling and use.** Flammable liquids, combustible liquids, combustible
19 materials and combustible waste, except for quantities of combustible liquids below permit
20 amounts, spare parts, tools, and incidental materials necessary for the safe and proper operation
21 and maintenance of the system, shall not be stored in machinery rooms for refrigerating systems.
22 Storage, use or handling of extra refrigerant or refrigerant oils shall be as required by FC Chapters
23 [27] 50, [30] 53, [32] 55 and [34] 57 and the Mechanical Code.
24

25 **606.11 [Termination] Discharge and termination of pressure relief devices.** Pressure relief
26 devices, fusible plugs and purge systems for refrigerating systems containing [more than 6.6
27 pounds (3 kg) of Group A2 or B2 refrigerants, as classified in the Mechanical Code, shall be
28 provided with an approved discharge system as required by FC 606.11.1, 606.11.2 and 606.11.3]
29 flammable, toxic or highly toxic refrigerants or ammonia shall comply with FC 606.11.1 through
30 606.11.3. Discharge piping and devices connected to the discharge side of a fusible plug or rupture
31 member shall have provisions to prevent plugging the pipe in the event of the fusible plug or
32 rupture member functions. [The location for the relief valve discharge] Discharge from systems
33 containing Group A3 or B3 refrigerants shall be approved by the department and the Department
34 of Buildings.
35

36 **606.11.1 Flammable refrigerants.** Systems containing more than 6.6 pounds (3 kg) of
37 flammable refrigerants having a density equal to or greater than the density of air shall
38 discharge vapor to the atmosphere only through an approved treatment system in accordance
39 with FC606.11.4 or a flaring system in accordance with FC606.11.5. Systems containing more
40 than 6.6 pounds (3 kg) of flammable refrigerants having a density less than the density of air
41 shall be allowed to discharge vapor to the atmosphere provided that the point of discharge is
42 located outdoors and not less than [20 feet (6096 mm)] 15 feet (4572mm) above the adjoining
43 grade level and not less than 20 feet (6096 mm) from any window, ventilation opening or exit.
44

45 **606.11.2 Toxic and highly toxic refrigerants.** Systems containing more than 6.6 pounds
46 (3 kg) of toxic or highly toxic refrigerants shall discharge vapor to the atmosphere [only
47 through an approved treatment system] in accordance with FC606.11.4 or a flaring system in
48 accordance with FC606.11.5.
49

1 **606.11.3 Ammonia refrigerant.** Systems containing more than 6.6 pounds (3 kg) of ammonia
2 refrigerant shall discharge vapor to the atmosphere [through an approved treatment system in
3 accordance with FC606.11.4, a flaring system in accordance with FC606.11.5, or through an
4 approved ammonia diffusion system in accordance with FC606.11.6, or by other approved
5 means.] in accordance with one of the following methods:
6

7 1. Through an approved treatment system in accordance with FC606.11.4;
8

9 2. Through a flaring system in accordance with FC606.11.5;
10

11 3. Through an approved ammonia diffusion system in accordance with FC606.11.6;
12

13 4. Directly to the atmosphere, when the commissioner determines, on review of an
14 engineering analysis prepared in accordance with FC104.7.2, that a fire, health or
15 environmental hazard would not result from the atmospheric discharge of ammonia; or
16

17 5. By other approved means.
18

19 **[Exceptions:**

20
21 1.] **Exception:** Ammonia/water absorption systems containing less than 22 pounds (10
22 kg) of ammonia and for which the ammonia circuit is located entirely outdoors.
23

24 [2. When the commissioner determines, on review of an engineering analysis prepared
25 in accordance with FC104.7.2, that a fire, health or environmental hazard would not
26 result from discharging ammonia directly to the atmosphere.]
27

28 **606.11.4 Treatment systems.** Treatment systems shall be designed to reduce the allowable
29 discharge concentration of the refrigerant gas to not more than 50 percent of the IDLH at the
30 point of exhaust. Treatment systems shall be in accordance with FC Chapter [37] 60.
31

32 **606.11.5 Flaring systems.** Flaring systems for incineration of flammable refrigerants shall be
33 designed to incinerate the entire discharge. The products of refrigerant incineration shall not
34 pose health or environmental hazards. Incineration shall be automatic upon initiation of
35 discharge, shall be designed to prevent blowback, and shall not expose structures or materials
36 to threat of fire. Emergency power shall have the capacity to operate for one and one-half the
37 required time for complete incineration of refrigerant in the system.
38

39 **606.11.6 Ammonia diffusion systems.** Ammonia diffusion systems shall include a tank
40 containing 1 gallon of water for each pound of ammonia ([4] 8.3 L of water for each 1 kg of
41 ammonia) that will be released in 1 hour from the largest relief device connected to the
42 discharge pipe. The water shall be prevented from freezing. The discharge pipe from the
43 pressure relief device shall distribute ammonia in the bottom of the tank, but no lower than 33
44 feet (10 058 mm) below the maximum liquid level. The tank shall contain the volume of water
45 and ammonia without overflowing.
46

1 **606.12 Discharge location for refrigerating system machinery room ventilation.** Exhaust from
2 mechanical ventilation systems serving refrigerating machinery rooms capable of exceeding 25
3 percent of the LFL or 50 percent of the IDLH shall be equipped with approved treatment systems
4 to reduce the discharge concentrations of flammable, toxic or highly toxic refrigerants to those
5 values or lower.
6

7 **606.13 Notification of refrigerant discharges.** The commissioner shall be notified immediately
8 when a discharge becomes reportable under state, federal or local regulations in accordance with
9 [FC2703.3.1] FC5003.3.1.
10

11 **606.14 Records.** A written record shall be kept of refrigerant quantities brought into and removed
12 from the premises.
13

14 **606.15 Electrical equipment.** Where refrigerants of Groups A2, A3, B2 and B3, as defined in the
15 Mechanical Code, are used, refrigerating system machinery rooms shall conform to the Class I,
16 Division 2 hazardous location classification requirements of the Electrical Code.
17

18 **Exception:** Ammonia machinery rooms that are provided with ventilation in accordance with
19 Chapter 11 of the Mechanical Code.
20

21 **606.16 Use of Group A3 and B3 refrigerants.** Nothing contained in this section shall be
22 construed to authorize the use of Group A3 or B3 refrigerants, as classified in the Mechanical
23 Code, if otherwise prohibited by the construction codes, including the Mechanical Code.
24

25 **SECTION FC 607**

26 **ELEVATORS IN READINESS**

27

28 **607.1 Phase I emergency recall operation and Phase II emergency in-car operation.** Elevators
29 intended to serve the needs of emergency personnel for firefighting or rescue purposes shall be
30 provided with Phase I emergency recall operation and Phase II emergency in-car operation in
31 accordance with the Building Code. Such elevators shall be operable with a citywide standard key
32 in accordance with FC506.2.1.
33

34 **607.2 Emergency signs.** All required signage for elevators shall be provided in accordance with
35 the construction codes, including the Building Code.
36

37 **607.3 Elevators in readiness.** Elevators in every building 75 feet (22 860 mm) or more in height
38 shall be kept ready for immediate use by the department during all hours of the night and day
39 including holidays and weekends. There shall be a competent building attendant available to
40 operate such elevators, except that no attendant shall be required for buildings between 75 and 150
41 feet (22 860 and 45 720 mm) in height having elevators with Phase I emergency recall operation
42 and Phase II emergency in-car operation.
43

44 **607.4 Emergency elevator operation and maintenance.** All elevators equipped with Phase I
45 emergency recall operation and Phase II emergency in-car operation shall be maintained in proper
46 working order such that the emergency elevator operations are operable at all times. All elevators
47 with Phase I emergency recall operation shall be subjected, at least monthly, to a Phase I recall

1 test. All elevators with Phase II emergency in-car operation shall be subjected, at least monthly, to
 2 a minimum of a one-floor operation II test.

3
 4 **607.5 Water protection of hoistway enclosures.** Methods to prevent water from infiltrating into
 5 the hoistway enclosures of fire service access elevators and occupant evacuation elevators, as
 6 approved by the Department of Buildings, shall be maintained.

7
 8 **SECTION FC 608**
 9 **STATIONARY ENERGY STORAGE [BATTERY] SYSTEMS**

10
 11 **[608.1 Scope.** Stationary storage battery systems having an electrolyte capacity of more than 50
 12 gallons (189 L) for flooded lead acid, nickel cadmium (Ni-Cd) and valve-regulated lead acid
 13 (VRLA), or 1,000 pounds (454 kg) for lithium-ion and lithium metal polymer, used for facility
 14 standby power, emergency power or uninterrupted power supplies, shall comply with this section
 15 and FC Table 608.1.

16
 17 **FC TABLE 608.1**
 18 **BATTERY REQUIREMENTS**

REQUIREMENT	NONRECOMBINANT BATTERIES		RECOMBINANT BATTERIES		OTHER
	Flooded Lead Acid Batteries	Flooded Nickel-Cadmium (Ni-Cd) Batteries	Valve Regulated Lead Acid (VRLA) Batteries	Lithium-ion Batteries	Lithium Metal Polymer
Safety caps	Venting caps (608.2.1)	Venting caps (608.2.1)	Self-resealing flame-arresting caps (608.2.2)	No caps	No caps
Thermal runaway Management	Not required	Not required	Required (608.3)	Not required	Required (608.3)
Spill control	Required (608.5)	Required (608.5)	Not required	Not required	Not required
Neutralization	Required (608.5.1)	Required (608.5.1)	Required (608.5.2)	Not required	Not required
Ventilation	Required (608.6.1; 608.6.2)	Required (608.6.1; 608.6.2)	Required (608.6.1; 608.6.2)	Not required	Not required
Signage	Required (608.7)	Required (608.7)	Required (608.7)	Required (608.7)	Required (608.7)
Seismic protection	Required (608.8)	Required (608.8)	Required (608.8)	Required (608.8)	Required (608.8)
Smoke detection	Required (608.9)	Required (608.9)	Required (608.9)	Required (608.9)	Required (608.9)

19
 20 **608.2 Safety caps.** Safety caps for stationary storage battery systems shall comply with
 21 FC 608.2.1 and 608.2.2.

22
 23 **608.2.1 Nonrecombinant batteries.** Vented lead acid, nickel-cadmium and other types of
 24 nonrecombinant batteries shall be provided with safety venting caps.

25
 26 **608.2.2 Recombinant batteries.** VRLA batteries shall be equipped with self-resealing
 27 flame-arresting safety vents.

28
 29 **608.3 Thermal runaway.** VRLA and lithium metal polymer battery systems shall be provided with
 30 a listed device or other approved method to preclude, detect and control thermal runaway.

1 **608.4 Room design and construction.** Stationary battery system rooms and enclosures shall be
2 designed and constructed in accordance with the Building Code. Battery systems may be installed
3 in the same room as the equipment to which they provide power.
4

5 **608.4.1 Separate rooms.** When stationary battery systems are installed in a separate
6 equipment room accessible only to authorized personnel, the batteries may be installed on an
7 open rack for ease of maintenance.
8

9 **608.4.2 Occupied areas.** Only VRLA, lithium-ion, and other types of sealed, nonventing
10 batteries may be installed in an occupied area. Such batteries shall be housed in a
11 noncombustible cabinet to prevent access by unauthorized personnel. Such cabinets shall be
12 located within 10 feet (3048 mm) of the equipment to which the batteries they house provide
13 power.
14

15 **608.5 Spill control and neutralization.** An approved method and materials for the control and
16 neutralization of a spill of electrolyte shall be provided in areas containing lead-acid, nickel-
17 cadmium or other types of batteries with free-flowing liquid electrolyte.
18

19 **Exception:** VRLA, lithium-ion, lithium metal polymer and other types of sealed batteries with
20 immobilized electrolyte shall not require spill control.
21

22 **608.5.1 Nonrecombinant battery neutralization.** For battery systems containing lead-acid,
23 nickel-cadmium or other types of batteries with free-flowing electrolyte, the method and
24 materials shall be capable of neutralizing a spill of the total capacity from the largest cell
25 or block to a pH between 5.0 and 9.0.
26

27 **608.5.2 Recombinant battery neutralization.** For VRLA and other types of sealed batteries
28 with immobilized electrolyte, the method and material shall be capable of neutralizing a spill
29 of 3 percent of the capacity of the largest VRLA cell or block in the room to a pH between
30 5.0 and 9.0.
31

32 **Exception:** Lithium-ion and lithium metal polymer batteries shall not require
33 neutralization.
34

35 **608.6 Ventilation.** Ventilation of stationary storage battery systems shall comply with
36 FC 608.6.1 and 608.6.2.
37

38 **608.6.1 Room ventilation.** Ventilation for flooded lead acid, flooded Ni-Cd and VRLA
39 batteries shall be provided in accordance with the Mechanical Code and the following
40 requirements:
41

- 42 1. The ventilation system shall be designed to limit the maximum concentration of
43 hydrogen to 1 percent of the total volume of the room; or
44
- 45 2. Continuous ventilation shall be provided at a rate of not less than 1 cubic foot per minute
46 per square foot ($0.0051 \text{ m}^3/\text{s}/\text{m}^2$) of floor area of the room.
47

1 **Exception:** Ventilation is not required for lithium-ion and lithium metal polymer
2 batteries.
3

4 **608.6.2 Cabinet ventilation.** When VRLA batteries are installed inside a cabinet, such
5 cabinet shall be approved for use in occupied spaces and shall be mechanically or naturally
6 vented by one of the following methods:
7

- 8 1. The cabinet ventilation shall be designed to limit the maximum concentration of
9 hydrogen to 1 percent of the total volume of the cabinet during the worst-case event
10 of simultaneous “boost” charging of all batteries in the cabinet; or
11
- 12 2. Continuous ventilation shall be provided at a rate of not less than 1 cubic foot per minute
13 per square foot (0.0051 m³/s/m²) of floor area covered by the cabinet. The room in
14 which the cabinet is installed shall also be ventilated as required in FC608.6.1.
15

16 **608.6.3 Ventilation system monitoring.** Mechanical ventilation systems where
17 required by FC 608.6.1 and 608.6.2 shall be supervised by an approved central station or
18 shall initiate an audible and visual signal at a constantly attended on-site location.
19

20 **608.7 Signage.** Signs shall be provided in accordance with FC 608.7.1 and 608.7.2.
21

22 **608.7.1 Equipment room and building signage.** A durable sign that reads as follows shall
23 be posted on doors into electrical equipment rooms or buildings containing stationary battery
24 systems: “CAUTION: This room contains energized battery systems. Battery electrolyte
25 solutions may be corrosive.”
26

27 **608.7.2 Cabinet signage.** Cabinets shall have a sign or marking identifying the type of
28 battery system, the electrical rating (voltage and current) of the system, and applicable
29 chemical and fire hazards.
30

31 **608.8 Seismic protection.** The battery systems shall be seismically braced in accordance with the
32 Building Code.
33

34 **608.9 Smoke detection.** An approved automatic smoke detection system shall be installed in
35 accordance with the Building Code in rooms containing stationary battery systems.
36

37 **608.10 Emergency procedures.** Emergency procedures detailing how to shut down the power
38 from the battery system shall be posted on or near the battery system or kept in an approved
39 location on the premises. The procedures shall also include a 24-hour/7-day per week telephone
40 number by which the owner can be contacted to provide additional information to emergency
41 responders.]
42

43 **608.1 Scope.** This section shall govern stationary energy storage systems, including emergency
44 power, standby power, uninterruptible power and mobile systems.
45

1 **608.2. General.** Stationary energy storage systems shall be designed, installed, operated and
2 maintained in accordance with this section, the rules, manufacturer’s specifications, and, to the
3 extent not inconsistent with this code and rules, NFPA 855, as modified by FC Appendix B.

4
5 **608.3 Permits.** Permits shall be required as set forth in FC105.6.

6
7 **608.4 Testing and listing standards.** All stationary energy storage systems shall be tested and
8 listed by a nationally recognized testing laboratory to the standards set forth in FC 608.4.1 through
9 608.4.3 (or later editions of these standards when necessary to address evolving standards
10 applicable to a rapidly developing technology):

11
12 **608.4.1 Listing standards.** Stationary energy storage systems shall be listed to the following
13 standards:

- 14
15 1. Underwriters Laboratories (UL) Standard 1741 (2010 edition), entitled “Inverters,
16 Converters, Controllers and Interconnection System Equipment for Use With
17 Distributed Energy Resources;”
- 18
19 2. Underwriters Laboratories (UL) Standard 1973 (2018 edition), entitled “Batteries for
20 Use in Light Electric Rail (LER) Applications and Stationary Applications;” and
- 21
22 3. Underwriters Laboratories (UL) Standard 9540 (2020 edition), entitled “Energy
23 Storage Systems and Equipment.”

24
25 **Exceptions:**

- 26
27 1. Any stationary energy storage system technology or application not subject to
28 one or more of these listing standards shall comply with such other testing or
29 listing standards as may be approved by the department.
- 30
31 2. A stationary energy storage system that received a listing under Underwriters
32 Laboratories (UL) Standard 9540 (2016 edition) prior to the effective date of this
33 section may be considered for a certificate of approval provided that such listing
34 is still valid and the system was subjected to full-scale testing in accordance with
35 FC608.4.2.
- 36
37 3. A stationary energy storage system approved by the department under a listing
38 standard superseded by a later edition may continue to be operated under such
39 listing standard and department certificate of approval, provided that the listing
40 is still valid and except as may be required by the department in accordance with
41 FC102.5.

42
43 **608.4.2 Full-scale testing.** Stationary energy storage systems shall be subjected to full-scale
44 testing (referred to as “large-scale testing” in NFPA 855) in accordance with ANSI/Underwriters
45 Laboratories (UL) Test Method 9540A (4th edition), entitled “Test Method for Evaluating Thermal
46 Runaway Fire Propagation in Battery Energy Storage Systems,” or other approved test method, or
47 its failure mode and effects documented by other approved test data.

1
2 **608.4.3 Listing with installation conditions.** Upon approval by the department and the
3 Department of Buildings of a listing standard that is used to establish listings with installation
4 conditions based upon test data, such approved listing standard shall replace the existing listing
5 and testing standards set forth in FC 608.4.1 and 608.4.2. The approved listing standard and
6 listings shall supersede the equipment approval process set forth in FC608.5 and, to the extent
7 addressed in such approved listing, the required separation distances.
8

9 **608.5 Equipment approval.** The design of each storage battery unit, including pre-engineered
10 and pre-packaged systems, shall be approved by the department. The manufacturer of the storage
11 battery unit shall obtain a certificate of approval for such unit in accordance with FC112 and the
12 rules. Application for a certificate of approval shall include the results of the full-scale testing of
13 the storage battery unit in accordance with FC608.4.2, including a failure modes and effects
14 analysis (FMEA) or other approved hazard mitigation analysis. The certificate of approval may
15 set forth terms and conditions for stationary energy storage system use. Such terms and conditions
16 may authorize below-grade installation, or indoor installation in Group R-3 occupancies, based on
17 the hazards demonstrated by the full-scale testing data and the mitigation thereof.
18

19 **608.6 Installation approval.** The design of each stationary energy storage system installation shall
20 be reviewed and approved by the department as required by FC 608.6.1 and 608.6.2.
21

22 **608.6.1 Indoor systems.** Department review and approval of indoor system installations is
23 required for systems utilizing equipment not approved by the department or not in accordance
24 with the terms and conditions of the certificate of approval, equipment listing or requirements
25 of this code. Otherwise, indoor system installation shall be reviewed and approved by the
26 Department of Buildings in accordance with that agency's requirements, with department
27 review and approval of energy storage management systems and monitoring stations, smoke
28 control and smoke purge systems, explosion mitigation, and such fire protection and hazard
29 mitigation systems and measures as are required to be reviewed by the department under this
30 code or the construction codes.
31

32 **608.6.2 Outdoor systems.** Department review and approval of outdoor system installations,
33 including mobile and rooftop systems, shall be in accordance with the rules.
34

35 **608.7 Supervision.** Stationary energy storage systems shall be operated and maintained under the
36 supervision of a person holding the certificate of fitness required for such purpose.
37

38 **608.7.1 Indoor systems.** Except as may be otherwise provided in the rules, indoor systems
39 shall be operated and maintained under the general supervision of such certificate of fitness
40 holder, provided, however, that an FLS director, FEP coordinator, certificate of qualification
41 holder or other responsible person with approved qualifications shall be on the premises during
42 the regular business hours in any building with an indoor system with an aggregate rated energy
43 capacity of one megawatt (1 MWh) or more. Such person shall be responsible for assisting
44 emergency responders, including coordinating with such certificate of fitness holder and the
45 remote monitoring facility in accordance with the emergency management plan.
46

1 **608.7.2 Outdoor systems.** Outdoor systems shall be operated and maintained under the
2 general supervision of such certificate of fitness holder, except as may be otherwise provided
3 in the rules.
4

5 **608.7.3 Qualifications and responsibilities.** A certificate of fitness holder responsible for a
6 stationary energy storage system shall possess the following qualifications and shall have the
7 following duties and responsibilities and such other duties and responsibilities as may be set
8 forth in the notice of examination for such certificate:
9

- 10 1. Be trained and knowledgeable in the installation and operation of the stationary energy
11 storage system, such as a person engaged in the design or installation of such systems;
12
- 13 2. Possess the manufacturer’s installation and operating specifications for each stationary
14 energy storage system and any associated fire protection systems;
15
- 16 3. Immediately report any emergency condition affecting a stationary energy storage
17 system to the department; and
18
- 19 4. Provide technical assistance about the stationary energy storage system installation to
20 the department in accordance with FC608.8 and the rules, and, in coordination with the
21 energy storage management system monitoring facility, identify a subject matter expert
22 who can provide technical assistance about the stationary energy storage system’s design
23 and performance in the event of an emergency condition affecting the stationary energy
24 storage system.
25

26 **608.8 Emergency management plan.** The owner, manufacturer and/or installer of a stationary
27 energy storage system shall have an emergency management plan or protocol that includes
28 procedures for notifications, provision of technical assistance to the department, mitigation of
29 hazardous conditions, and decommissioning or restoration to normal operation. The department
30 may require that a representative of the stationary energy storage system manufacturer or other
31 subject matter expert with technical knowledge of the system and its operation be available in a
32 timely manner to provide technical assistance to the department during an emergency involving or
33 affecting the system.
34

35 **608.9 Design and installation.** Stationary energy storage systems shall comply with the
36 requirements set forth in FC 608.9.1 through 608.9.4.
37

38 **Exception:**
39

40 Lead acid and nickel-cadmium stationary energy storage systems with a maximum operating
41 voltage of 50 volts alternating current or 60 volts direct current, designed and installed for the
42 purpose of supplying emergency power, standby power or uninterruptible power to
43 telecommunications equipment under the exclusive control of a telecommunications provider,
44 when such systems are located outdoors or in an indoor telecommunications facility used
45 exclusively for powering telecommunications equipment, and are in compliance with the
46 requirements of NFPA 855, as adopted and modified by the Department of Buildings, and
47 NFPA 76.

1
2
3
4 **608.9.1 Maximum aggregate rated energy capacity.** The maximum aggregate rated energy
5 capacity of stationary energy storage systems shall be in accordance with FC 608.9.1.1 and
6 608.9.1.2.

7
8 **608.9.1.1 Indoor systems.** The aggregate rated energy capacity per control area of indoor
9 systems shall not exceed the limitations set forth in FC Table 608.9.1.1.

10
11 **FC TABLE 608.9.1.1**
12 **MAXIMUM AGGREGATE RATED ENERGY CAPACITY OF INDOOR STATIONARY ENERGY STORAGE SYSTEMS**

<u>TYPE OF STORAGE BATTERY</u>	<u>MAXIMUM AGGREGATE RATED ENERGY CAPACITY (kWh) PER CONTROL AREA^{a,b}</u>
<u>Lead-acid, all types</u>	<u>600^c</u>
<u>Nickel, all types except sodium nickel chloride</u>	<u>600^c</u>
<u>Lithium-ion, all types</u>	<u>400</u>
<u>Sodium nickel chloride</u>	<u>400</u>
<u>Flow</u>	<u>400</u>
<u>Other</u>	<u>As prescribed by rules or approved by the department</u>

13 a. Subject to the control area limitations set forth in FC Table 5003.8.3.3

14 b. The control areas on a floor of a dedicated use building, other than on a high-rise floor, may be combined or otherwise modified, provided that the
15 total maximum aggregate rated energy capacity of indoor systems allowed per floor is not exceeded.

16 c. Except where a greater maximum aggregate rated capacity is allowed per floor by FC608.9.4.1.10.
17

18 **608.9.1.2 Outdoor systems.** The aggregate rated energy capacity of outdoor stationary
19 energy storage systems (including mobile systems) shall be as approved by the department,
20 unless the department prescribes by rule a maximum aggregate rated energy capacity for
21 such systems.
22

23 **608.9.2 Energy storage management system monitoring.** All stationary energy storage
24 systems shall be designed with an energy storage management system that transmits data
25 regarding energy storage system status and temperature to a remote monitoring facility or other
26 approved location. Indoor systems shall be provided with approved remote monitoring stations
27 at the building's fire command center and/or other approved location.
28

29 **608.9.3 Fire protection and hazard mitigation.** Stationary energy storage systems shall be
30 designed to address the hazards identified by full-scale testing, including protecting the
31 stationary energy storage system and the building or enclosure that houses such system with,
32 as applicable, fire barriers, fire alarm systems, explosion mitigation, gas detection and other
33 emergency alarm systems, fire extinguishing systems and ventilation systems.
34

35 **608.9.3.1 Indoor systems.** Indoor systems shall be provided with the fire protection and
36 hazard mitigation systems and measures required by the conditions of the system's listing
37 and equipment approval, this section, the construction codes, the Electrical Code and the
38 rules.
39

40 **608.9.3.2 Outdoor systems.** Outdoor systems shall be provided with the fire protection
41 and hazard mitigation systems and measures required by the rules.
42

1 **608.9.4 Location.** Stationary energy storage systems shall be installed in accordance with the
2 location requirements and restrictions set forth in FC 608.9.4.1 and 608.9.4.2.

3
4 **608.9.4.1 Indoor systems.** Indoor systems shall be installed in accordance with
5 FC 608.9.4.1.1 through 608.9.4.1.9.

6
7 **608.9.4.1.1 Below-grade locations.** Indoor systems shall not be installed below grade,
8 except when approved by the department in a dedicated use building, or as otherwise
9 approved pursuant to FC608.5.

10
11 **608.9.4.1.2 Sprinkler protection required.** Indoor systems may be installed only in
12 buildings fully protected throughout by a sprinkler system, except as otherwise
13 provided in FC608.9.4.1.9. Control areas housing stationary energy storage systems
14 shall be fully protected throughout by a sprinkler system designed in accordance with
15 NFPA 15, except as may otherwise be approved based on equipment listings and testing
16 results pursuant to FC608.4.

17
18 **608.9.4.1.3 Occupancy restrictions.** Indoor systems may be installed in Group A,
19 Group R-1, Group R-2 and Group I buildings and occupancies only when the building
20 is of noncombustible construction, except as otherwise provided in FC608.9.4.1.9.

21
22 **608.9.4.1.4 Control areas.** Indoor systems shall be installed only in control areas
23 designed, installed, operated and maintained in accordance with this section. The
24 maximum aggregate rated energy capacity of indoor systems per control area shall be
25 in accordance with FC608.9.1. The design and number of control areas per floor shall
26 be in accordance with FC5003.8.3.3, including FC Table 5003.8.3.3, except that
27 (subject to FC608.9.4.1.9 and FC608.9.4.1.10) each control area housing an indoor
28 stationary energy storage system shall be designed and constructed as a high-hazard
29 occupancy, and rooftop installations shall be treated as outdoor installations.

30
31 **608.9.4.1.5 Smoke detection.** Control areas housing stationary energy storage systems
32 shall be protected by a fire alarm system or, if a fire alarm system is not otherwise
33 required in the building or occupancy, by a dedicated smoke detection system.

34
35 **608.9.4.1.6 Ventilation.** Control areas housing stationary energy storage systems shall
36 be equipped with ventilation systems designed for high-hazard occupancies in
37 accordance with the construction codes. Such ventilation systems shall be adequate to
38 exhaust any flammable or other gases generated during the normal operation and/or
39 failure of the stationary energy storage system.

40
41 **608.9.4.1.7 Spill control, neutralization, drainage and containment.** Control areas
42 housing stationary energy storage systems shall be provided with a means to control
43 leaks and spills of liquid electrolyte and such containment and drainage systems as may
44 be required by the construction codes and NFPA 855, as modified by FC Appendix B.

1 **608.9.4.1.8 Emergency power.** All fire protection and hazard mitigation systems
2 required by this section shall be provided with an emergency power system in
3 accordance with the Building Code.

4
5 **608.9.4.1.9 Exceptions for certain battery systems for fire and life safety.** Lead acid
6 battery systems, and nickel-cadmium battery systems, and where approved by the
7 certificate of approval based on their testing results, other types of energy storage
8 systems, designed and installed solely for the purpose of supplying emergency or
9 standby power for building fire safety and life safety systems in accordance with the
10 construction codes and this code may be:

- 11 1. installed in buildings that are not protected throughout by a sprinkler system.
- 12 2. installed in buildings of combustible construction.
- 13
- 14
- 15
- 16 3. housed in control areas that are not constructed as high-hazard occupancies but
17 meet such fire separation standards as may be set forth in the construction codes.
- 18

19 **608.9.4.1.10 Exceptions for certain battery systems for business operations.** The
20 exceptions set forth in FC608.9.4.1.9 shall also be applicable to lead acid battery
21 systems and nickel-cadmium battery systems, not exceeding a maximum aggregate
22 rated energy capacity of 70 kWh per floor, and where approved by the certificate of
23 approval, other types of energy storage systems, designed and installed for the purpose
24 of supplying emergency power, standby power or uninterruptible power, for business
25 operations, in accordance with the construction codes and this code.

26
27 **608.9.4.2 Outdoor systems.** Outdoor systems, including reach-in and walk-in facilities
28 and mobile systems, shall be designed and installed in accordance with the rules. Rooftop
29 systems with an aggregate rated energy capacity exceeding 400 kWh, other than lead acid
30 battery systems, may be installed only on the rooftops of buildings of noncombustible
31 construction.

32
33 **608.10 Commissioning and decommissioning.** Stationary energy storage systems shall be
34 installed and activated for use (commissioned) and deactivated from use and removed from the
35 premises (decommissioned) in accordance with this section, the rules and NFPA 855, as modified
36 by FC Appendix B.

37
38 **608.10.1 Commissioning.** Stationary energy storage systems shall be installed by trained and
39 knowledgeable persons in accordance with manufacturer's specifications. Upon completion of
40 the installation, the certificate of fitness holder assuming responsibility for supervision of the
41 system shall authorize it to be activated, after confirming that the energy storage system is in
42 good working order and operating in accordance with manufacturer's specifications. Approved
43 fire protection, smoke control and smoke purge, and hazard mitigation systems and measures
44 installed to protect the system shall also be inspected and tested by a person holding the
45 qualifications required by this code, the construction codes and/or the Electrical Code, and any
46 required acceptance testing conducted, prior to activation of the system.

1 **608.10.2 Decommissioning.** The certificate of fitness holder supervising a stationary energy
2 storage system shall be responsible for its decommissioning. The deactivation, de-energizing,
3 dismantling and removal of the system shall be conducted by trained and knowledgeable
4 persons in accordance with manufacturer's specifications. The owner, manufacturer, installer,
5 hazardous materials carrier or other party responsible for removal, transportation and/or
6 disposal of the stationary energy storage system shall ensure that the energy storage system is
7 lawfully decommissioned, transported and disposed of in accordance with DOTn hazardous
8 materials regulations and other applicable laws, rules and regulations.

9
10 **608.10.3 Notice to department.** Notice of the commissioning and decommissioning of
11 stationary energy storage systems shall be given to the department, and the removal of a
12 malfunctioning system coordinated with the department, in accordance with the rules.

13
14 **608.11 Operation and maintenance.** Stationary energy storage systems shall be operated and
15 maintained in accordance with FC 608.11.1 through 608.11.6.

16
17 **608.11.1 Remote monitoring of energy storage management system and reporting.** Except
18 for telecommunications equipment subject to the exception set forth in FC608.9, the owner of
19 a stationary energy storage system shall arrange for data transmissions from the energy storage
20 system's energy storage management system to be continuously monitored (on a 24/7 basis)
21 by a remote monitoring facility staffed by trained and knowledgeable persons retained by the
22 manufacturer or installer of the energy storage system. The remote monitoring facility shall,
23 without delay, make all necessary notifications, as required by the rules and the emergency
24 management plan, including notifications to the department, the certificate of fitness holder
25 and the subject matter expert, in the event a stationary energy storage system installed in New
26 York City exceeds or appears likely to exceed thresholds at which fire, explosion or other
27 serious adverse consequences may result.

28
29 **608.11.2 Central station monitoring of fire protection systems.** All fire protection systems
30 protecting the stationary energy storage system installation, including any fire extinguishing
31 system, and fire and gas detection or other emergency alarm system, shall be monitored by an
32 approved central station.

33
34 **608.11.3 Signage.** Stationary energy storage systems shall be identified by signs or markings
35 in accordance with the rules. The department may require that such signs and markings provide
36 required warnings, location of controls, emergency shut down procedures, energy storage
37 management system monitoring facility and other emergency contact information, and other
38 necessary information.

39
40 **608.11.4 Maintenance.** The owner shall ensure that stationary energy storage systems are
41 periodically inspected, tested, serviced and otherwise maintained in accordance with
42 manufacturer's specifications and the requirements of this section by a person trained and
43 knowledgeable in the specific system. The department may prescribe by rule stationary energy
44 storage system periodic inspection requirements.

45
46 **608.11.5 Restoration to service after serious failure.** Any stationary energy storage system
47 that undergoes a serious failure, including one that results in a fire, release of flammable or

1 toxic gas, and/or physical damage to system components, shall be removed from service
2 forthwith. The stationary energy storage system shall not be restored to service until it has been
3 evaluated and, if necessary, repaired or replaced, by a trained and qualified person, and
4 recommissioned by the certificate of fitness holder responsible for the system.
5

6 **608.11.6 Replacement components.** Any replacement storage battery units or other stationary
7 energy storage system components shall be designed for the same storage battery technology
8 and/or chemistry and be compatible with the existing energy storage system installation. In-
9 kind replacement of existing components (consistent with the listing for the storage battery
10 unit or stationary energy storage system) constitutes maintenance and does not require
11 department review and approval. Department review and approval, and, as applicable,
12 Department of Buildings review and approval, is required in the same manner as an application
13 for a new stationary energy storage system installation for replacement of existing components
14 that effect an alteration of the energy storage system, including:
15

- 16 1. replacement of components included in the storage battery unit listing, or that could
17 otherwise affect the results of the full-scale testing of the battery storage unit;
- 18
- 19 2. replacement components that use different battery technologies or chemistries (including
20 the electrolyte chemistry in a flow system); and
- 21
- 22 3. replacement components that change the storage/generating capacity or other
23 functionality of the stationary energy storage system.
24

25 **608.12 Recordkeeping.** A written record of the following information shall be maintained at the
26 premises or other approved location by the certificate of fitness holder and by the owner or operator
27 of the stationary energy storage system, except as otherwise prescribed by the department by rule:
28

- 29 1. Stationary energy storage system installation and commissioning;
- 30
- 31 2. Stationary energy storage system maintenance, including all inspections, servicing and
32 repair;
- 33
- 34 3. Stationary energy storage system decommissioning and removal;
- 35
- 36 4. Installation and maintenance of stationary energy storage system fire protection systems,
37 including all inspection, testing, servicing and repair; and
- 38
- 39 5. Fires or other incidents involving or affecting the stationary energy storage system.
40

41 **608.13 Group R-3 occupancies.** Stationary energy storage systems installed in or on the premises
42 of Group R-3 occupancies (indoor and outdoor systems) shall comply with the foregoing
43 provisions of this section, except as follows:
44

- 45 1. Notwithstanding any provision of FC608.7 to the contrary, both indoor systems and outdoor
46 systems shall be operated and maintained under the general supervision of such certificate of
47 fitness holder.

1
2 2. In lieu of FC608.9, the following provisions shall apply to the design and installation of
3 stationary energy storage systems in a Group R-3 dwelling and any attached or detached
4 garage space serving such a dwelling:
5

6 2.1. No indoor system shall be installed below grade in such a dwelling or garage except
7 when approved by the department.
8

9 2.2. No indoor system shall be installed in such a dwelling except when approved for such
10 installation by its certificate of approval based on UL9540 listing meeting the
11 performance-cell level test requirements of UL9540A or as otherwise approved
12 pursuant to FC608.5.
13

14 2.3. The maximum rated energy capacity of any storage battery in an energy storage system
15 installed in such a dwelling, attached garage or detached garage or mounted outdoors
16 on an exterior wall thereof, shall not exceed 20 kWh, and the maximum aggregate rated
17 energy capacity of such energy storage system shall not exceed the following amounts:
18

19 2.3.1 in any such dwelling, 20 kWh per dwelling unit, except as may be approved by
20 the department; or
21

22 2.3.2 in any such attached garage, or when mounted outdoors on an exterior wall of
23 such a dwelling or attached garage, 40 kWh, provided that there is an approved
24 two-hour fire barrier separating such indoor system or wall mounted installation
25 from the dwelling, or other approved measure based on the testing results of the
26 energy storage systems; or
27

28 2.3.3 in any such detached garage, or mounted on an exterior wall thereof, 40 kWh.
29

30 2.4. Indoor systems installed in such a dwelling shall be protected by a one-hour fire barrier.
31 Indoor systems shall otherwise be located, installed and protected in such dwellings
32 and garages in accordance with the construction codes, the Electrical Code and the
33 rules.
34

35 2.5. Indoor systems shall be equipped with an energy storage management system in
36 accordance with FC608.9.2.
37

38 3. Outdoor systems shall be designed and installed in accordance with the rules.
39

40 **SECTION FC 609**
41 **COMMERCIAL COOKING SYSTEMS**
42

43 **[609.1 General.** Commercial cooking systems shall be designed, installed, operated and
44 maintained in accordance with this section.
45

1 **609.2 Design and installation.** Commercial cooking systems shall be designed and constructed in
2 accordance with the construction codes, including the Building Code and the Mechanical Code,
3 and shall comply with the requirements of this section.
4

5 **609.2.1 Fire extinguishing systems.** The fire extinguishing system for commercial cooking
6 systems shall comply with the requirements of FC904.11.
7

8 **609.2.2 Commercial cooking exhaust systems.** Commercial cooking exhaust hoods and
9 exhaust ducts shall comply with the requirements of this section.
10

11 **609.2.2.1 Exhaust hoods.** Commercial cooking exhaust hoods shall be designed, installed,
12 operated and maintained in accordance with the construction codes, including the Building
13 Code and the Mechanical Code. Type 1 hoods shall be operated and maintained in
14 accordance with this section.
15

16 **609.2.2.2 Exhaust ducts.** Commercial cooking exhaust ducts shall be provided with
17 cleanout openings in accordance with Chapter 5 of the Mechanical Code, to allow for
18 cleaning and other maintenance, as required by this section.
19

20 **609.2.3 Deep fat fryers.** Deep fat fryers shall be designed and installed in accordance with
21 this section.
22

23 **609.2.3.1 Separation.** Deep fat fryers shall be separated from any adjacent cooking
24 equipment that uses an open flame by at least 16 inches (406 mm). In lieu of such separation
25 distance, a 16-inch (406-mm) high by 1/8-inch (3.2-mm) thick steel baffle permanently
26 attached to the longer of the two adjacent cooking appliances may be used. The baffle shall
27 extend to the full depth of the cooking equipment to which it is attached.
28

29 **609.2.3.2 High-limit controls.** Deep fat fryers shall be equipped with an independent high-
30 limit control in addition to the adjustable operating control (thermostat). Such high-limit
31 control shall be designed and arranged to shut off the fuel supply, including electrical
32 energy, when the fat temperature reaches not more than 475°F (246°C), 1 inch (25 mm)
33 below the liquid surface.
34

35 **609.2.4 Solid fuel cooking.** Solid fuel cooking systems and facilities shall be designed and
36 installed in accordance with the requirements of this section.
37

38 **609.2.4.1 Cooking equipment.** Cooking equipment burning solid fuel shall be installed on
39 floors of noncombustible construction that extend 3 feet (914 mm) from the cooking
40 equipment in all directions. Cooking equipment burning solid fuel shall not be installed
41 within 3 feet (914 mm) horizontally of combustible surfaces or construction, or within 6
42 feet (1829 mm) vertically of such surfaces or construction.
43

44 **609.2.4.2 Solid fuel storage.** Solid fuel shall be stored in a dedicated room with walls,
45 floor and ceiling having a minimum fire rating of one hour. The storage room floor shall
46 be noncombustible or surfaced with noncombustible material.
47

1 **609.3 Operation.** Commercial cooking systems shall be operated in accordance with this section
2 and FC609.5.

3
4 **609.3.1 Unlawful operation.** It shall be unlawful to operate commercial cooking equipment
5 that generates smoke or grease-laden vapors or fumes:

- 6
7 1. without a permit for the operation of the commercial cooking system.
- 8
9 2. without a lawful fire extinguishing system.
- 10
11 3. without a lawful exhaust system.
- 12
13 4. without the required grease filters.
- 14
15 5. while its fire extinguishing system or exhaust system is out of service.

16
17 **609.3.2 Supervision.** Commercial cooking equipment shall be attended at all times while in
18 operation.

19
20 **609.3.3 Portable commercial cooking equipment markings.** The designated location for
21 portable (wheeled) commercial cooking equipment shall be outlined on the floor in a durable
22 1-inch (25-mm) wide yellow line markings or other approved means. Such location shall be
23 determined in relation to the location of the fire extinguishing system nozzle protecting such
24 portable commercial cooking equipment.

25
26 **609.3.4 Ventilation system.** Commercial cooking ventilation systems shall be operated and
27 maintained in accordance with this section.

28
29 **609.3.4.1 Operation during cooking.** Exhaust systems shall be operated at all times while
30 cooking equipment is in use. The ventilation system into which commercial cooking
31 system exhaust hoods exhaust shall be operating at the required rate of air movement, and
32 approved grease filters shall be in place when equipment under the exhaust hood is in use.

33
34 **609.3.4.2 Grease extractors.** When installed, grease extractors shall be operated at all
35 times while cooking equipment is in use.

36
37 **609.3.4.3 Maintenance of operational efficiency.** Fixed air supply openings installed to
38 provide make-up air for air exhausted through the exhaust system shall not be restricted by
39 covers, dampers, or any other means that would reduce the operating efficiency of the
40 exhaust system. Commercial cooking hoods shall not be painted.

41
42 **609.3.5 Signage.** A sign clearly and concisely summarizing the operation, maintenance and
43 cleaning requirements for commercial cooking systems regulated by this code, together with a
44 schematic drawing depicting the origin, run, and terminus of the exhaust system shall be
45 provided in accordance with this section. Such sign shall be at least 8½ inches (216 mm) by
46 11 inches (279 mm) in size, posted at or near the main entrance to the cooking area, and
47 laminated or framed under a clear glass or plexiglas cover.

1
2 **609.3.6 Staff training.** The owner or operator of commercial cooking equipment shall train all
3 staff in the proper procedure for the use of all components of the grease removal system,
4 cleaning of filters, and the manual operation of the fire extinguishing system. Refresher
5 training in the manual operation of the fire extinguishing system shall be provided at least once
6 every 6 months.
7

8 **609.4 Maintenance.** Commercial cooking systems shall be maintained in accordance with this
9 section and FC609.5.
10

11 **609.4.1 Exhaust system inspection and cleaning.** The entire exhaust system, including
12 exhaust hoods, grease filters, grease extractors, ducts, exhaust fans, pollution control devices,
13 and other appurtenances, shall be inspected and cleaned at least once every 3 months by a
14 person holding a certificate of fitness. Surfaces shall be cleaned to bare metal. The powder
15 residue or other foreign substance left by saponifying agents or other cleaning materials shall
16 be removed. Flammable cleaning fluids shall not be used. Cleaning fluids shall not be applied
17 to fusible links or other detection devices of the fire extinguishing system.
18

19 **Exceptions:**

- 20
- 21 1. Commercial cooking equipment utilizing solid fuel shall be inspected monthly by a
22 trained and knowledgeable person, and cleaned by a certificate of fitness holder as
23 necessary but not less frequently than once every 3 months.
24
 - 25 2. Vertical portions of interior and exterior vertical ducts in excess of three stories in height
26 shall be cleaned at least every 6 months by a person holding a certificate of fitness.
27 Horizontal portions of such ducts, including all elbows, shall be inspected and cleaned
28 in accordance with this section.
29

30 **609.4.2 System deactivation.** Unless necessary to accomplish cleaning, components of the
31 fire extinguishing system shall not be rendered inoperable during the cleaning process. If
32 electrical switches, detection devices, or other components of the fire extinguishing system
33 must be deactivated during the cleaning process, such deactivation shall be performed by a
34 licensed master fire suppression piping contractor. Immediately upon completion of the
35 cleaning process the licensed master fire suppression piping contractor shall restore the system
36 to proper operation. Electrical switches that may be accidentally activated during the cleaning
37 process shall be electrically locked out during such process.
38

39 **609.4.3 Grease filters.** In addition to the cleaning required by FC609.4.1, grease filters shall
40 be regularly cleaned or replaced by a trained and knowledgeable person, as necessary but at
41 least once per month.
42

43 **609.4.4 High-limit controls for deep fat fryers.** All high-limit controls shall be replaced
44 every 3 years with a new or rebuilt unit certified to operate at not more than 475°F (246°C).
45

46 **609.5 Solid fuel commercial cooking systems.** In addition to the other requirements of FC609,
47 solid fuel cooking systems shall be operated and maintained in accordance with this section.

1
2 **609.5.1 Cooking operations.** Unless otherwise approved by the Commissioner of Buildings,
3 the burning of solid fuel in commercial cooking equipment, such as briquettes, mesquite,
4 hardwood, or charcoal, shall be allowed only for purposes of flavor enhancement. Solid fuel
5 shall be ignited with a match or other approved means. Combustible or flammable liquids shall
6 not be used. Matches shall not be stored in the immediate vicinity of cooking equipment. Solid
7 fuel shall be added to the fire in a safe manner and only in quantities that will not create a flame
8 higher than required. Long-handled tongs, hooks and other required devices shall be provided
9 and used in order to safely add fuel, adjust the fuel, position and control the fire without having
10 to reach into the fire box. The room where solid fuel is stored or used shall be protected
11 throughout by a sprinkler system.
12

13 **609.5.2 Solid fuel storage.** Not more than a one-day supply may be kept in the same room as
14 the solid fuel cooking equipment or masonry oven or in the room with the fuel loading or clean-
15 out doors. Solid fuel shall not be stored:
16

- 17 1. within 3 feet (914 mm) of any portion of a solid fuel burning equipment, masonry oven
18 or any other heating or cooking appliance.
- 19
- 20 2. within 6 feet (1829 mm) of any solid fuel loading opening or door of the solid fuel
21 cooking equipment or masonry oven.
- 22
- 23 3. above any heating or cooking equipment, flue or vent.
24

25 **609.5.3 Water supply.** A water supply with a flexible hose shall be readily available to solid
26 fuel cooking appliances and masonry ovens to cool down any fire that becomes too hot and to
27 completely extinguish any fire before leaving the premises. The water source shall be a fixed
28 pipe system with a hose of adequate length to reach to the combustion and cooking chambers
29 of the appliance. The nozzle shall be equipped with a manual shutoff device, and shall be of
30 the type to provide a fine to medium spray. A full flow or strong stream shall not be used.
31

32 **609.5.4 Spent fuel.** Spent fuel, ash, cinders and other fire debris shall be removed from the
33 fire box at regular intervals, but at least once a day, and, once removed, shall not be stored
34 indoors. Adequate long handle rakes, hoes, scrapers and shovels shall be provided for such
35 removal. When being removed from the fire box, the spent fuel shall be wetted down and
36 cooled with water from the required water supply. Metal containers with covers shall be
37 provided for such spent fuel removal. Such metal containers shall be of a minimum 16 gauge
38 construction and shall be limited in size to a capacity not exceeding 20 gallons (75.7 L), so as
39 to facilitate easy handling by any employee assigned to the task and to enable such containers
40 to easily pass through any door or passageway. The spent fuel shall be placed outdoors in a
41 dumpster or heavy metal container used exclusively for this purpose and kept covered at all
42 times. Such dumpster or container shall be kept separate from combustible construction, and
43 stored combustible materials and combustible waste.
44

45 **609.6 Portable fire extinguishers.** Portable fire extinguishers shall be readily available for use in
46 the cooking area but in any event no further than 30 feet (9144 mm) of travel distance from the
47 commercial cooking equipment.

1
2 **609.6.1 Commercial cooking.** Commercial cooking equipment areas shall be provided with a
3 Class K rated portable fire extinguisher.
4

5 **609.6.2 Deep fat fryers.** When a deep fat fryer is installed in a cooking area, Class K portable
6 fire extinguishers shall be provided as follows:
7

- 8 1. For up to four fryers individually having a maximum cooking medium capacity of
9 80 pounds (36.3 kg) and a maximum surface area of 6 square feet (0.55 m²): One
10 having a minimum 1½ gallon (6 L) capacity.
11
- 12 2. For every additional group of up to four fryers, individually having a maximum cooking
13 medium capacity of 80 pounds (36.3 kg) and a maximum surface area of 6 square feet
14 (0.55 m²) each: One additional Class K portable fire extinguisher having a minimum
15 1½ gallon (6 L) capacity.
16
- 17 3. For individual fryers having a maximum cooking medium capacity exceeding 80
18 pounds (36.3 kg) or 6 square feet (0.55 m²) in surface area: Provide Class K
19 portable fire extinguishers in accordance with the portable fire extinguisher
20 manufacturer's recommendations.
21

22 **609.6.3 Solid fuel cooking equipment.** When solid fuel cooking equipment is installed in a
23 cooking area, Class K portable fire extinguishers shall be provided as follows:
24

- 25 1. For equipment with individual fireboxes of 5 cubic feet (0.14 m³) or less in volume:
26 One having a minimum 2½ gallon (9 L) capacity, or two having a minimum 1½
27 gallon (6 L) capacity.
28
- 29 2. For equipment with fireboxes exceeding 5 cubic feet (0.14 m³): Provide Class K
30 portable fire extinguishers in accordance with the portable fire extinguisher
31 manufacturer's recommendations.
32

33 **609.7 Recordkeeping.** A record shall be maintained of the following commercial cooking system
34 maintenance in accordance with FC107.7:
35

- 36 1. The inspection and cleaning of the exhaust system required by FC609.4.1, including the date
37 that such inspection and cleaning was conducted, and the name and certificate of fitness
38 number of the certificate of fitness holder or the name of the trained and knowledgeable
39 person conducting such inspection and cleaning.
40
- 41 2. The replacement of deep fat fryer high-limit controls in accordance with FC609.4.4.
42
- 43 3. The servicing of the fire extinguishing system in accordance with FC904.11.6.]
44

45 **609.1 General.** Commercial cooking systems shall be designed, installed, operated and maintained
46 in accordance with this section.
47

1 **609.2 Unlawful operation.** It shall be unlawful to operate a commercial cooking appliance that
2 generates smoke or grease-laden vapors, smoke or fumes:

- 3
- 4 1. without a permit for the operation of the commercial kitchen in which the commercial
5 cooking appliance is installed.
- 6
- 7 2. when the appliance is not an approved commercial cooking appliance.
- 8
- 9 3. when the appliance is a portable fueled device, unless otherwise authorized by the
10 department.
- 11
- 12 4. without an approved, lawfully-installed and tested fire extinguishing system.
- 13
- 14 5. without an approved and lawfully-installed exhaust system.
- 15
- 16 6. without the required grease filters.
- 17
- 18 7. when its fire extinguishing system or exhaust system is out of service.
- 19
- 20 8. when the operation of a commercial cooking appliance is unsafe due to excessive grease
21 accumulation on or in such appliance or in the commercial cooking exhaust system.
- 22

23 **609.3 Supervision.** Commercial cooking appliances shall be attended at all times while in
24 operation. A person holding a certificate of fitness shall supervise commercial cooking system
25 cleaning and fire protection.

26

27 **609.3.1. Cleaning of commercial cooking exhaust system.** Commercial cooking exhaust
28 systems shall be cleaned by a company holding a company certificate and persons employed
29 by such company who hold a certificate of fitness, except that ductless hoods may be inspected
30 and cleaned by the owner or trained and knowledgeable employees of the owner.

31

32 **609.3.1.1 Commercial cooking cleaning company.** It shall be unlawful for any person
33 engaged in the business of inspecting and cleaning commercial cooking exhaust systems
34 as required by the provisions of this code to perform such services without a commercial
35 cooking exhaust system servicing company certificate. Such cleaning company shall
36 possess the vehicles, tools, equipment and supplies required to perform such services.

37

38 **609.3.1.2 Certificate of fitness.** All persons engaged in the cleaning of commercial
39 cooking exhaust systems, including any individual who assists such persons, shall hold a
40 certificate of fitness for that purpose.

41

42 **609.3.2 Commercial cooking fire extinguishing system.** Fire extinguishing systems
43 protecting commercial cooking systems in accordance with FC904 shall be maintained in
44 accordance with FC904.5 by a master fire suppression piping contractor holding a certificate
45 of fitness in accordance with FC901.6.3.

46

1 **609.4 Commercial cooking appliances.** Commercial cooking appliances shall be designed and
2 installed in accordance with FC 609.4.1 through 609.4.3.

3
4 **609.4.1 Design and installation.** Commercial cooking appliances requiring a fire
5 extinguishing system shall be designed and installed in accordance with the construction codes,
6 including the Mechanical Code and Fuel Gas Code, and the Electrical Code. Commercial
7 cooking appliances shall not be relocated, or replaced with appliances utilizing a different
8 power source, change in gas valve, or other change affecting the design of the commercial
9 cooking fire extinguishing system, without prior department approval.

10
11 **609.4.1.1 Deep fat fryers.** Deep fat fryers shall be designed and installed in accordance
12 with this section.

13
14 **609.4.1.1.1 Separation.** Deep fat fryers shall be separated from any adjacent cooking
15 equipment that uses an open flame by:

- 16
17 1. A separation distance of at least 16 inches (406 mm); or
- 18
19 2. A 16-inch (406-mm) high by 1/8-inch (3.2-mm) thick steel baffle permanently
20 attached to the longer of the two adjacent cooking appliances. The baffle shall
21 extend to the full depth of the cooking equipment to which it is attached; or
- 22
23 3. A combination of separation distance and baffle height equal to at least 16 inches.

24
25 **609.4.1.1.2 High-limit controls.** Deep fat fryers shall be equipped with an independent
26 high-limit control in addition to the adjustable operating control (thermostat). Such
27 high-limit control shall be designed and installed to shut off the fuel supply, including
28 electrical energy, when the temperature of the fat 1 inch (25 mm) below the liquid
29 surface reaches a temperature of 475°F (246°C). All high-limit controls shall be
30 replaced every 3 years with a new or rebuilt device certified by the manufacturer to
31 activate at the designated temperature of 475°F (246°C).

32
33 **609.4.1.2 Solid fuel burning appliances.** Commercial cooking appliances burning solid
34 fuel shall be installed on floors of noncombustible construction that extend 3 feet (914 mm)
35 from the cooking equipment in all directions. Cooking equipment burning solid fuel shall
36 not be installed within 3 feet (914 mm) horizontally of combustible surfaces or
37 construction, or within 6 feet (1829 mm) vertically of such surfaces or construction.

38
39 **609.4.2 Solid fuel commercial cooking operations.** Solid fuel commercial cooking
40 operations shall additionally comply with the requirements of FC 609.4.2.1 through 609.4.2.5.
41 Unless otherwise approved by the Department of Buildings, the burning of solid fuel, such as
42 briquettes, mesquite, hardwood, or charcoal, in commercial cooking appliances shall be
43 allowed only for purposes of flavor enhancement. The use of solid fuel for flavor enhancement
44 shall be in accordance with NFPA 96, including the use of a listed smoker box.

45
46 **609.4.2.1 Solid fuel storage.** Solid fuel used for commercial cooking operations shall be
47 stored in accordance with FC315.7.

1
2 **609.4.2.2 Lighting.** Solid fuel shall be ignited with a match or other approved means.
3 Combustible or flammable liquids shall not be used. Matches shall not be stored in the
4 immediate vicinity of cooking equipment.

5
6 **609.4.2.3. Handling.** Solid fuel shall be added to the fire in a safe manner and only in
7 quantities that will not create a flame higher than required. Long-handled tongs, hooks and
8 other required devices shall be provided and used in order to safely add fuel, adjust the
9 fuel, position and control the fire without having to reach into the fire box.

10
11 **609.4.2.4 Water supply.** A water supply with a flexible hose shall be readily available to
12 solid fuel commercial cooking appliances and masonry ovens to cool down any fire that
13 becomes too hot and to completely extinguish any fire at the conclusion of cooking
14 operations. The water source shall be a fixed pipe system with a hose of adequate length to
15 reach to the combustion and cooking chambers of the appliance. The nozzle shall be
16 equipped with a manual shutoff device, and shall be of the type to provide a fine to medium
17 spray. A full flow or strong stream shall not be used to cool down and extinguish any
18 cooking fire.

19
20 **609.4.2.5 Spent fuel.** Spent fuel, ash, cinders and other fire debris shall be removed from
21 the fire box at regular intervals, but at least once a day, and, once removed, shall not be
22 stored indoors. Adequate long handle rakes, hoes, scrapers and shovels shall be provided
23 for such removal. When being removed from the fire box, the spent fuel shall be wetted
24 down and cooled with water from the required water supply. Metal containers with covers
25 shall be used when transporting such spent fuel removal. Such metal containers shall be of
26 a minimum 16 gauge construction and shall be limited in size to a capacity not exceeding
27 20 gallons (75.7 L), so as to facilitate easy handling by any employee assigned to the task
28 and to enable such containers to easily pass through any door or passageway. The spent
29 fuel shall be placed outdoors in a dumpster or heavy metal container with a lid or cover
30 used exclusively for this purpose and kept closed at all times. Such dumpster or container
31 shall be kept separate from combustible construction, combustible materials and
32 combustible waste.

33
34 **609.4.3 Movable commercial cooking appliance markings.** The designated location for
35 movable (wheeled) commercial cooking appliances shall be outlined on the floor in durable 1-
36 inch (25-mm) wide yellow line markings or other approved means. Such location shall be
37 determined in relation to the location of the fire extinguishing system nozzle protecting such
38 movable commercial cooking equipment. The owner or operator of a commercial cooking
39 system shall ensure that each movable appliance is positioned at its designated location before
40 commencing cooking.

41
42 **609.5. Commercial cooking exhaust system.** Commercial cooking exhaust systems, including
43 the hood, grease filters, ducts, exhaust fans and emission control devices, shall be designed and
44 installed in accordance with the construction codes, including the Mechanical Code, the Electrical
45 Code and this code.

1 **609.5.1 Design and installation.** Commercial cooking exhaust systems shall be designed and
2 installed in accordance with FC 609.5.1.1 through 609.5.1.5.

3
4 **609.5.1.1 Exhaust hoods.** Commercial cooking systems shall be equipped with a Type I
5 hood suitable for commercial cooking appliances in accordance with Mechanical Code.
6 Prefabricated hoods shall be of a type for which a certificate of approval has been issued
7 in accordance with FC112 and the rules. Exhaust hoods shall not be painted and scratch
8 protection sheeting shall be removed.

9
10 **609.5.1.2 Exhaust ducts.** Commercial cooking exhaust ducts shall be provided with clean
11 out openings in accordance with Mechanical Code, to allow for cleaning and other
12 maintenance. The department may require installation of additional access panels when the
13 department determines, based on a report from a commercial cooking exhaust system
14 cleaning company or other good cause, that there is inadequate access to conduct a proper
15 cleaning of the system. The department shall give the owner notice and an opportunity to
16 be heard prior to ordering compliance with any such determination; evaluate objections
17 asserted on the basis on engineering considerations and impracticability; and address
18 proposed alternatives.

19
20 **609.5.1.3 Emission control devices.** When required by the Air Pollution Code,
21 commercial cooking systems shall be equipped with a precipitator or other emission control
22 device of a type for which a certificate of approval has been issued in accordance with
23 FC112 and the rules.

24
25 **609.5.1.4 Ductless hoods.** Ductless hoods shall be of a type for which a certificate of
26 approval has been issued in accordance with FC112 and the rules.

27
28 **609.5.1.5 Grease filters.** Grease filters shall be of a type for which a certificate of approval
29 has been issued in accordance with FC112 and the rules.

30
31 **609.5.2 Operation.** Commercial cooking exhaust systems shall be operated in accordance with
32 FC 609.5.2.1 through 609.5.2.5.

33
34 **609.5.2.1 Operation during cooking.** The exhaust system shall be in operation at all times
35 whenever a commercial cooking appliance is in use. The exhaust system shall continue to
36 operate as designed in the event of an automatic or manual activation of the fire
37 extinguishing system, with the exception of any emission control device designed to shut
38 off in the event of fire.

39
40 **609.5.2.2 Maintenance of airflow.** The required rate of exhaust airflow for the commercial
41 cooking exhaust system shall be maintained at all times. Fixed air supply openings installed
42 to provide make-up air for air exhausted through the exhaust system shall not be restricted
43 by covers, dampers, or any other means that would reduce the operating efficiency of the
44 exhaust system. The department may require that the exhaust system be tested in
45 accordance with the Mechanical Code if, upon inspection, the exhaust airflow appears to
46 be insufficient to allow proper exhausting of grease vapors, steam, fumes, smoke and/or
47 odors.

1
2 **609.5.2.3 Grease filters.** Approved grease filters shall be in place in the proper position at
3 all times when cooking appliances are in use.

4
5 **609.5.2.4 Grease extractors.** When installed, grease extractors and other grease removal
6 devices, equipment and systems shall be operated at all times while cooking equipment is
7 in use.

8
9 **609.5.2.5 Combustible materials.** Combustible materials shall not be placed on the
10 exhaust hood, other than the required proof of compliance.

11
12 **609.5.3 Cleaning and other maintenance.** The entire exhaust system, including exhaust
13 hoods, grease filters, grease extractors, exhaust ducts, exhaust fans, emission control devices,
14 and other exhaust system components, shall be inspected and cleaned in accordance with
15 FC 609.5.3.1 through 609.5.3.6.

16
17 **609.5.3.1 Frequency of exhaust system inspection.** The entire exhaust system shall be
18 inspected with a minimum frequency as set forth in FC Table 609.5.3.1, except as
19 otherwise provided in the rules:

20
21
22 **FC TABLE 609.5.3.1
COMMERCIAL COOKING EXHAUST SYSTEM INSPECTION**

<u>TYPE OF COMMERCIAL COOKING OR COOKING DEVICE/EQUIPMENT/SYSTEM^a</u>	<u>MINIMUM FREQUENCY OF INSPECTION</u>	<u>QUALIFICATIONS</u>
<u>All commercial cooking exhaust systems, except ductless hoods</u>	<u>Every 3 months</u>	<u>Approved cleaning company</u>
<u>Ductless hoods</u>	<u>In accordance with the terms and conditions of the certificate of approval and the manufacturer's instructions but not less than once every three months</u>	<u>Trained/knowledgeable person</u>
<u>Grease filters</u>	<u>Daily</u>	<u>Trained/knowledgeable person</u>
<u>High-volume cooking</u>	<u>Weekly</u>	<u>Trained/knowledgeable person</u>
	<u>Every three months</u>	<u>Approved cleaning company</u>
<u>Solid fuel cooking</u>	<u>Monthly</u>	<u>Trained/knowledgeable person</u>
<u>Commercial cooking appliance exhaust flue</u>	<u>Annually</u>	<u>Trained/knowledgeable person</u>

23 a. Emission control devices shall be inspected in accordance with the inspection frequency for the commercial cooking system for which the device
24 has been installed.

25
26 **609.5.3.2 Cleaning of grease filters and other grease removal devices.** Grease filters
27 and other grease removal devices associated with a commercial cooking system shall be
28 cleaned in accordance with FC 609.5.3.2.1 through 609.5.3.2.3.

29
30 **609.5.3.2.1 Grease filters.** Grease filters shall be inspected daily by a trained and
31 knowledgeable person, and cleaned as necessary by such a person, but at least once a
32 month. Additionally, grease filters shall be cleaned at the end of the workday when
33 high-volume cooking is being conducted and/or when grease accumulation exceeds
34 1/8 inch (3.175 mm) as measured by a depth gauge comb or other approved device.
35

609.5.3.2.2 Charcoal grease filters. Charcoal filters in emission control devices shall be replaced by a person holding a certificate of fitness for emission control device cleaning, in accordance with the terms and conditions of the certificate of approval, if specified therein, or the manufacturer's instructions, but not less than once every 3 months.

609.5.3.2.3 Grease removal devices. Grease traps, grease extractors and other grease removal devices, equipment and systems shall be cleaned by a trained and knowledgeable person, as necessary, in accordance with manufacturer's instructions, but at least once a week for grease traps and at least once a month for all other types of devices.

609.5.3.3 Exhaust system cleaning. The commercial cooking exhaust system, including the hood, ducts, fans and air emission control devices, shall be cleaned by an approved cleaning company in accordance with the following requirements, except as otherwise provided in the rules:

**FC TABLE 609.5.3.3
COMMERCIAL COOKING EXHAUST SYSTEM CLEANING**

<u>TYPE OF COMMERCIAL KITCHEN</u>	<u>CLEANING REQUIRED</u>	<u>MINIMUM FREQUENCY OF CLEANING</u>
<u>High-volume cooking</u>	<u>All hoods; all exhaust ducts and fans for a distance of 3 floors above such kitchen; all exhaust duct elbows and other horizontal portions on all floors; and all emission control devices</u>	<u>Every 3 months</u>
	<u>Exhaust ducts and fans on floors more than 3 floors above such kitchen</u>	<u>Every 3 months</u>
<u>All other commercial kitchens</u>	<u>All hoods; all exhaust ducts and fans for a distance of 3 floors above such kitchen; all exhaust duct elbows and other horizontal portions on all floors; and all emission control devices</u>	<u>Every 3 months</u>
	<u>Exhaust ducts and fans on floors more than 3 floors above such kitchen</u>	<u>Every 6 months</u>
<u>All commercial kitchens</u>	<u>All affected areas. Such cleaning shall not replace the regularly scheduled cleaning (and the existing frequency of cleaning shall be maintained) unless a complete cleaning of the commercial cooking system (as set forth above) is conducted</u>	<u>Additional cleaning when grease accumulation in the commercial cooking exhaust system exceeds 1/8 inch (3.175 mm)</u>

609.5.3.4 Standard for cleaning. Surfaces shall be cleaned to bare metal. The powder residue or other foreign substance left by saponifying agents or other cleaning materials shall be removed. Flammable cleaning fluids shall not be used. Cleaning fluids shall not be applied to fusible links or other detection devices of the fire extinguishing system.

609.5.3.5 System deactivation. Unless necessary to accomplish cleaning, components of the fire extinguishing system shall not be rendered inoperable during the cleaning process. If electrical switches, detection devices, or other components of the fire extinguishing system must be deactivated during the cleaning process, such deactivation shall be

1 performed by a licensed master fire suppression piping contractor. Immediately upon
2 completion of the cleaning process the licensed master fire suppression piping contractor
3 shall restore the system to good working order. Electrical switches that may be accidentally
4 activated during the cleaning process shall be electrically locked out during such process.
5

6 **609.5.3.6 Responsibility.** The owner shall ensure that the commercial cooking exhaust
7 system is inspected, cleaned and serviced by a commercial cooking cleaning company
8 holding a commercial cooking exhaust system servicing company certificate as required
9 by this section. The commercial cooking cleaning company shall be responsible for
10 inspecting, cleaning and servicing the commercial cooking exhaust system in accordance
11 with the standards and requirements of this section. The owner shall be responsible for the
12 owner's cleaning of a commercial cooking system when such cleaning is authorized by this
13 section and shall be held to the same standard as a commercial cooking cleaning company.
14

15 **609.5.3.7 Proof of compliance.** The approved commercial cooking cleaning company
16 shall document its cleaning of the commercial cooking exhaust system by affixing to each
17 exhaust hood the proof of compliance approved for such purposes, and in such other
18 manner as may be required by the rules.
19

20 **609.5.4 Exposed ducts.** Commercial cooking exhaust system ducts not concealed within walls
21 and ceilings shall be periodically inspected for defects, and defective ducts repaired or replaced
22 to maintain their integrity. The inspection shall include the condition of the insulation, and
23 confirm the absence of deterioration or cracking of the duct, which would allow the release of
24 grease vapors, steam, fumes, smoke or odors.
25

26 **609.6 Commercial cooking fire extinguishing systems.** Commercial cooking appliances shall be
27 protected by a commercial cooking fire extinguishing system in accordance with the Building
28 Code and FC904.
29

30 **609.6.1 Acceptance testing.** Commercial cooking fire extinguishing systems shall be subject
31 to an acceptance test in accordance with FC904.3.8.
32

33 **609.6.2 Periodic inspection.** A visual inspection of a commercial cooking fire extinguishing
34 system shall be conducted at least once a month by a trained and knowledgeable person in
35 accordance with FC904.5.1 to confirm that the system appears to be in good working order,
36 including the following conditions:
37

38 1. The fire extinguishing system is intact and undamaged, including the extinguishing agent
39 container, system piping, nozzles and protective nozzle caps.
40

41 2. The fire extinguishing system is charged and operational. Check the pressure gauge
42 and/or control head (on a wet chemical system) to confirm that system is operational and
43 the extinguishing agent has not been discharged. On other systems monitored by a fire
44 alarm system, check the fire alarm system control panel to confirm that there are no
45 supervisory or trouble signals.
46

47 3. The fusible links or other heat detection devices are not coated with grease.

- 1
2 4. Any movable commercial cooking appliances are in position under the proper fire
3 extinguishing system nozzle, in accordance with approved floor markings, so that the
4 nozzles are centered over the commercial cooking appliance.
5
6 5. Access to the manual activation device for the commercial cooking fire extinguishing
7 system is not obstructed and the tamper indicator is intact.
8
9 6. The maintenance tag is in place for the commercial cooking fire extinguishing system
10 and has not expired.

11
12 **609.6.3 Inspection, testing and other maintenance by certificate of fitness holder.** A master
13 fire suppression piping contractor holding a certificate of fitness for fire extinguishing systems,
14 who is trained and knowledgeable in the installation, operation and maintenance of the specific
15 fire extinguishing system, shall inspect, test, service and otherwise maintain such system in
16 accordance with FC904.5.2.

17
18 **609.7 Signage.** The following signage, legibly printed and laminated or framed under a clear glass
19 or plexiglas cover, shall be posted in accordance with FC Table 609.7 at a conspicuous location
20 near the entrance to each kitchen or other separate cooking area that is a commercial kitchen.

21
22
23 **FC TABLE 609.7**
COMMERCIAL COOKING FIRE EXTINGUISHING AND EXHAUST SYSTEM SIGNAGE

<u>CONTENT OF SIGN</u>	<u>MINIMUM SIZE</u>	<u>LOCATION</u>	<u>PURPOSE</u>
<u>Exhaust system diagram (origin, run, and terminus of the exhaust system)</u>	<u>8½" x 11"</u>	<u>Immediately outside of main entrance to each kitchen</u>	<u>Assist firefighting personnel</u>
<u>Location of emission control devices (type, model and exact location)</u>	<u>3" x 5"</u>	<u>Adjacent to exhaust system diagram</u>	<u>Assist firefighting personnel</u>
<u>Identification of emission control device, including, if applicable, high voltage warning in accordance with the Electrical Code</u>	<u>3" x 5"</u>	<u>On or adjacent to each emission control device</u>	<u>Assist firefighting personnel</u>
<u>Operation/maintenance (approved summary of operating and cleaning instructions)</u>	<u>8½" x 11"</u>	<u>Immediately inside main entrance to each kitchen</u>	<u>Kitchen staff instructions</u>
<u>Instructions for fire extinguishing system manual activation</u>	<u>3" x 5"</u>	<u>Adjacent to each manual activation device</u>	<u>Kitchen staff instructions</u>
<u>Portable fire extinguisher warning sign (to activate fire extinguishing system prior to portable fire extinguisher use)</u>	<u>3" x 5"</u>	<u>Adjacent to each kitchen portable fire extinguisher</u>	<u>Kitchen staff instructions</u>

24
25 **609.8 Staff training.** The owner or operator of a commercial cooking system shall train all staff,
26 at time of employment, in the proper procedure for the use and cleaning of all grease removal
27 devices, including the cleaning or replacement of grease filters, and the manual operation of the
28 commercial cooking fire extinguishing system. Refresher training shall be provided at least once
29 every 6 months.

30
31 **609.9 Portable fire extinguishers.** Each commercial kitchen shall be provided with one or more
32 Class K portable fire extinguishers, which shall be readily available for use in the cooking area but

1 in any event no further than 30 feet (9144 mm) of travel distance from any commercial cooking
2 appliance.

3
4 **609.9.1. Deep fat fryers.** When deep fat fryers are installed in a commercial kitchen, additional
5 Class K portable fire extinguishers shall be provided, as follows:

6
7 1. For up to four fryers individually having a maximum cooking medium capacity of
8 80 pounds (36.3 kg) and a maximum surface area of 6 square feet (0.56 m²): One Class K
9 portable fire extinguisher having a minimum 1½ gallon (6 L) capacity.

10
11 2. For every additional group of up to four fryers, individually having a maximum cooking
12 medium capacity of 80 pounds (36.3 kg) and a maximum surface area of 6 square feet
13 (0.56 m²) each: One additional Class K portable fire extinguisher having a minimum 1½
14 gallon (6 L) capacity.

15
16 3. For individual fryers having a maximum cooking medium capacity exceeding 80 pounds
17 (36.3 kg) or 6 square feet (0.56 m²) in surface area: Provide Class K portable fire
18 extinguishers in accordance with the portable fire extinguisher manufacturer's
19 recommendations.

20
21 **609.9.2 Solid fuel cooking equipment.** When solid fuel cooking equipment is installed in a
22 commercial kitchen, additional Class K portable fire extinguishers shall be provided, as
23 follows:

24
25 1. For equipment with individual fireboxes of 5 cubic feet (0.14 m³) or less in volume: One
26 Class K portable fire extinguisher having a minimum 2½ gallon (9 L) capacity, or two
27 Class K portable fire extinguishers having a minimum 1½ gallon (6 L) capacity.

28
29 2. For equipment with fireboxes exceeding 5 cubic feet (0.14 m³): Provide Class K portable
30 fire extinguishers in accordance with the portable fire extinguisher manufacturer's
31 recommendations.

32
33 **609.10 Recordkeeping.** A record shall be maintained of the following commercial cooking system
34 maintenance in accordance with FC107.7:

35
36 **609.10.1. Commercial cooking appliances.** The owner of a commercial cooking system shall
37 maintain records of any required inspection and other maintenance of commercial cooking
38 appliances, including the replacement of deep fat fryer high-limit controls as required by
39 FC609.4.1.1.2, and the cleaning of cooking appliance exhaust flues.

40
41 **609.10.2 Commercial cooking exhaust system.** The owner of a commercial cooking system
42 shall keep records of each required inspection and cleaning conducted by a person in the
43 owner's employ, including the date of each required inspection and each cleaning or
44 replacement of the grease filters, and the date of each inspection and cleaning by an approved
45 cleaning company. Approved cleaning companies shall keep such documentation of the
46 cleaning of the exhaust system, including conditions existing prior to and after cleaning, as
47 may be required by the rules.

1
2 **609.10.3 Commercial cooking fire extinguishing system.** The date and cause of each
3 activation of the commercial cooking fire extinguishing system, and the date of each
4 inspection, testing and servicing of such system in accordance with FC904.5 and the rules.
5

6 **609.10.4 Portable fire extinguishers.** The date of each inspection and servicing of the portable
7 fire extinguishing system as required by FC906. Such recordkeeping shall be made as entries
8 on the department-issued tag affixed to each portable fire extinguisher in accordance with
9 FC906 and the rules or as otherwise authorized therein.
10

11 **SECTION FC 610**
12 **COMMERCIAL KITCHEN COOKING OIL STORAGE SYSTEMS**
13

14 **610.1 General.** Storage of unused (fresh) and/or used (waste) cooking oil in an aboveground
15 storage system in a commercial kitchen shall be in accordance with FC 610.2 through 610.4 and
16 NFPA 30.
17

18 **610.2 Storage tanks.** Cooking oil tanks shall be designed and constructed so as to be capable of
19 withstanding the heating associated with the operation of cooking oil storage systems. Cooking oil
20 shall be stored in metallic storage tanks listed in accordance with UL 142 or UL 80, and shall be
21 installed in accordance with the tank manufacturer's instructions. Cooking oil may be stored in
22 nonmetallic tanks only when approved by the department.
23

24 **610.3 Cooking oil storage system components.** Cooking oil storage system components,
25 including piping, connections, fittings, valves, tubing, hose, pumps and vents, may be of metallic
26 or nonmetallic construction, and shall be designed for the working pressure and maximum
27 operating temperature of the storage system. All electrical components shall comply with the
28 Electrical Code. Electrical components used to heat the cooking oil shall additionally be listed to
29 UL 499.
30

31 **610.4 Tank venting.** Normal and emergency venting shall be provided for cooking oil storage
32 tanks and shall terminate outdoors.
33

34 **610.4.1 Normal vents.** Normal vents shall be located above the maximum normal liquid line,
35 and shall have a minimum effective area not smaller than the largest filling or withdrawal
36 connection.
37

38 **610.4.2 Emergency vents.** Emergency vents shall be located above the maximum normal
39 liquid line, and shall be in the form of a device or devices that will relieve excessive internal
40 pressure caused by a fire.
41

42 **SECTION FC 611**
43 **AUTOMATED PARKING GARAGES**
44

45 **611.1 Scope.** This section shall govern the design, installation, operation and maintenance of
46 automated parking garages.
47

1 **611.2 General.** Automated parking garages shall be designed, installed, operated and maintained
2 in accordance with this section and the construction codes.

3
4 **611.3 Design and installation.** Automated parking garages shall be designed and installed in
5 accordance with the construction codes and the requirements of the Department of Buildings.
6 Application shall be made to the Department of Buildings and the department for review and
7 approval.
8

9 **611.3.1 Emergency shut-down device.** A manually-activated emergency shut down device
10 shall be installed at a conspicuous, readily-accessible location at or near the main entrance to
11 the automated parking garage, and, if required by the Department, at other approved locations
12 suitable for firefighting operations.
13

14 **611.3.2 Location of control panels.** The control panels for all fire protection systems and
15 smoke purge systems shall be installed at a conspicuous, readily-accessible location at or near
16 the main entrance to the automated parking garage, or other approved location suitable for
17 firefighting operations.
18

19 **611.4 Operational requirements.** Automated parking garages shall be operated in accordance
20 with FC 611.4.1 through 611.4.4.
21

22 **611.4.1 Notification to department.** At least 2 weeks prior to occupancy or operation of the
23 automated parking system, the owner shall give written notice of same to the department, in
24 the manner prescribed by the department, to allow the department to inspect the installation
25 and familiarize itself with its operation.
26

27 **611.4.2 Automated parking garage information card.** An information card depicting the
28 operation of the automated parking system and setting forth other information, in the form
29 prescribed by the department by rule, shall be prepared by the owner for all automated parking
30 garages prior to occupancy or operation of the automated parking system.
31

32 **611.4.3 Recordkeeping.** A record of the maintenance of the automated parking system and
33 associated fire protection and other safety systems shall be maintained on the premises in the
34 office of the parking garage attendant, in a first responder box, or other approved location.
35

36 **611.4.4 Emergency communications.** A telephone not requiring a coin to operate or other
37 approved means to communicate an emergency in the automated parking garage shall be
38 provided and identified by a durable and conspicuously posted sign or markings, as follows:
39

40 1. A means to notify the department of an emergency shall be provided for public use at
41 the facility at an approved location.
42

43 2. A means for firefighters or other department representatives to contact, on a 24/7 basis,
44 a trained and knowledgeable person who can provide technical assistance with respect to
45 the operation of the automated parking garage. This telephone or other approved means
46 may be secured by key box operated by a citywide standard (2642) key.
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**CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION**

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**SECTION FC 701
GENERAL**

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701.1 Scope. This chapter shall govern the maintenance of fire-resistance-rated construction.

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701.2 General. Fire-resistance-rated construction shall be maintained in accordance with this chapter.

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**SECTION FC 702
DEFINITIONS**

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702.1 Terms defined in FC Chapter 2. Terms used in this chapter[, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown in FC Chapter 2 or elsewhere in this code] and defined in FC202 shall have the meanings set forth therein.

46
47

**SECTION FC 703
FIRE-RESISTANCE-RATED CONSTRUCTION**

703.1 Maintenance. The required fire-resistance rating of fire-resistance-rated construction, including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements shall be properly repaired, restored or replaced when damaged, altered, breached or penetrated. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self-closing or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly.

703.1.1 Fireblocking and draftstopping. Required fireblocking and draftstopping in combustible concealed spaces shall be maintained to provide continuity and integrity of the construction.

703.1.2 Smoke barriers and smoke partitions. Required smoke barriers and smoke partitions shall be maintained to prevent the passage of smoke. All openings protected with approved smoke barrier doors or smoke dampers shall be maintained in accordance with NFPA 105.

703.1.3 Fire walls, fire barriers and fire partitions. Required fire walls, fire barriers and fire partitions shall be maintained to prevent the passage of fire. All openings protected with approved doors, fire dampers or smoke dampers shall be maintained in accordance with NFPA 80.

703.2 Maintenance of openings. Fire doors and fire windows shall be maintained in good working order in accordance with NFPA 80. Fire doors and smoke barrier doors shall not be blocked or

1 obstructed or otherwise made inoperable. Fusible links shall be replaced promptly whenever fused,
2 damaged or otherwise rendered inoperable. Fire door assemblies shall not be modified.

3
4 **703.2.1 Signs.** Where required by the commissioner, a sign shall be permanently displayed on
5 or near each fire door in letters not less than 1 inch (25 mm) high to read as follows:

6
7 1. For doors designed to normally be kept open: FIRE DOOR—DO NOT BLOCK.

8
9 2. For doors designed to normally be kept closed: FIRE DOOR—KEEP CLOSED.

10
11 **703.2.2 Hold-open devices and automatic door closers.** Hold-open devices for fire doors and
12 automatic door closers for self-closing fire doors, where provided, shall be inspected, tested,
13 and otherwise maintained in accordance with FC 703.2 and 907.20. During the period that such
14 device is out of service for repairs, the door it operates shall remain in the closed position.

15
16 **703.2.3 Door operation.** Swinging fire doors shall close from the full-open position and latch
17 automatically. The door closer shall exert enough force to close and latch the door from any
18 partially open position.

19
20 **703.3 Ceilings.** The hanging of decorative material, merchandise displayed for sale or other
21 display items from acoustical ceiling systems that are part of a fire-resistance-rated floor/ceiling
22 or roof/ceiling assembly shall be prohibited.

23
24 **703.4 Testing.** Horizontal and vertical sliding and rolling fire doors shall be inspected and tested
25 annually to confirm proper operation and full closure.

26
27 **SECTION FC 704**
28 **FLOOR OPENINGS AND SHAFTS**

29
30 **704.1 Enclosures.** Interior vertical shafts, including stairways, elevator hoistways, service and
31 utility shafts, that connect two or more stories of a building shall be enclosed or protected as
32 specified in the construction codes, including the Building Code. When openings are required to
33 be protected by the construction codes, including the Building Code, openings into such shafts
34 shall be maintained self-closing or automatic-closing by smoke detection. Existing fusible-link-
35 type automatic door-closing devices are allowed if the fusible link rating does not exceed 135°F
36 (57°C).

37
38
39 **CHAPTER 8**
40 **INTERIOR FURNISHINGS, DECORATIONS AND SCENERY**

41
42 **SECTION FC 801**
43 **GENERAL**

44
45 **801.1 Scope.** This chapter shall govern furnishings, decorative vegetation, decorations and scenery
46 in buildings and structures.

1 **801.2 General.** The furnishings, decorative vegetation, decorations and scenery governed by this
2 chapter shall be designed, stored, handled and used in accordance with this chapter.

3
4 **801.3 Flame-retardant treatments.** When a material or item is treated with a flame-retardant
5 chemical to meet the requirements of this chapter for a flame-resistant material, such chemical and
6 its method of application shall be approved. Flame-retardant treatments shall be maintained so as
7 to retain the effectiveness of the treatment under conditions encountered in actual use.

8
9 **801.4 Fire-retardant coating.** When a material or item is coated with a fire-retardant coating to
10 meet the requirements of this chapter for a flame-resistant material, such coating and its method
11 of application shall be approved. Flame-retardant coatings shall be maintained so as to retain the
12 effectiveness of the coating under conditions encountered in actual use.

13
14 **801.5 Prohibited decorative vegetation, decorations and scenery.** It shall be unlawful in Group
15 A, E and I occupancies to store or use decorative vegetation, decorations or scenery that consists
16 of or is coated with pyroxylin or similarly hazardous base.

17
18 **801.6 Obstructions.** The required width of any portion of a means of egress shall not be obstructed
19 by any furnishing, decorative vegetation, decoration or scenery nor shall such furnishing,
20 decorative vegetation, decoration or scenery obstruct any exit or the visibility thereof.

21
22 **801.7 Supervision.** Compliance with flame resistance standards shall be under the supervision of
23 a certificate of fitness holder in accordance with FC 801.7.1 and 801.7.2.

24
25 **801.7.1. Application of flame-retardant chemical.** When a material or item is treated with a
26 flame-retardant chemical to meet the requirements of this chapter for a flame-resistant material,
27 the application of the chemical shall be conducted by or under the personal supervision of a
28 certificate of fitness holder.

29
30 **801.7.2 Certification of compliance.** Certification of compliance with the requirements of this
31 section shall be prepared by a certificate of fitness holder and made available to department
32 representatives in accordance with the rules or upon request of any department representative,
33 provided, however, that a manufacturer's certification, in a form acceptable to the department,
34 may be presented for an article that is inherently flame-resistant.

35
36 **801.8 Certificate of approval.** Any flame-retardant chemical used to render a material flame-
37 resistant to meet the requirements of this chapter shall be of a type for which a certificate of
38 approval has been issued in accordance with FC112 and the rules.

39
40 **SECTION FC 802**
41 **DEFINITIONS**

42
43 **802.1 Definitions.** The following terms shall, for the purposes of this chapter and used elsewhere
44 in this code, have the meanings [shown herein] set forth in FC202.

45
46 **CONIFER.** [Any tree, plant or shrub containing pitch, including hemlock, balsam, pine and fir.]
47

1 **DECORATION.** [Any item that is used for acoustical, aesthetic or artistic enhancement of an
2 interior space, including artwork, banners, curtains, draperies, decorative greens, fabrics, hangings,
3 and streamers, but not including acoustical materials regulated by the Building Code as an interior
4 finish.]

5
6 **FIRE-RETARDANT COATING.** [An approved coating that, when applied to the surface of
7 scenery in an approved manner, imparts flame resistance and reduces flame spread.]

8
9 **FLAME-RESISTANT MATERIAL.** [Material that meets the flame propagation performance
10 criteria of NFPA 701, either because it is inherently flame-resistant or because it has been subjected
11 to a flame-retardant treatment.]

12
13 **FLAME-RETARDANT TREATMENT.** [An approved chemical that, when applied to a
14 material in an approved manner, imparts flame resistance to a material.]

15
16 **FLAME SPREAD.** [The propagation of flame over a surface.]

17
18 **FURNISHING.** [Furniture or items other than structural elements, building service equipment or
19 interior finishes that are installed or placed in a building for the human comfort or other use of the
20 occupants.]

21
22 **INTERIOR FINISH.** [Construction materials that form the exposed interior surfaces of a building
23 and that are part of or affixed to walls, fixed or folding partitions, ceilings, and other construction
24 elements.]

25
26 **NATURAL DECORATIVE GREEN.** [A bough of a natural tree or part thereof.]

27
28 **NATURAL TREE.** [Any live tree, plant or shrub, including conifer, that is rooted in soil.]

29
30 **NATURAL VEGETATION.**

31
32 **SCENERY.** [Any or all of those devices ordinarily used on a stage in the presentation of a
33 theatrical, artistic, musical or other similar live performance, such as back drops, side tabs, teasers,
34 borders or scrim, rigid flats, set pieces, and all properties, except costumes.]

35
36 **SECTION FC 803**
37 **UPHOLSTERED FURNITURE AND MATTRESSES**

38
39 **803.1 Upholstered furniture.** Upholstered furniture newly introduced in Occupancy Groups I-1,
40 I-2, I-3 and R-1 college and university dormitories after the effective date of this section shall
41 comply with the resistance to ignition by cigarettes and maximum heat release rate requirements of
42 this section.

43
44 **803.1.1 Ignition by cigarettes.** Newly-introduced upholstered furniture in Occupancy Groups
45 I-1, I-2, I-3 and R-1 college and university dormitories shall be shown to resist ignition by
46 cigarettes as determined by tests conducted in accordance with one of the following
47 standards:

- 1
2 1. Mocked-up composites of the upholstered furniture shall have a char length not
3 exceeding 1½ inches (38 mm) when tested in accordance with NFPA 261.
4
5 2. The components of the upholstered furniture shall meet the requirements for Class I
6 when tested in accordance with NFPA 260.
7

8 **Exception:** The requirements of FC 803.1.1(1) and 803.1.1(2) shall not apply to
9 upholstered furniture owned by the resident of a Group I-2 occupancy, provided
10 such furniture is located in the sleeping room of the resident and such sleeping room
11 is provided with a smoke detector in accordance with the requirements of the
12 Building Code.
13

14 **803.1.2 Heat release rate.** Newly-introduced upholstered furniture in Occupancy Groups I-
15 1, I-2, I-3 and R-1 college and university dormitories shall have limited rates of heat release
16 when tested in accordance with [ASTM E1537 or] California Technical [Bulletin 133, as
17 follows:
18

- 19 1. The peak rate of heat release for the single upholstered furniture item shall not exceed
20 80 kW, except upholstered furniture in rooms or spaces protected throughout by a
21 sprinkler system.
22
23 2. The total energy released by the single upholstered furniture item during the first 10
24 minutes of the test shall not exceed 25 megajoules (MJ), except upholstered furniture
25 in rooms or spaces protected throughout by a sprinkler system.
26

27 **Exception:** The exceptions set forth in FC 803.1.2(1) and 803.1.2(2) for upholstered
28 furniture in rooms or spaces protected throughout by a sprinkler system shall not
29 apply to Occupancy Group I-3] Bulletins 116 and 117.
30

31 **803.1.3 Listing and labeling.** Upholstered furniture shall be listed and labeled in
32 compliance with the requirements of FC 803.1.1 and 803.1.2.
33

34 **803.2 Mattresses.** Mattresses newly introduced in Occupancy Groups I-1, I-2, I-3 and R-1 college
35 and university dormitories after the effective date of this section shall comply with the resistance
36 to ignition by cigarettes and maximum heat release rate requirements of this section.
37

38 **803.2.1 Ignition by cigarettes.** Newly-introduced mattresses in Occupancy Groups I-1, I-2, I-
39 3, and R-1 college and university dormitories shall be shown to resist ignition by cigarettes
40 as determined by tests conducted in accordance with 16 CFR Part 1632 and shall have a
41 char length not exceeding 2 inches (51 mm).
42

43 **803.2.2 Heat release rate.** Newly-introduced mattresses shall have limited rates of heat release
44 when tested in accordance with ASTM E1590 or California Technical Bulletin 129, as
45 follows:
46

- 1 1. The peak rate of heat release for the single mattress shall not exceed 100 kW, except
2 mattresses in rooms or spaces protected throughout by a sprinkler system.
3
4 2. The total energy released by the mattress during the first 10 minutes of the test shall not
5 exceed 25 MJ, except mattresses in rooms or spaces protected throughout by a sprinkler
6 system.
7

8 **Exception:** The exceptions set forth in FC 803.2.2(1) and 803.2.2(2) for mattresses
9 in rooms or spaces protected throughout by a sprinkler system shall not apply to
10 Occupancy Group I-3.

11
12 **803.2.3 Listing and labeling.** Mattresses shall be listed and labeled in compliance with the
13 requirements of FC 803.2.1 and 803.2.2.
14

15 **SECTION FC 804** 16 **DECORATIVE VEGETATION**

17
18 **804.1 Natural trees and cut natural trees.** Natural trees and cut natural trees shall be stored, sold,
19 displayed and maintained in accordance with FC 804.1.1 through 804.1.6.
20

21 **804.1.1 Indoor display of cut natural trees.** Cut natural trees may be displayed in a building,
22 except in Group A, B, E, I, M, R-1 and R-2 occupancies and any building or structure used for
23 a public gathering. Notwithstanding the foregoing occupancy restrictions, cut natural trees may
24 be displayed in houses of worship and dwelling units in Group R-2 apartment house
25 occupancies.
26

27 **804.1.2 Indoor storage of cut natural trees.** It shall be unlawful to store cut natural trees in
28 any building, except in connection with a display allowed under FC804.1.1.
29

30 **804.1.3 Indoor storage and display of natural trees.** Natural trees, except conifers, may be
31 stored and displayed in a building, provided they are maintained in a healthy condition and are
32 not allowed to become dry. It shall be unlawful to store or display natural trees that are conifers
33 in any building.
34

35 **804.1.4 Support devices.** Cut natural trees for display in any building shall have the trunk
36 bottoms cut off at least ½ inch (12.7 mm) above the original cut and shall be placed in a support
37 device. The support device shall be of a type that is stable, holds the tree in an upright position
38 and meets all of the following criteria:
39

- 40 1. The device shall hold the tree securely and be of adequate size to avoid tipping over of
41 the tree.
42
43 2. The device shall be capable of containing a minimum 2-day supply of water.
44
45 3. The water level, when full, shall cover the tree stem at least 2 inches (51 mm). The water
46 level shall be maintained above the fresh cut and checked at least once daily.
47

1 **804.1.5 Dryness.** Natural trees and cut natural trees shall be removed from the building
2 whenever the needles or leaves fall off readily when a tree branch is shaken or if the needles
3 are brittle and break when bent between the thumb and index finger. Trees shall be checked
4 daily for dryness.

5
6 **804.1.6 Retail sale of cut natural trees.** Merchants of cut natural trees, including Christmas
7 trees, shall, at the time of retail sale of each such tree, attach to the tree a printed tag containing
8 appropriate instructions for its safe and lawful display and disposal.

9
10 **804.2 [Reserved.] Natural vegetation.** Natural vegetation shall be maintained in a healthy
11 condition to prevent the vegetation from becoming dry and ignitable. Natural vegetation that has
12 become dry and readily ignitable shall be promptly removed from the premises. Natural vegetation
13 shall be regularly pruned to prevent the vegetation from becoming overgrown and expanding
14 beyond the space designated for it.

15
16 **804.3 Open flames.** Candles and other open flames shall not be used or maintained on or near
17 decorative vegetation. Natural cut trees shall be kept a distance at least equal to the height of the
18 tree from heat sources, including fireplaces, portable heaters and vents, and open-flame or heat-
19 producing devices.

20
21 **804.3.1 Electrical fixtures and wiring.** Electrical wiring and lighting used on natural cut trees
22 and decorative vegetation shall be listed. It shall be unlawful to use electrical wiring and
23 lighting on metal artificial trees.

24
25 **804.4 Artificial vegetation.** Artificial decorative vegetation, including artificial trees, shall be
26 [flame resistant] made of flame-resistant material in the buildings and occupancies set forth in
27 FC805.1. Alternatively, [the] artificial decorative vegetation shall have a maximum heat release
28 rate of 100 kW when tested in accordance with NFPA 289, using a 20 kW ignition source. [Such
29 flame resistance or maximum heat release rate shall be certified by a testing laboratory, or by the
30 manufacturer in an approved manner. Documentation of such certification shall be submitted to
31 the department upon request and as required by the rules.]

32
33 **804.5 Natural decorative greens.** Natural decorative greens shall be stored and displayed in a
34 building in accordance with FC 804.5.1 through 804.5.4.

35
36 **804.5.1 Storage.** It shall be unlawful to store natural decorative greens in any building, except
37 merchandise for sale or displayed for sale which does not contain conifers.

38
39 **804.5.2 Display.** Natural decorative greens may be displayed in buildings on a temporary basis.
40 The display of natural decorative greens in Group A, E, I, and M occupancies, in common
41 areas of Group R-1, R-2 and B occupancies, and any building or structure used for a public
42 gathering, except display of works of art in museums and houses of worship, shall comply with
43 the restrictions set forth in FC804.5.3.

44
45 **804.5.3 Restrictions on display.** It shall be unlawful to display in any building natural
46 decorative greens that:
47

- 1 1. Contain pitch, such as hemlock, balsam, pine or Spanish moss.
- 2
- 3 2. Are displayed at a location less than 3 feet (914 mm) from [stuffed] upholstered
- 4 furniture, rugs, or other combustible material or contain combustible decorations.
- 5
- 6 3. Are on a combustible framework or displayed in conjunction with combustible material
- 7 unless such material is flame resistant.
- 8

9 **804.5.4 Dryness.** Any natural decorative green shall be removed from a building at the first
10 sign of deterioration or dryness. Natural decorative greens shall be checked at least daily for
11 dryness.

12 **SECTION FC 805**

13 **DECORATIONS AND SCENERY**

14 **805.1 Decorations.** Except as otherwise specifically provided [for] in this chapter, decorations
15 shall be made of flame-resistant material in Group A, E, I[,] and M occupancies, [and] Group R-1
16 college and university dormitories, common areas in Group B, R-1 and R-2 occupancies, and any
17 building or structure used as a place of public gathering[, decorations shall be flame-resistant].

18 **Exceptions:**

- 19 1. Acoustical or other decorative materials consisting of foam plastics with a maximum
- 20 heat release rate of 100 kW when tested in accordance with UL 1975.
- 21
- 22 2. Artwork in a museum or art gallery.
- 23
- 24 3. Artwork on the walls of building hallway corridors in Group B office and Group R-2
- 25 occupancies, provided that the wall area covered by such artwork does not exceed
- 26 20 percent of any wall in any occupancy not protected throughout by a sprinkler system
- 27 or 50 percent of any wall in any occupancy protected throughout by a sprinkler system,
- 28 and the artwork is affixed in a manner that prevents it from moving freely.
- 29
- 30 4. Artwork and educational materials in classrooms in Group E and I-4 occupancies, and
- 31 on the walls of corridors in such occupancies, provided that the corridor wall area covered
- 32 by such artwork and materials does not exceed 20 percent of any wall, and the artwork
- 33 and materials are affixed in a manner that prevents them from moving freely.
- 34
- 35 5. Curtains, draperies, hangings and other decorative materials suspended from walls of
- 36 sleeping units and dwelling units in Occupancy Group R-1 dormitories protected
- 37 throughout by a sprinkler system, where the total amount of such materials does not
- 38 exceed 25 percent of the aggregate area of walls.
- 39
- 40 6. Decorations displayed for sale.
- 41
- 42 7. Guest rooms in hotels and motels.
- 43
- 44
- 45
- 46
- 47

1 8. Decorations in houses of worship, including wood used for screening or ornamental
2 purposes.

3
4 9. Decorations in private offices in commercial buildings.

5
6 **805.1.1 Fabric partitions.** In Group B and M occupancies, fabric partitions suspended from
7 the ceiling and not supported by the floor shall be [inherently noncombustible or shall be
8 treated to meet the flame propagation performance criteria in accordance with FC805.1.3
9 and NFPA 701] flame-resistant material.

10
11 **805.1.2 Trim and decorative materials.** The type and quantity of interior trim allowed shall
12 be as set forth in Chapter 8 of the Building Code. The quantity of flame resistant materials used
13 in decorations when combined with combustible trim shall not exceed 10 percent of the
14 specific wall or ceiling area to which it is attached.

15
16 **805.1.3 [Acceptance criteria and reports.** Where required to be flame resistant, decorations
17 shall meet the flame propagation performance criteria of NFPA 701. Certification of
18 compliance shall be prepared by a certificate of fitness holder and made available to department
19 representatives in accordance with the rules.] Reserved.

20
21 **805.1.4 Motion picture screens.** Motion picture screens and supporting construction shall
22 comply with the requirements of FC306.3.

23
24 **805.2 Scenery.** All scenery in Group A occupancies shall be made of materials that are inherently
25 [noncombustible] flame-resistant, have a Class A flame-spread rating, or rendered flame resistant
26 by the application of a fire-retardant coating, except that the commissioner may authorize the use
27 of scenery not complying with any of the above requirements where provision is made to ensure
28 an equivalent level of fire safety. Foam plastic materials used for scenery shall [comply with the
29 maximum heat release rate set forth in Exception 1 to FC805.1.] have a maximum heat release rate
30 of 100 kW when tested in accordance with UL 1975, or when tested in accordance with NFPA 289
31 using the 20 kW ignition source.

32
33 **805.3. Outdoor decorative installations.** In an outdoor place of assembly, outdoor place of public
34 gathering or other outdoor common area in a building or occupancy set forth in FC805.1, any
35 decorative installation that is freestanding, more than 4 feet (1219 mm) in height, and under,
36 through or around which the public or building occupants can enter or pass, shall be flame-resistant
37 material, except as otherwise authorized by the department.

38
39 **SECTION FC 806**
40 **INTERIOR FINISHES**

41
42 **806.1 General.** The quantity and type of interior finishes shall comply with the requirements of
43 Chapter 8 of the Building Code.

44
45 **806.2 Foam plastic signs.** Foam plastic signs that are not interior finishes shall have a maximum
46 heat release rate of 150 kW when tested in accordance with UL 1975, or when tested in
47 accordance with NFPA 289 using the 20 kW ignition source.

1
2
3 **CHAPTER 9**
4 **FIRE PROTECTION SYSTEMS**

5
6 **SECTION FC 901**
7 **GENERAL**
8

9 **901.1 Scope.** This chapter shall govern the design, installation, operation and maintenance,
10 including inspection and testing, of fire protection devices, equipment and systems, and other fire
11 protection measures for the control and extinguishment of fire.
12

13 **901.1.1 General.** Fire protection systems shall be designed, installed, operated and maintained
14 in accordance with this chapter and the reference standards set forth in FC Table 901.6.1.
15

16 **901.1.2 Emergency alarm systems.** Except as otherwise provided in the construction codes,
17 this code or the rules, emergency alarm systems shall be designed, installed, operated and
18 maintained in the same manner as fire alarm systems.
19

20 **901.2 Design and installation documents.** The commissioner may require design and installation
21 documents and calculations to be submitted for review for all fire protection systems. Design and
22 installation documents required or regulated by this code or the rules shall be submitted for review
23 and approval prior to installation, and shall certify that the design complies with the requirements
24 of this code and the rules.
25

26 **901.3 Permits.** Permits shall be required as set forth in FC105.6.
27

28 **901.4 Design and installation.** Fire protection systems shall be designed and installed in
29 accordance with FC 901.4.1 through [901.4.5] 901.4.6.
30

31 **901.4.1 Required fire protection systems.** Fire protection systems shall be designed and
32 installed in accordance with the construction codes, including the Building Code, and, as
33 applicable, this code and the rules, and the applicable referenced standards listed in this code.
34 Required systems shall be extended or altered as necessary to maintain and continue protection
35 whenever the building or structure is altered. Alterations to fire protection systems shall be
36 performed in compliance with the requirements of this code, the rules, and the construction
37 codes, as applicable. Buildings and structures shall be provided with such fire hose, portable
38 fire extinguishers and other means of preventing and extinguishing fires as the commissioner
39 may direct.
40

41 **901.4.1.1 Fire protection systems deemed required.** A fire protection system for which
42 a design option, exception or reduction to the provisions of this code or the construction
43 codes has been granted shall be deemed a required system.
44

45 **901.4.2 Fire protection systems not required by code.** Any fire protection system or portion
46 thereof not required by this code, the rules or the construction codes, including the Building
47 Code, may be installed to provide partial or complete protection of a building or structure,

1 provided such system meets the requirements of this code, the rules and the construction codes,
2 including the Building Code, as applicable. Where the design and installation of such fire
3 protection system is governed by this code or the rules, the commissioner may modify such
4 requirements, consistent with the interests of fire safety, upon a determination that such
5 modification will promote public safety by encouraging the installation of such systems.
6

7 **901.4.3 Additional fire protection systems.** Where an existing or proposed storage, handling
8 or use of a material or the conduct of an operation in a particular occupancy gives rise to special
9 hazards in addition to the normal hazards of the occupancy, or where the commissioner
10 determines that size, design and arrangement of the occupancy would unduly delay the ability
11 of firefighting personnel to gain access to the hazard, the commissioner may require additional
12 fire protection or other fire safety measures. Such measures may include the following:
13 automatic fire detection systems, fire alarm systems, fire extinguishing systems, standpipe
14 systems, or portable or fixed extinguishers. Where a certificate of occupancy limits the
15 commissioner's authority to order the installation of such additional systems or the
16 implementation of such additional measures, the commissioner may apply to the Board of
17 Standards and Appeals for a modification of such certificate of occupancy, and such
18 application shall be granted upon a showing that such additional systems or measures will
19 reasonably mitigate the special hazard or delayed access.
20

21 **901.4.4 Prohibition of deceptive equipment.** It shall be unlawful to install or maintain any
22 device that has the physical appearance of fire protection equipment but that does not perform
23 the fire protection function, in any building, structure or premises where it may be confused
24 with actual fire protection equipment.
25

26 **901.4.5 Certificate of approval.** The [following] fire protection devices, equipment and
27 systems listed in FC112 shall be of a type for which a certificate of approval has been issued
28 in accordance with this code, or which was approved by the Department of Buildings or the
29 Board of Standards and Appeals prior to the effective date of this section, unless such approval
30 by the Department of Buildings or the Board of Standards and Appeals is amended or repealed
31 by the commissioner[:
32

- 33 1. Pre-engineered non-water fire extinguishing systems, including systems installed in
34 connection with commercial cooking systems.
35
- 36 2. Prefabricated hoods and grease filters installed in connection with commercial cooking
37 systems.
38
- 39 3. Fire department connections, standpipe system hose outlets and pressure reducing
40 valves.
41
- 42 4. Fire alarm control units, and medical gas, toxic, highly toxic and flammable gas
43 detection system control panels].
44

45 **901.4.6 Connection to water supply.** Sprinkler systems, and other fire extinguishing and fire
46 protection systems, connected to a potable water supply shall be protected against backflow in

1 accordance with the construction codes and Department of Environmental Protection
2 requirements.

3
4 **901.5 Installation acceptance testing.** Fire detection and alarm systems, fire extinguishing
5 systems, private fire hydrant systems, yard hydrant systems, standpipe systems, fire pump systems,
6 private fire service mains and all other fire protection systems and appurtenances thereto shall be
7 subject to acceptance tests as set forth in the installation standards specified in this code. Where
8 required by the construction codes, including the Building Code, this code or the rules, such tests
9 shall be conducted, at the owner's risk, by his or her representative before a representative of the
10 department. When an installation does not pass an acceptance test required to be witnessed by the
11 department, the necessary corrections shall be made and the installation retested, or, when
12 authorized by the rules, certification of such corrections by a licensed or certified professional
13 submitted to the department.

14
15 **901.5.1 Occupancy.** It shall be unlawful to occupy any portion of a building or structure until
16 [any] all required fire detection systems, fire alarm systems, standpipe systems and fire
17 extinguishing systems have been tested and approved[.], except as follows:

18
19 1. In a new building undergoing construction, a completed floor below the level of ongoing
20 construction may be occupied upon installation, testing and approval of the required fire
21 protection systems on all floors up to and including the occupied floor.

22
23 2. In an existing building undergoing alteration, a completed floor may be occupied upon
24 installation, testing and approval of the required fire protection systems for such floor in
25 accordance with Building Code and Department of Buildings requirements.

26
27 **901.5.2 Correction of non-compliant conditions.** When the Department of Buildings
28 authorizes occupancy of a building notwithstanding the existence of installation defects or
29 other non-compliant conditions in the fire protection systems on the floors of the building in
30 which occupancy has been authorized, any and all prior written inspection findings of such
31 defects and other noncompliance shall, upon issuance of the occupancy authorization,
32 constitute an enforceable violation of this code. Such violations shall be corrected within the
33 time for correction set forth in the inspection finding, but in any event within 60 days of
34 occupancy, unless additional time for compliance is granted by the department.

35
36 **901.6 Maintenance.** Fire protection systems shall be maintained in good working order at all
37 times. Any fire protection system that is not in good working order shall be repaired or replaced
38 as necessary to restore such system to good working order, or, where authorized by the Building
39 Code, removed from the premises.

40
41 **901.6.1 Standards.** Fire protection systems shall be inspected, tested, serviced and otherwise
42 maintained in accordance with this section, the rules and the referenced standards listed in FC
43 Table 901.6.1. Where required by this section, such inspection, testing and maintenance shall
44 additionally comply with the rules. Where applicable, the requirements of the reference
45 standards listed in FC Table 901.6.1 shall be in addition to those requirements specified in the
46 rules.

FIRE PROTECTION SYSTEM MAINTENANCE STANDARDS

[SYSTEM	STANDARD
Portable fire extinguishers	NFPA 10
Low, medium and high expansion foam systems	NFPA 11 and NFPA 25
Carbon dioxide fire extinguishing system	NFPA 12
Halon 1301 fire extinguishing systems	NFPA 12A
Foam water sprinkler and spray systems	NFPA 16 and NFPA 25
Dry chemical fire extinguishing systems	NFPA 17
Wet chemical fire extinguishing systems	NFPA 17A
Water based fire protection systems	NFPA 25
Fire alarm systems	NFPA 72
Water mist fire extinguishing systems	NFPA 750
Clean agent fire extinguishing systems	NFPA 2001
Aerosol fire extinguishing systems	NFPA 2010]

FIRE PROTECTION SYSTEM	REFERENCED STANDARD
<u>Fire alarm systems</u>	<u>NFPA 72</u>
<u>Fire extinguishing systems</u>	
<u>Aerosol fire extinguishing systems</u>	<u>NFPA 2010</u>
<u>Clean agent fire extinguishing systems</u>	<u>NFPA 2001</u>
<u>Carbon dioxide fire extinguishing system</u>	<u>NFPA 12</u>
<u>Dry chemical fire extinguishing systems</u>	<u>NFPA 17</u>
<u>Expansion foam systems (low, medium and high)</u>	<u>NFPA 11 and NFPA 25</u>
<u>Foam water sprinkler and spray systems</u>	<u>NFPA 16 and NFPA 25</u>
<u>Halon 1301 fire extinguishing systems</u>	<u>NFPA 12A</u>
<u>Water mist fire extinguishing systems</u>	<u>NFPA 25</u>
<u>Wet chemical fire extinguishing systems</u>	<u>NFPA 17A</u>
<u>Portable fire extinguishers</u>	<u>NFPA 10</u>
<u>Water-based fire protection systems (including hydrant, fire hose, sprinkler and standpipe systems)</u>	<u>NFPA 25</u>

901.6.2 Records. Records of all system inspections, tests, servicing and other maintenance required by this code, the rules or the referenced standards shall be maintained in accordance with FC107.7.

901.6.2.1 Standpipe and sprinkler systems. [In addition to those records required by NFPA 25, an approved card bearing the dates of each inspection, certificate of fitness number and signature of the certificate of fitness holder shall be posted on the premises near the main water supply control valve. A detailed inspection report relative to conditions of water supply, gravity and pressure tanks and levels therein, valves, risers, piping, sprinkler heads, hose valves, hose and nozzles, fire department connections, alarms, fire pumps, obstructions, and conditions of all other system equipment and appurtenances] A visual inspection shall be completed monthly by the certificate of fitness holder in accordance with the requirements of NFPA 25. Periodic testing and other maintenance, as required by NFPA 25, shall be conducted by a certificate of fitness holder possessing the requisite qualifications. All defects or violations shall be noted on the inspection report.

901.6.3 Supervision. [A person holding a certificate of fitness for the following fire protection systems shall personally supervise the inspection, testing, servicing and other maintenance required by this code or the rules with respect to the system supervised by such certificate of fitness holder:] The inspection, testing, servicing and other maintenance of the following fire protection systems shall be personally conducted by a certificate of fitness holder, provided, however, that when required by the construction codes or other applicable law, rule or

1 regulation to conduct such maintenance work, such certificate of fitness holder shall hold a
2 master fire suppression piping contractor license, master electrician license or other required
3 license, or be under the direction and control of such license holder.
4

5 1. [Sprinkler] Fire extinguishing systems.
6

7 **Exception:** [Buildings classified] Sprinkler systems in Group R-3 occupancies.
8

9 2. Standpipe systems.
10

11 3. [Foam fire extinguishing systems.
12

13 4.] Fire alarm systems.
14

15 [5] 4. Private fire hydrant systems.
16

17 [6] 5. Yard hydrant systems.
18

19 **901.6.3.1 Servicing of portable fire extinguishers.** It shall be unlawful for any person
20 engaged in the business of servicing portable fire extinguishers to service portable fire
21 extinguishers without a portable fire extinguisher servicing company certificate. Any
22 person that services portable fire extinguishers shall hold a certificate of fitness, except that
23 a person training for such certificate of fitness may service portable fire extinguishers under
24 the personal supervision of a certificate of fitness holder. Nothing in this section shall
25 preclude portable fire extinguishers that are maintained on a premises for use at such
26 premises from being serviced by the owner or occupant of the premises, or an employee of
27 such owner or occupant, who possesses a certificate of fitness for portable fire extinguisher
28 servicing and the tools, materials, equipment and facility necessary to perform such
29 services.
30

31 **901.6.3.2 Portable fire extinguisher sales.** It shall be unlawful for any person to engage
32 in the business of selling portable fire extinguishers door to door to owners of buildings or
33 businesses for use on their premises without a portable fire extinguisher sales company
34 certificate. Persons performing such services for or on behalf of licensed portable fire
35 extinguisher sales companies shall possess a certificate of fitness for portable fire
36 extinguisher sales.
37

38 **Exception:** Sale to owners of Group R-2 and R-3 occupancy buildings.
39

40 **901.6.3.3 [Commercial cooking exhaust systems.** It shall be unlawful for any person
41 engaged in the business of inspecting and cleaning commercial cooking exhaust systems
42 as required by the provisions of this code to perform such service without a commercial
43 cooking exhaust system servicing company certificate. The inspection and cleaning of
44 commercial cooking exhaust systems required by FC904.11 shall be performed by a person
45 holding a certificate of fitness. Nothing in this section shall preclude commercial cooking
46 exhaust systems from being inspected and cleaned by the owner or occupant of the
47 premises, or an employee of such owner or occupant, who possesses a certificate of fitness

1 for inspecting and cleaning commercial cooking exhaust systems and the tools, materials,
2 and equipment necessary to perform such services in accordance with this section.]
3 Reserved.

4
5 **901.6.3.4 Smoke detector cleaning and testing.** The cleaning and testing for smoke entry
6 and sensitivity of smoke detectors installed in a fire alarm system shall be performed by a
7 person holding a certificate of fitness for smoke detector maintenance. Such work shall be
8 performed under the supervision and by employees of a person holding a smoke detector
9 maintenance company certificate, except that such smoke detector cleaning and testing
10 may be performed by an owner or occupant of the premises, or an employee of such owner
11 or occupant, who possesses a certificate of fitness for smoke detector maintenance, and
12 possesses the tools, instruments or other equipment necessary to perform such services in
13 accordance this code and the rules. All other smoke detector maintenance shall be
14 performed by a person possessing the requisite qualifications and experience, and any
15 applicable license or certificate.

16
17 **901.6.3.5 Central station fire alarm monitoring.** It shall be unlawful for any person to
18 operate a central station that monitors fire alarm systems and maintain transmitters in
19 protected premises without a certificate of operation.

20
21 **901.6.4 Verification of system functionality.** Any fire protection system which is or may
22 have been damaged or rendered out of service in whole or in part as result of exposure to fire
23 or water or other cause, shall be inspected to verify that the system is in good working order.
24 If not in good working order, the system shall be repaired or otherwise restored to good
25 working order forthwith.

26
27 **901.7 Out-of-service systems.** The owner and the impairment coordinator for a standpipe system,
28 sprinkler system or fire alarm system shall comply with the requirements of this section whenever
29 such fire protection system is out of service. The department may direct that, until such fire
30 protection system has been returned to service, fire safety measures appropriate to the size,
31 configuration, occupancy, use and hazards be implemented that are in addition to or in lieu of those
32 required by this section.

33
34 **901.7.1 Impairment coordinator.** The building owner shall designate an impairment
35 coordinator to take the actions required by this section when a standpipe system, sprinkler
36 system or fire alarm system is out of service. In the absence of a specific designee, the owner
37 shall be considered the impairment coordinator.

38
39 **901.7.2 Fire watch.** Unless otherwise directed by the department, the building shall be
40 evacuated or a fire watch maintained in accordance with this section when a standpipe system,
41 sprinkler system or fire alarm system is out of service. Such fire watch shall be conducted in
42 compliance with the requirements of FC 901.7.2.1 through 901.7.2.3.

43
44 **901.7.2.1 Duties and responsibilities.** Persons conducting a fire watch shall:

- 45
46 1. continuously patrol the area affected by the out-of-service fire protection system to
47 which such person has been assigned, keeping constant watch for fires;

2. be provided with at least one approved means for notification of the department and any FLS director, FEP coordinator or FEP staff on the premises;
3. immediately report any fire to the department and notify emergency preparedness staff on the premises;
4. be trained in the use of portable fire extinguishers and equipped with a portable fire extinguisher, or made aware of the location of readily accessible portable fire extinguishers in the area to which such person has been assigned to maintain a fire watch;
5. be responsible for extinguishing fires when they are limited in size and spread such that they can readily be extinguished using a portable fire extinguisher;
6. maintain a record of such fire watch on the premises during the fire watch and for a minimum of 48 hours after the fire watch has concluded; and
7. have no other duties.

901.7.2.2 Fire guards required. The fire watch required when a standpipe system, sprinkler system or fire alarm system is out of service shall be maintained in accordance with FC901.7.2.2.1 and this section.

Exception: The impairment coordinator or other building staff trained and knowledgeable in conducting a fire watch may conduct a fire watch in lieu of a fire guard during the initial 4 hours of a planned removal from service, or after discovery of an unplanned out-of-service condition, provided that the floor or area in which the fire protection system is out of service does not exceed 50,000 square feet (4645 m²).

901.7.2.2.1 Fire guards required. The fire watch required for an out-of-service standpipe system, sprinkler system or fire alarm system shall be maintained by one or more fire guards.

901.7.2.3 Fire watch coverage. A sufficient number of fire guards shall be provided such that each floor or area in which the fire protection system is out of service is patrolled at least once an hour. The area to be patrolled by each fire guard shall not exceed more than 50,000 square feet (4645 m²) of floor area. The area patrolled by each fire guard may be further limited by the department depending on the configuration of the premises, impediments to patrol, nature of the occupancy, fire risk, and other fire safety considerations.

901.7.3 Planned removal from service. The impairment coordinator shall be made aware in advance of any planned removal from service of a standpipe system, sprinkler system or fire alarm system, or system component, for repair, servicing, alteration, testing and other maintenance of the system or component, or to allow construction to be performed in the area protected by the system without unnecessarily activating it. The impairment coordinator shall

1 authorize and personally supervise the placing of the fire protection system out of service.
2 Before authorizing the placing of the fire protection out of service the impairment coordinator
3 shall:

- 4
- 5 1. notify the certificate of fitness holder responsible for supervising the maintenance of the
6 standpipe system, sprinkler system or fire alarm system.
7
- 8 2. determine the extent and expected duration of the out-of-service condition.
9
- 10 3. inspect the areas or buildings involved and assess the increased risks.
11
- 12 4. make appropriate recommendations to the owner.
13
- 14 5. notify the department in accordance with FC901.7.5, if required.
15
- 16 6. notify the responsible person designated by the owner to issue hot work authorizations
17 in accordance with FC Chapter [26] 35.
18
- 19 7. notify the central station and insurance carrier.
20
- 21 8. notify the occupants in the affected areas if the duration of time the sprinkler system or
22 fire alarm system will be out of service is estimated to be more than 30 minutes.
23
- 24 9. place a tag at each fire department connection, standpipe and sprinkler system control
25 valve and fire command center, indicating which fire protection system, or part thereof,
26 is out of service.
27
- 28 10. maintain the fire protection system in service until work is ready to begin.
29

30 **901.7.4 Unplanned out-of-service condition.** Any person, upon becoming aware of any
31 condition, except a planned removal from service, rendering a standpipe system, sprinkler
32 system or fire alarm system, or part thereof, inoperable in whole or in part, shall notify the
33 owner and the impairment coordinator of such condition. The impairment coordinator shall
34 take the actions set forth in FC901.7.3 and 901.7.5, and such other actions as are necessary or
35 appropriate to protect the occupants of the building and promptly restore the system to service.
36

37 **901.7.5 Notification to department.** The department shall be notified that a standpipe system,
38 sprinkler system or fire alarm system is out of service, whether by reason of a planned removal
39 from service or an unplanned out-of-service condition, where required by FC 901.7.5.1 through
40 901.7.5.3.
41

42 **901.7.5.1 Standpipe systems.** Notification shall be made to the department whenever a
43 standpipe system is or will be out of service for any period of time.
44

45 **901.7.5.2 Sprinkler systems and fire alarm systems.** Notification that a sprinkler system
46 or fire alarm system, or any part thereof, is or will be out of service shall be made to the
47 department under the following circumstances:

- 1
2 1. The sprinkler system or fire alarm system is or will be out of service on more than
3 one floor of a building; or
4
- 5 2. With respect to a sprinkler system, the work or repairs cannot be completed, and the
6 system restored to service, within 8 hours of the time the system was placed or went
7 out of service; or
8
- 9 3. With respect to a fire alarm system, the work or repairs will require the fire alarm
10 system to be out of service for 8 hours or more [than 8 hours] in any 24-hour period
11 or 30 hours or more (consecutive or non-consecutive) in any month; or
12
- 13 4. One or more other fire protection systems in the area in which a fire protection
14 system is out of service are or will also be out of service at the same time.
15

16 **901.7.5.3 Reporting requirements.** Notification of an out-of-service condition pursuant
17 to this section shall be made by the impairment coordinator to the [Department] department
18 at the applicable telephone number set forth in [FC401.2.2] FC901.10. Such notification
19 shall include the following information:
20

- 21 1. The owner or impairment coordinator's name and contact information;
22
- 23 2. The building address;
24
- 25 3. The type of fire protection system that is out of service;
26
- 27 4. Whether the fire protection system is out of service by reason of a planned removal
28 from service (and if so, the reason for placing it out of service) or an unplanned out-
29 of-service condition;
30
- 31 5. If a planned removal from service, the date and time the fire protection system will
32 be placed out of service, and the estimated duration the system will be out of service;
33
- 34 6. If an unplanned out-of-service condition, the estimated duration the system will be
35 out of service;
36
- 37 7. The floors or areas in which the fire protection system is out of service;
38
- 39 8. Whether the other fire protection systems are in good working order; and
40
- 41 9. The name and certificate number of the certificate of fitness holder responsible for
42 supervision of the fire protection system that is out of service.
43

44 **901.7.6 Restoring systems to service.** When an out-of-service device, equipment or system is
45 restored to service, the impairment coordinator shall:
46

- 1 1. conduct necessary inspections and tests to verify that the affected systems are
2 operational.
- 3
- 4 2. notify the department in accordance with FC901.10.
- 5
- 6 3. notify the owner, central station, insurance carrier, emergency preparedness staff, and,
7 if previously notified, the occupants in the affected areas.
- 8
- 9 4. remove the out-of-service tags.

10
11 **901.7.7 Out-of-service standpipe systems at construction sites.** The owner, fire safety
12 manager and/or impairment coordinator shall take the following actions whenever a standpipe
13 system at a construction site is out of service:

- 14
- 15 1. Immediately notify the department in accordance with FC901.10 of any unplanned out-
16 of-service condition, and otherwise comply with the requirements of FC901.7.4.
- 17
- 18 2. Notify the department in accordance with FC901.10 at least 24 hours prior to any
19 planned removal of the standpipe system from service, and otherwise comply with the
20 requirements of FC901.7.3.
- 21
- 22 3. Ensure that a fire watch is continuously maintained in compliance with the requirements
23 of FC901.7.2 while the standpipe system is out of service.
- 24
- 25 4. Repair the standpipe system and return it to service in compliance with the requirements
26 of FC 901.7.6 and Section 3303.8.1 of the Building Code. The construction site may
27 continue to be occupied, and construction, demolition or alteration activities may
28 continue, pending such repair and restoration to service, except:
 - 29
 - 30 4.1. as otherwise provided in Section 3303.8.1 of the Building Code; and/or
 - 31
 - 32 4.2. as otherwise directed by the commissioner upon a determination that, in the
33 absence of an operable standpipe system, the conduct of certain construction,
34 demolition or alteration activities would be imminently perilous to life or property;
35 and
 - 36
 - 37 4.3. that in no circumstance shall hot work be conducted on the construction site until
38 such time as the standpipe system is restored to service and the standpipe alarm
39 reactivated.
 - 40

41 **901.8 Tampering with or rendering equipment inoperable.** Fire protection systems and related
42 apparatus shall not be tampered with or rendered inoperable, except as set forth in FC107.4.

43
44 **901.9 Recall of fire protection system components.** A component of a fire protection system
45 regulated by this code that is subject to a voluntary or mandatory recall under federal law shall be
46 replaced with an approved, listed component in compliance with the referenced standards. A
47 record of the replacement of the component shall be maintained in accordance with FC107.7.

1
2 **901.10 Telephone numbers for department notification.** Except as otherwise required by the
3 rules or order of the department, when this code requires non-emergency notification to be made
4 to the department, such notification shall be made by calling one of the following telephone
5 numbers, depending upon the borough in which the property is located:
6

7	<u>Bronx properties</u>	<u>(718) 430-0200</u>
8	<u>Brooklyn properties</u>	<u>(718) 965-8300</u>
9	<u>Manhattan properties</u>	<u>(212) 570-4300</u>
10	<u>Queens properties</u>	<u>(718) 476-6200</u>
11	<u>Staten Island properties</u>	<u>(718) 494-4296</u>

12
13 **SECTION FC 902**
14 **DEFINITIONS**
15

16 **902.1 Definitions.** The following terms shall, for the purposes of this chapter and as used
17 elsewhere in this code, have the meanings [shown herein] set forth in FC202.
18

19 **ALARM NOTIFICATION APPLIANCE.** [A fire alarm system component, such as a bell, horn,
20 speaker, light, text display or vibration device that issues an audible, tactile, and/or visual alert.]
21

22 **ALARM SIGNAL.** [A signal indicating an emergency requiring immediate action, such as a
23 signal indicative of fire.]
24

25 **ANNUNCIATOR.** [A unit containing one or more indicator lamps, alphanumeric displays, or
26 other equivalent means in which each indication provides status information about a circuit,
27 condition or location.]
28

29 **AUTOMATIC.** [As applied to fire protection devices, any device, equipment or system that
30 initiates system function as a result of a predetermined temperature rise, rate of temperature rise,
31 or combustion products, without the necessity for human intervention.]
32

33 **CENTRAL STATION.** [A facility that receives alarm signals from a protected premises and
34 retransmits or otherwise reports such alarm signals to the department.]
35

36 **CERTIFICATE OF OPERATION.** [A written statement issued by the commissioner approving
37 the operation of a central station, for which such certificate is required by this code or the rules, or
38 the construction codes.]
39

40 **CLEAN AGENT.** [Electrically nonconducting, volatile, or gaseous fire extinguishant that does
41 not leave a residue upon evaporation.]
42

43 **COMMERCIAL COOKING EXHAUST SYSTEM SERVICING COMPANY**
44 **CERTIFICATE.** [A certificate issued by the commissioner to a person engaged in the business
45 of inspecting and cleaning commercial cooking equipment exhaust systems, which authorizes such
46 person to inspect and clean commercial cooking equipment exhaust systems, for which such
47 certificate is required by this code or the rules.]

1
2 **COMMERCIAL COOKING SYSTEM.** [A system consisting of commercial cooking
3 equipment, exhaust hood, filters, exhaust duct system, fire extinguishing system and other related
4 appurtenances designed to capture grease-laden cooking vapors.]

5
6 **DOMESTIC COOKING HOOD.**

7
8 **DOMESTIC COOKING SYSTEM.**

9
10 **EMERGENCY ALARM SYSTEM.** [A system to provide indication and warning of an
11 emergency condition involving a release of hazardous materials or other hazardous material
12 incident.]

13
14 **FIRE ALARM BOX, MANUAL.** [A manually operated device used to initiate an alarm signal.]

15
16 **FIRE ALARM SIGNAL.** [A signal initiated by a fire alarm-initiating device such as a manual
17 fire alarm box, automatic fire detector, water-flow switch, or other device whose activation is
18 indicative of the presence of a fire or fire signature.]

19
20 **FIRE ALARM SYSTEM.** [Any system, including any interconnected fire alarm sub-system, of
21 components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory
22 signal-initiating devices.]

23
24 **FIRE DETECTOR, AUTOMATIC.** [A device designed to detect the presence of a fire signature
25 and to initiate action.]

26
27 **FIRE EXTINGUISHING SYSTEM.** [An approved system of devices and equipment which
28 detects a fire and discharges an approved fire extinguishing agent onto or in the area of a fire. Such
29 term includes automatic systems and, where such systems are authorized by this code or the
30 Building Code, manually activated systems.]

31
32 **FIRE PROTECTION SYSTEM.** [Approved devices, equipment and systems or combinations
33 of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage
34 smoke and products of a fire or any combination thereof, including fire extinguishing systems, fire
35 alarm systems, sprinkler systems and standpipe systems.]

36
37 **FIRE PUMP.**

38
39 **FIRE SUPPRESSION PIPING CONTRACTOR.**

40
41 **IMPAIRMENT COORDINATOR.** [The person responsible for ensuring that proper safety
42 precautions are taken when a fire protection system is out of service.]

43
44 **INITIATING DEVICE.** [A system component that originates transmission of a change-of-state
45 condition, such as in a smoke detector, manual fire alarm box, or supervisory switch.]

46

1 **MULTIPLE-STATION ALARM DEVICE.** [Two or more single-station alarm devices that can
2 be interconnected such that actuation of one causes all integral or separate audible alarms to
3 operate. It also can consist of one single-station alarm device having connections to other detectors
4 or to a manual fire alarm box.]

5
6 **OUT-OF-SERVICE SYSTEM.** [A fire protection system that is not fully functional; or whose
7 operation is impaired or is otherwise not in good working order.]

8
9 **PLUMBER.**

10
11 **PORTABLE COOKING EQUIPMENT.** [Commercial cooking equipment, provided with or
12 installed with wheels.]

13
14 **PORTABLE FIRE EXTINGUISHER SALES COMPANY CERTIFICATE.** [A certificate
15 issued by the commissioner to a person engaged in the business of selling portable fire
16 extinguishers door to door to owners of buildings or business for use on their premises, which
17 authorizes such person to engage in such business and supervise such sales.]

18
19 **PORTABLE FIRE EXTINGUISHER SERVICING COMPANY CERTIFICATE.** [A
20 certificate issued by the commissioner to a person engaged in the business of servicing portable
21 fire extinguishers, which authorizes such person to engage in such business and supervise the
22 provision of such servicing by certificate of fitness holders.]

23
24 **PRESIGNAL SYSTEM.** [A fire alarm system having a feature that allows initial fire alarm
25 signals to sound in a constantly attended central location and for which a human action is
26 subsequently required to achieve a general alarm, or a feature that allows the control equipment to
27 delay the general alarm by more than one minute after the start of the alarm processing.]

28
29 **PROTECTED PREMISES.** [A building, occupancy or structure located in the city that is
30 equipped with a fire alarm system that transmits an alarm signal to the department or a central
31 station that monitors such system for the purposes of reporting fire alarms to the department,
32 whether or not the installation of such system on the premises is required by law.]

33
34 **SINGLE-STATION SMOKE ALARM.** [An assembly incorporating the detector, the control
35 equipment, and the alarm-sounding device in one unit, operated from a power supply either in the
36 unit or obtained at the point of installation.]

37
38 **SMOKE ALARM.** [A single- or multiple-station alarm responsive to smoke and not connected
39 to a system.]

40
41 **SMOKE DETECTOR.** [A listed device that senses visible or invisible particles of combustion.]

42
43 **SMOKE DETECTOR MAINTENANCE COMPANY CERTIFICATE.** [A certificate issued
44 by the commissioner to a person engaged in the business of performing smoke detector cleaning
45 and testing, which authorizes such person to engage in such business and supervise the
46 performance of such cleaning and testing by certificate of fitness holders.]

1 **SPRINKLER SYSTEM.** [A fire extinguishing system, other than a mist fire extinguishing
2 system, that utilizes water as the extinguishing agent.]
3

4 **STANDPIPE, MULTI-ZONE.** [A standpipe system that is vertically subdivided as required by
5 the construction codes, including the Building Code, into zones to limit the maximum operating
6 pressure in the system. Each zone will have its own individual automatic water supply.]
7

8 **STANDPIPE SYSTEM.** [Piping installed in a building or structure that serves to transfer water
9 from a water supply to hose connections at one or more locations in a building or structure used
10 for firefighting purposes.]
11

12 **SUPERVISORY SIGNAL.** [A signal indicating the need for action in connection with the
13 supervision of guard tours, fire extinguishing systems or equipment, fire alarm systems or the
14 maintenance features of related systems.]
15

16 **SUPERVISORY SIGNAL-INITIATING DEVICE.** [An initiating device, such as a valve
17 supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe sprinkler
18 system, that triggers a supervisory signal.]
19

20 **TROUBLE SIGNAL.** [A signal initiated by the fire alarm system or device indicative of a fault
21 in a monitored circuit or component.]
22

23 **UNNECESSARY ALARM.** [An alarm signal transmitted by a fire alarm system which
24 functioned as designed, but for which a department response proved unnecessary. An example of
25 an unnecessary alarm is an alarm triggered by smoke from a lit cigarette in a non-smoking area,
26 when the presence of such smoke does not implicate fire safety concerns.]
27

28 **UNWARRANTED ALARM.** [An alarm signal transmitted by a fire alarm system which failed
29 to function as designed as a result of improper installation, improper maintenance, malfunction, or
30 other factor. Examples of unwarranted alarms are alarms resulting from improper smoke detector
31 placement, improper detector setting for installed location, lack of system maintenance, and
32 control panel malfunction.]
33

34 **WATER MIST SYSTEM.**
35

36 **SECTION FC 903**
37 **SPRINKLER SYSTEMS**
38

39 **903.1 General.** Sprinkler systems shall comply with the requirements of this section.
40

41 **903.2 Where required.** Sprinkler systems shall be provided in buildings, structures, premises, or
42 parts thereof, when required by the construction codes, including the Building Code, this code or
43 the rules.
44

45 **903.2.1 through and including 903.2.10** Reserved.
46

1 **903.2.11 During construction.** Sprinkler systems required during construction, alteration and
 2 demolition operations shall be provided in accordance with Chapter 33 of the Building Code
 3 and [FC1414] FC3314.

4
 5 **903.2.12** Reserved.

6
 7 **903.2.13 Other required fire extinguishing systems.** In addition to the requirements of
 8 FC903.2, the provisions indicated in FC Table 903.2.13 also require the installation of a fire
 9 extinguishing system for certain buildings and areas.

10
 11 **FC TABLE 903.2.13**
 12 **ADDITIONAL REQUIRED FIRE EXTINGUISHING SYSTEMS**

SECTION	SUBJECT
<u>314.5.1</u>	<u>Covered kiosks, displays, booth or concession stands</u>
<u>315.7.2.1</u>	<u>Indoor additional storage of solid fuel</u>
<u>317.4.3.3</u>	<u>Defueling area</u>
<u>321.4</u>	<u>Construction shanties and construction storage facilities and areas – fixed guideway transit and passenger rail systems</u>
<u>322.4</u>	<u>Construction shanties and construction storage facilities and areas – road tunnels, bridges and other limited access highways</u>
<u>501.4.3.1</u>	<u>Altered buildings on substandard width public streets and fire apparatus access roads</u>
<u>503.2.10</u>	<u>Buildings fronting on substandard width fire apparatus access roads</u>
<u>503.3.2</u>	<u>Buildings fronting on substandard width public streets</u>
<u>608.9.4</u>	<u>Energy storage system, stationary (NFPA 13 system, where required/allowed)</u>
<u>1027.6</u>	<u>Equipment storage in Group I-2 building hallway corridors</u>
[1208.2] <u>2108.2</u>	[Dry] <u>Newly-established dry cleaning facilities</u>
[1208.3] <u>2108.3</u>	[Dry] <u>Lawfully existing dry cleaning [machines] facilities</u>
<u>2306.8</u>	<u>Flammable liquid motor fuel-dispensing areas</u>
<u>2308.7.4</u>	<u>Indoor CNG compressing, storage and dispensing areas</u>
<u>2309.3.4.2</u>	<u>Hydrogen motor fuel-dispensing areas under canopies</u>
<u>2311.8.2</u>	<u>Repair garage for vehicle fueled by lighter-than-air motor fuel</u>
[1504.3.3.1] <u>2404.3.3</u>	<u>Spray rooms and spray booths</u>
[1504.3.3.2]	[Spray booths]
[1505.2] <u>2405.2</u>	<u>Dip-tank rooms</u>
[1505.3.4.2] <u>2405.3.4</u>	<u>Dip tanks</u>
[1505.4.4] <u>2405.4.4</u>	<u>Hardening and tempering tanks</u>
<u>2406.3.3.1</u>	<u>Powder coating rooms and booths</u>
<u>2407.3.2.1</u>	<u>Electrostatic spray finishing operations</u>
<u>2408.2.2</u>	<u>Spraying operations involving the use of organic peroxides and other dual-component coatings</u>
<u>2409.2.1</u>	<u>Resin application areas</u>
[1803.10] <u>2703.10</u>	<u>HPM facilities</u>
[1803.10.1.1] <u>2703.10.1.1</u>	<u>HPM work station exhaust</u>
<u>2703.10.1.2</u>	<u>HPM combustible tools</u>
[1803.10.2] <u>2703.10.2</u>	<u>HPM gas cabinets and exhaust enclosures</u>
[1803.10.3] <u>2703.10.3</u>	<u>HPM corridors</u>
[1803.10.4] <u>2703.10.4</u>	<u>HPM exhaust</u>
[1803.10.4.1] <u>2703.10.4.1</u>	<u>HPM noncombustible ducts</u>
[1803.10.4.2] <u>2703.10.4.2</u>	<u>HPM combustible ducts</u>
<u>2903.4</u>	<u>Organic coating manufacturing facility</u>
[2106.1] <u>3006.1</u>	<u>Class A and B furnaces</u>
[2106.2] <u>3006.2</u>	<u>Class C and D furnaces</u>

[2206.8]	[Flammable liquid motor fuel-dispensing areas]
[2208.7.4]	[Indoor CNG compressing, storage and dispensing areas]
[2209.3.4.2]	[Hydrogen motor fuel-dispensing areas under canopies]
FC Table [2306.2] <u>3206.2</u>	High-piled storage fire protection
[2306.4] <u>3206.4</u>	High-piled storage
<u>3207.2</u>	<u>Solid-piled and shelf storage</u>
<u>3208.2</u>	<u>Rack storage</u>
<u>3208.5.1</u>	<u>Extra-high-rack combustible storage</u>
<u>3209.2</u>	<u>Automated storage</u>
<u>3704.5</u>	<u>Storage of more than 1,000 cubic feet of loose combustible fibers</u>
<u>3706.6</u>	<u>Combustible fibers, storage at waterfront structure</u>
<u>4003.5.1</u>	<u>Distilleries</u>
[2703.8.4.1] <u>5003.8.4.1</u>	Gas rooms
[2703.8.5.3] <u>5003.8.5.3</u>	Exhausted enclosures
[2704.5] <u>5004.5</u>	Indoor storage of hazardous materials
[2705.1.8] <u>5005.1.8</u>	Indoor handling and use of hazardous materials
[2804.4.1] <u>5104.4.1</u>	Aerosol warehouses
<u>5106.3.2</u>	<u>Retail aerosol displays over 8 feet high</u>
[2904.5]	[Storage of more than 1,000 cubic feet of loose combustible fibers]
<u>5306.2.1</u>	<u>Medical gas rooms</u>
<u>5306.2.3</u>	<u>Medical gas cabinets</u>
[3306.7] <u>5606.7</u>	Storage of small arm ammunition, powder-actuated tool loads, black powder or smokeless propellant
<u>5704.3.5.1</u>	<u>Below grade storage of combustible liquids</u>
[3404.3.7.5.1] <u>5704.3.7.5.1</u>	Flammable and combustible liquid storage rooms
[3404.3.8.4] <u>5704.3.8.4</u>	Flammable and combustible liquid storage warehouses
[3405.3.7.3] <u>5705.3.7.3</u>	Flammable and combustible liquid Group H-2 or H-3 areas
<u>5706.4.10.5</u>	<u>Bulk plants and terminals</u>
<u>5706.4.10.5.1</u>	<u>Cargo tank loading racks</u>
<u>5806.3.2</u>	<u>Sterilization systems</u>
[3704.1.2.2] <u>6004.1.2.2</u>	Gas cabinets for highly toxic and toxic gas
[3704.1.3.1] <u>6004.1.3.1</u>	Exhausted enclosures for highly toxic and toxic gas
[3704.2.2.6] <u>6004.2.2.6</u>	Gas rooms for highly toxic and toxic gas
[3704.3.3] <u>6004.3.3</u>	Outdoor storage for highly toxic and toxic gas
<u>6109.9</u>	<u>Storage of LPG within buildings accessible to the public</u>
<u>6304.1.4</u>	<u>Solid and liquid oxidizer storage areas</u>
<u>6404.2.2</u>	<u>Outdoor storage areas of pyrophoric materials with overhead construction</u>
[4204.1.1] <u>6504.1.1</u>	Pyroxylin plastic storage cabinets and vaults
[4204.1.3] <u>6504.1.3</u>	Pyroxylin plastic storage vaults
[4204.2] <u>6504.2</u>	Pyroxylin plastic storage, handling and use
Building Code	Sprinkler requirements as set forth in the construction codes, including the Building Code

For SI: 1 cubic foot = 0.023 m³.

903.3 Installation requirements. Except as otherwise provided in this code, sprinkler systems shall be designed and installed in accordance with the construction codes, including the Building Code.

903.3.1 Inspector's test gauge. A pressure gauge shall be installed at or near the inspector's test connection in Group R-2 occupancies, converted dwellings, and single room occupancies to enable persons responsible for inspecting or testing the sprinkler system, including certificate of fitness holders, plumbers, master fire suppression contractors and department

1 representatives, to visually confirm the static pressure in the system. Installation of a pressure
2 gauge shall constitute an operational requirement of this code.
3

4 **903.4 Sprinkler system supervision and alarms.** All valves controlling the water supply for
5 sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures, and water-
6 flow switches on all sprinkler systems shall be electrically supervised by the fire alarm system
7 where a fire alarm system is required by Section 907 of the Building Code.
8

9 **Exceptions:**

- 10
- 11 1. Sprinkler systems protecting Group R-3 occupancies.
 - 12
 - 13 2. Reserved.
 - 14
 - 15 3. Sprinkler systems installed in accordance with NFPA 13R, as modified by FC Appendix
16 B, where a common supply main is used to supply both domestic water and the sprinkler
17 system, and a separate shutoff valve for the sprinkler system is not provided, except
18 where the Building Code requires such sprinkler system to be supervised.
 - 19
 - 20 4. Jockey pump control valves that are sealed or locked in the open position.
 - 21
 - 22 5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are
23 sealed or locked in the open position.
 - 24
 - 25 6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the
26 open position.
 - 27
 - 28 7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are
29 sealed or locked in the open position.
 - 30

31 **903.5 Maintenance.** Sprinkler systems shall be periodically inspected, tested, serviced and
32 otherwise maintained in accordance with FC901.6 and the rules. Except as otherwise provided in
33 FC 903.5.1 through 903.5.3, sprinkler systems shall be inspected and otherwise maintained as
34 follows:
35

- 36 1. Sprinkler systems shall be inspected at least once a month by a person holding a certificate
37 of fitness, employed by the owner, to ensure that all parts of the system are in perfect working
38 order, and that the department connections, if any, are ready for immediate use by the
39 department. A detailed record of each inspection shall be kept for examination by any
40 representative of the department.
- 41
- 42 2. There shall be one or more employees instructed in the maintenance of sprinkler systems.
- 43
- 44 3. There shall be kept available at all times in the premises a supply of at least six extra sprinkler
45 heads, representative of the sprinkler heads installed on the sprinkler system, to replace
46 promptly any fused or damaged sprinklers.
- 47

1 4. Fire department connections shall be hydrostatically tested at least once every 5 years, in
2 accordance with FC912.6.
3

4 **903.5.1 Sprinkler systems in converted dwellings and single room occupancies.** In any
5 converted dwelling or tenement used in whole or in part for single room occupancy, regardless
6 of occupancy classification, in which a sprinkler system has been installed pursuant to the
7 requirements of the Multiple Dwelling Law, such sprinkler system shall be inspected and
8 otherwise maintained as follows:
9

10 1. Sprinkler systems shall be inspected at least once a month by a person employed by the
11 owner, holding a certificate of fitness issued by the department, a fire suppression
12 contractor license issued by the Department of Buildings, or, for a sprinkler system with
13 not more than thirty sprinkler heads, a plumber, to ensure that all parts of the system are
14 in perfect working order, and that the department connections, if any, are ready for
15 immediate use by the department. Such inspection shall include a check of all control
16 valves on the system, including the main supply control valve, making certain the valves
17 are fully open and sealed in such open position; a check of the static pressure in the
18 sprinkler system from a pressure gauge[, if installed,] located at or near the inspector's
19 test connection, making certain the system design pressure is being maintained; a check
20 that all sprinkler heads are in place; and such other requirements as the commissioner
21 may prescribe. A detailed record of each inspection shall be kept for examination by any
22 representative of the department.
23

24 2. There shall be one or more employees instructed in the location and status of the
25 sprinkler system control valves.
26

27 3. There shall be kept available at all times in the premises a supply of at least six extra
28 sprinkler heads, representative of the sprinkler heads installed at the premises, to replace
29 promptly any fused or damaged sprinklers, except that a supply of at least three extra
30 sprinkler heads shall be kept available for any sprinkler system installed in accordance
31 with NFPA 13R, as modified by FC Appendix B.
32

33 4. Fire department connections shall be hydrostatically tested at least once every 5 years in
34 accordance with FC912.6.
35

36 5. [Upon order of the commissioner, but at least once every year, a] A flow test of the
37 sprinkler system shall be conducted at least once every year. Such test shall be conducted
38 at the owner's risk by his or her representative, who shall be a [licensed master] plumber
39 or licensed master fire suppression contractor. [At least one] Upon order of the
40 commissioner, but at least once every 5 years, such flow test shall be conducted before a
41 representative of the department [at least once every 5 years]. A report of each test, on
42 an approved form, shall be certified by such [licensed master] plumber or licensed master
43 fire suppression contractor and shall be kept for not less than 5 years and made available
44 for inspection by any representative of the department.
45

46 6. The owner or managing agent of any building subject to the requirements of this section
47 shall maintain a record of each inspection and test and a listing of all outstanding

1 violations issued pursuant to this section. Such records and listing shall be made available
2 for inspection by occupants of such residential buildings during regular business hours.
3

4 **903.5.2 Sprinkler systems in other R-2 occupancies.** Except as otherwise provided in
5 FC903.5.1, in Group R-2 occupancies, sprinkler system shall be inspected and otherwise
6 maintained as follows:
7

- 8 1. Sprinkler systems shall be inspected at least once a month by a person employed by the
9 owner, holding a certificate of fitness issued by the department, a fire suppression
10 contractor license issued by the Department of Buildings, or, for a sprinkler system with
11 not more than thirty sprinkler heads, a plumber, to ensure that all parts of the system are
12 in perfect working order, and that the department connections, if any, are ready for
13 immediate use by the department. Such inspection shall include a check of all control
14 valves on the system, including the main supply control valve, making certain the valves
15 are fully open and sealed in such open position; a check of the static pressure in the
16 sprinkler system from a pressure gauge[, if installed,] located at or near the inspector's
17 test connection, making certain the system design pressure is being maintained; a check
18 that all sprinkler heads are in place; and such other requirements as the commissioner
19 may prescribe. A detailed record of each inspection shall be kept for examination by any
20 representative of the department.
21
- 22 2. There shall be one or more employees instructed in the location and status of the
23 sprinkler system control valves.
24
- 25 3. There shall be kept available at all times in the premises a supply of at least six extra
26 sprinkler heads, representative of the sprinkler heads installed at the premises, to replace
27 promptly any fused or damaged sprinklers, except that a supply of at least three extra
28 sprinkler heads shall be kept available for any sprinkler system installed in accordance
29 with NFPA 13R, as modified by FC Appendix B.
30
- 31 4. Fire department connections shall be hydrostatically tested at least once every 5 years in
32 accordance with FC912.6.
33
- 34 5. [Upon order of the commissioner, but at least once every year, a flow test of the sprinkler
35 system shall be conducted; provided, however, that where there is a pressure gauge
36 installed at or near the inspector's test location that is checked during the required
37 monthly inspection described in FC903.5.2(1) to make certain the system design pressure
38 is being maintained, a] A flow test of the sprinkler system shall be conducted upon order
39 of the commissioner, but at least once every 30 months. Such test shall be conducted at
40 the owner's risk by his or her representative, who shall be a plumber or licensed master
41 fire suppression contractor. [At least one] Upon order of the commissioner, but at least
42 once every 5 years, such test shall be conducted before a representative of the department
43 [at least once every 5 years]. A report of each test, on [a] an approved form[prepared by
44 the department], shall be certified by such plumber or licensed master fire suppression
45 contractor and shall be kept for not less than 5 years and made available for inspection
46 by any representative of the department.
47

6. The owner or managing agent of any building subject to the requirements of this section shall maintain a record of each inspection and test and a listing of all outstanding violations issued pursuant to this section. Such records and listing shall be made available for inspection by occupants of such residential buildings during regular business hours.

903.5.3 Sprinkler systems in Group R-3 occupancies. Sprinkler systems in buildings classified in Group R-3 occupancies shall be maintained in perfect working order.

903.5.4 Sprinkler system control valve signage. A sign identifying the location of the sidewalk box housing the sprinkler system control valve shall be conspicuously posted on the exterior wall of the building directly opposite the sidewalk box. Such sign shall have red letters 1 inch (25 mm) in height on a white background and read: “Sprinkler System Shutoff Valve (*indicate distance*) Feet Opposite This Sign” or other approved design.

903.6 Dry pipe sprinkler system valves. In addition to the maintenance requirements set forth in FC903.5, any dry pipe valve installed in a sprinkler system shall be trip tested at least once every 5 years and whenever the system is altered. Such trip test shall be conducted at the owner’s risk, with the control valve fully open and the quick-opening device, if provided, in service, by a master fire suppression contractor licensed by the Department of Buildings before a representative of the department.

SECTION FC 904 FIRE EXTINGUISHING SYSTEMS

904.1 General. Fire extinguishing systems shall be designed, installed, operated and maintained in accordance with this section, FC901[and], the terms and conditions of the listing, if applicable, the applicable referenced standards[, including performing all required inspections, testing and servicing] set forth in FC Table 904.1, and the manufacturer’s instructions.

Exception: Sprinkler systems, which are governed by FC903.

**FC TABLE 904.1
FIRE EXTINGUISHING SYSTEM REFERENCED STANDARDS**

FIRE EXTINGUISHING SYSTEM	REFERENCED STANDARD
<u>Aerosol fire extinguishing systems</u>	<u>NFPA 2010</u>
<u>Carbon dioxide fire extinguishing system</u>	<u>NFPA 12</u>
<u>Clean agent fire extinguishing systems</u>	<u>NFPA 2001</u>
<u>Dry chemical fire extinguishing systems</u>	<u>NFPA 17</u>
<u>Expansion foam systems (low, medium and high)</u>	<u>NFPA 11</u>
<u>Foam water sprinkler and spray systems</u>	<u>NFPA 16 and NFPA 25</u>
<u>Halon 1301 fire extinguishing systems</u>	<u>NFPA 12A</u>
<u>Water mist fire extinguishing systems</u>	<u>NFPA 750</u>
<u>Water Spray Fixed Systems for Fire Protection</u>	<u>NFPA 15</u>
<u>Wet chemical fire extinguishing systems</u>	<u>NFPA 17A</u>

904.1.1 Fire extinguisher system design. Fire extinguishing systems may be engineered or pre-engineered. Pre-engineered systems shall be of a type for which a certificate of approval has been issued in accordance with FC 112 and 901.4.5. Except as otherwise provided in this code or other applicable law, rule, regulation or standard, fire extinguishing systems may be designed as local applications or as total flooding systems. All activation devices and other

1 system components shall be listed and installed in accordance with the listing and the
2 manufacturer's instructions.

3
4 **904.1.2 Installation acceptance testing.** [Fire] All fire extinguishing systems shall be subject
5 to acceptance [tests as contained in the installation standards set forth in this code and the rules]
6 test conducted at the owner's risk by his or her representative before a representative of the
7 department. The owner's representative shall furnish the necessary equipment required to
8 conduct the test. [When a] A discharge test [is not] may be required [by] as set forth in the
9 applicable installation standard[, the commissioner may require such test] or as required by the
10 department when there is evidence that the system will not provide the necessary level of
11 protection. [Such tests shall be conducted at the owner's risk by his or her representative before
12 a representative of the department.

13
14 **904.1.2] 904.1.3 Additional safeguards.** If an area is protected by a fire extinguishing system
15 which uses an extinguishing agent that will make the protected area hazardous by its discharge
16 or thermal decomposition, suitable safeguards shall be provided to ensure prompt evacuation,
17 to prevent entry into such atmospheres, and to provide means for prompt rescue of any trapped
18 personnel. Such safeguards shall include establishment of a trained brigade, equipped with and
19 qualified in the use of self-contained breathing apparatus with 30-minute minimum supply, for
20 prompt search of the protected area.

21
22 **Exception:** Self-contained breathing apparatus shall not be required for a clean agent fire
23 extinguishing system installation if:

- 24
25 1. The installation is provided with an alarm system that is connected to an approved
26 central station.
- 27
28 2. The protected area is provided with an approved fixed emergency forced ventilation
29 system able to expel the extinguishing agent. Such emergency forced ventilation
30 system shall have a capacity sufficient to effect at least twenty air changes per hour.
- 31
32 3. The protected area is of a size, design and/or occupied in such a manner that egress
33 will not be impeded.
- 34
35 4. The protected area is not normally occupied by any individual requiring assistance
36 in evacuation.

37
38 **904.1.4 Prohibited fire extinguishing systems.** It shall be unlawful to install carbon dioxide,
39 halon and clean agent fire extinguishing systems as set forth in FC 904.1.4.1 through 904.1.4.3.

40
41 **904.1.4.1 Existing carbon dioxide systems.** It shall be unlawful to install or continue to
42 maintain total flooding carbon dioxide fire extinguishing systems within normally
43 occupied areas, including commercial kitchens. Total flooding carbon dioxide systems
44 installed in normally occupied areas prior to July 1, 2008 were required by this code to be
45 removed by July 1, 2013. Existing total flooding carbon dioxide fire extinguishing systems
46 in such areas shall be removed and a replacement fire extinguishing system installed, where

1 required, in accordance with the Building Code, this code or other applicable laws, rules
2 and regulations.

3
4 **904.1.4.2 Existing halon systems.** It shall be unlawful to install a halon system in any
5 building or occupancy. Lawfully existing halon fire extinguishing systems shall be
6 maintained in accordance with FC904.5. If a lawfully existing system cannot be maintained
7 under the laws, rules, regulations, standards and design and installation approvals under
8 which it was installed, such system shall be removed and replaced with a type of fire
9 extinguishing system complying with this code.

10
11 **904.1.4.3 Clean agent systems.** It shall be unlawful to install clean agent systems that are
12 not total flooding systems. Lawfully existing clean agent fire extinguishing systems that
13 are not total flooding systems shall be maintained in accordance with FC904.5. If a lawfully
14 existing system cannot be maintained under the laws, rules, regulations, standards and
15 design and installation approvals under which it was installed, such system shall be
16 removed and replaced with a type of fire extinguishing system complying with this code.

17
18 **904.2 Where required.** Where this code or the rules requires the installation of a fire extinguishing
19 system, other than a sprinkler system, the commissioner shall approve the type of fire
20 extinguishing system to be installed. Fire extinguishing systems installed as an alternative to
21 sprinkler systems otherwise required by this code or the construction codes, including the Building
22 Code, shall be approved by the commissioner. Such a system may be accepted by the
23 commissioner where the nature of the fire hazard is such that water would be ineffective or
24 hazardous as an extinguishing agent, or the need to preserve the historic, irreplaceable or special
25 nature of the contents of the occupancy militates against the installation of a sprinkler system.
26 Sprinklers shall not be omitted from any room or area merely because it is of fire-resistance-rated
27 construction or contains electrical equipment except as allowed by Section 903 of the Building
28 Code.

29
30 If a system using a fixed amount of extinguishing agent is authorized to be installed in lieu of a
31 required sprinkler system or any other fire extinguishing system otherwise required by law, a
32 connected reserve of charged agent cylinders equal to the primary supply shall be provided. The
33 commissioner may impose additional requirements on the installation of any fire extinguishing
34 system to be installed in lieu of any required sprinkler system. Fire extinguishing systems shall not
35 be considered alternatives for the purposes of exceptions or reductions allowed by other
36 requirements of this code.

37
38 **904.3 Installation.** Fire extinguishing systems shall be installed in accordance with this section.

39
40 **904.3.1 Electrical wiring.** Electrical wiring shall be in accordance with the Electrical Code.

41
42 **904.3.2 [Actuation. Fire] Activation.** Unless otherwise provided by this code or the rules, fire
43 extinguishing systems shall be designed and installed to activate automatically. Automatically
44 activating fire extinguishing systems shall additionally be provided with a manual means of
45 [actuation] activation.

1 **904.3.3 System interlocking.** Automatic equipment interlocks with fuel shutoffs, ventilation
2 controls, door closers, window shutters, conveyor openings, smoke and heat vents, and other
3 features necessary for proper operation of the fire extinguishing system shall be provided as
4 required by the construction code or other design and installation standard utilized for the
5 hazard.
6

7 **904.3.4 Alarms and warning signs.** Where alarms are required to indicate the operation of
8 fire extinguishing systems, distinctive audible, visible alarms and warning signs shall be
9 provided to warn of pending agent discharge. Where exposure to automatic-extinguishing
10 agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants
11 before agent discharge, a separate warning signal shall be provided to alert occupants once
12 agent discharge has begun. Carbon dioxide fire extinguishing systems, where allowed, shall
13 comply with the signage requirements of NFPA 12.
14

15 **904.3.5 Monitoring.** All indoor fire extinguishing systems, except commercial cooking,
16 domestic cooking and spray finishing fire extinguishing systems, installed after the effective
17 date of this section shall be monitored by an approved central station. Where a building fire
18 alarm system is installed, all such indoor fire extinguishing systems, except domestic cooking
19 systems, shall be monitored by such fire alarm system.
20

21 **904.3.6 Flood hazard.** Non-water fire extinguishing system control panels located in areas of
22 special flood hazard or on the premises of Group I-2 occupancies that are hospitals located in
23 shaded X-Zones (as defined in Section G201.2 of Appendix G of the Building Code) shall be
24 located at or above the design flood elevation in accordance with Appendix G of the Building
25 Code.
26

27 **904.3.7 Additional safety measures.** Additional safety measures shall be provided for the fire
28 extinguishing systems as set forth in FC 904.3.7.1 and 904.3.7.2.
29

30 **904.3.7.1 Carbon dioxide systems.** Carbon dioxide systems, where allowed, shall be
31 provided with the additional safety measures set forth in FC 904.3.7.1.1 through
32 904.3.7.1.8.
33

34 **904.3.7.1.1 Egress precautions.** All areas whose atmospheres will be made hazardous
35 by the discharge of carbon dioxide shall be provided with:
36

37 1. Exit and exit routes that are kept clear at all times.
38

39 2. Lighting and exit directional signs in accordance with the construction codes,
40 including the Building Code.
41

42 3. Only outward swinging, self-closing doors at exits, and panic hardware on any
43 such doors that are secured with a locking or latching device.
44

45 **904.3.7.1.2. Ventilation and other safety equipment.** A carbon dioxide system shall
46 be provided with a fixed emergency forced ventilation system able to clear the area

1 with sufficient capacity to accomplish at least 6 air changes per hour, and such other
2 safety equipment as may be prescribed by the commissioner.

3
4 **904.3.7.1.3 Detection, activation, alarm and control.** Detection, pre-discharge alarms
5 and discharge alarms shall be provided within and outside the protected area and such
6 other areas that are made hazardous by a carbon dioxide discharge. Such alarms shall
7 be audible and visible.

8
9 **904.3.7.1.3.1 Automatic operation.** The carbon dioxide fire extinguishing system
10 shall be activated by an automatic cross-zoned detection system in which activation
11 of a detection device in one zone shall sound a local alarm and transmit an alarm to
12 an approved central station, and activation of a detection device in the cross zone
13 shall initiate the pre-discharge warning signal and after a time delay, initiate the
14 discharge of carbon dioxide. The pre-discharge warning signal time delay shall be
15 of sufficient duration to allow for evacuation from the protected area. Distinct
16 alarms shall indicate the activation of a detector in one zone, the activation of a
17 detector in a cross zone (pre-discharge alarm) and the discharge of carbon dioxide.
18 Such alarms shall be continued until the atmosphere has been returned to normal
19 except that the alarm for the detector in one zone may be discontinued when the
20 alarm for the cross-zoned detector is activated.

21
22 **Exceptions:**

- 23
24 1. A carbon dioxide fire extinguishing system activated solely by manual
25 means may be installed with department approval upon a showing
26 satisfactory to the department of the need for such a system.
27
28 2. A detection system that is not cross-zoned may be installed with
29 department approval upon a showing satisfactory to the department of the
30 need for such a detection and activation system.

31
32 **904.3.7.1.3.2 Manual operation.** A manual pull station shall be provided which,
33 upon activation, transmits an alarm to an approved central station, overrides any
34 delay other than the pre-discharge delay, and causes the carbon dioxide to discharge.
35 Activation of a carbon dioxide fire extinguishing system by means of a manual pull
36 station shall result in a complete pre-discharge delay sequence prior to system
37 discharge.

38
39 **904.3.7.1.3.3 Abort systems.** Abort systems may be installed, but shall be limited
40 to systems activated by smoke detectors. Abort controls shall be located in the
41 protected area near the means of egress for the area, and shall be designed to cause
42 the discharge of carbon dioxide after a time delay unless the abort control is
43 reactivated for another cycle of delay. Abort controls shall not interfere with
44 transmission of local alarms or central station alarms.

1 **904.3.7.1.3.4 Power supply.** Power supply to the alarm system shall be in
2 accordance with applicable requirements of the Electrical Code and the
3 construction codes, including the Building Code.

4
5 **904.3.7.1.4 Pressure relief venting.** The protected area enclosure shall be provided
6 with suitable pressure relief venting which vents outdoors.

7
8 **Exception:** Such venting shall not be required when a registered design
9 professional certifies that the walls, ceilings and floors comprising the protected
10 space have sufficient porosity and leakage to prevent damage to the integrity of
11 such space upon discharge of the extinguishing agent, and that the inert gas agent
12 leakage into other non-flooded rooms and spaces will not reach dangerous
13 concentrations.

14
15 **904.3.7.2 Clean agent systems.** Clean agent systems, where allowed, shall be provided
16 with the additional safety measures set forth in FC 904.3.7.2.1 through 904.3.7.2.6.

17
18 **904.3.7.2.1 System alarm and activation.** Audible and visible alarms shall be installed
19 both inside and outside the protected area to signal the activation of an automatic
20 detection device and the operation of the fire extinguishing system. Such signals shall
21 continue until the atmosphere has been returned to normal. Activation of a single
22 automatic detection device shall sound a local alarm and transmit an alarm to an
23 approved central station. Unless the alarm is cancelled by an abort system as set forth
24 in FC904.3.7.2.3, activation of a second automatic detection device shall, within 30
25 seconds, initiate the discharge of clean agent. Power supply to the alarm system shall
26 be in accordance with the Electrical Code, the construction codes, including the
27 Building Code, and NFPA 2001, as modified by FC Appendix B.

28
29 **904.3.7.2.2 Warning and instruction signs.** Warning and instruction signs shall be
30 posted at entrances to and within the protected area subject to flooding.

31
32 **904.3.7.2.3 Abort systems.** Abort systems may be installed only on systems activated
33 by smoke detectors. Abort controls shall be manually operated, shall be located in the
34 protected area, and shall cause the discharge of the clean agent after a 2-minute delay
35 unless the abort control is reactivated for another cycle of delay. A manual pull station
36 shall be provided which, upon activation, shall transmit an alarm to an approved central
37 station, override the delay and cause the clean agent to discharge immediately. Abort
38 controls shall not interfere with transmission of local alarms or central station alarms.

39
40 **904.3.7.2.4 Means of egress.** Where the protected area is normally occupied, provision
41 shall be made for adequate clear routes of exit with doors opening in direction of travel.
42 Emergency lighting shall be provided for such exits. Exit directional signs shall clearly
43 indicate the path of egress and exits shall be clearly marked.

44
45 **904.3.7.2.5 Fixed emergency forced ventilation.** When the protected area is normally
46 occupied, a fixed emergency forced ventilation system sufficient to accomplish at least

1 six air changes per hour of the flooded protected area shall be provided unless all of the
2 following apply:

- 3
- 4 1. The clean agent fire extinguishing system is used to extinguish a Class A fire.
- 5
- 6 2. The design concentration does not exceed the “no observable adverse effect
7 level” for halocarbon agents, or “no effect level” for inert gas agents as defined
8 in NFPA 2001, as modified by FC Appendix B.
- 9
- 10 3. If other than inert gas agents are used, the quantity of the thermal decomposition
11 products formed from such agents is below the dangerous toxic load (DTL) for
12 humans as described in Meldrum's “Toxicology of Substances in Relation to
13 Major Hazards: Hydrogen Fluoride” (HMSO, London, 1993). Upon request,
14 documentation of hazard assessment of thermal decomposition products formed
15 from such agents shall be filed with the department.

16

17 **904.3.7.2.6 Pressure relief venting.** Clean agent fire extinguishing systems using inert
18 gas agents shall be provided with suitable pressure relief venting for the flooded
19 protected area that discharges outdoors.

20

21 **Exception:** Such venting shall not be required when a registered design
22 professional certifies that the walls, ceilings and floors comprising the protected
23 space have sufficient porosity and leakage to prevent damage to the integrity of
24 such space upon discharge of the extinguishing agent, and that the inert gas agent
25 leakage into other non-flooded rooms and spaces will not reach dangerous
26 concentrations.

27

28 **904.3.8 Commercial cooking systems.** Commercial cooking fire extinguishing systems shall
29 be installed in accordance with FC 904.3.8.1 through 904.3.8.3.

30

31 **904.3.8.1 Types of systems approved for commercial cooking operations.** Commercial
32 cooking operations shall be protected by one of the following types of fire protection
33 systems, as listed for commercial cooking operations.

- 34
- 35 1. Wet chemical fire extinguishing systems designed in accordance with NFPA 17A,
36 as modified by FC Appendix B, and tested in accordance with UL 300.
- 37
- 38 2. Foam-water sprinkler system or foam-water spray systems designed in accordance
39 with NFPA 16, as modified by FC Appendix B.
- 40
- 41 3. Water mist systems designed in accordance with NFPA 750, as modified by FC
42 Appendix B.

43

44 **904.3.8.1.1 Dry chemical, non-listed wet chemical and carbon dioxide systems.** Dry
45 chemical systems, wet chemical systems not listed to the UL 300 standard and carbon
46 dioxide systems may not be used for commercial cooking operations and shall be

1 removed and replaced with a type of fire extinguishing system complying with this
2 code.

3
4 **904.3.8.2 Manual activation device.** A manual activation device for the fire extinguishing
5 system, except foam-water systems, shall be installed at a location near a means of egress
6 that is readily accessible from the cooking area and not less than 10 feet (3048 mm) nor
7 more than 20 feet (6096 mm) from the commercial cooking appliances protected by the
8 fire extinguishing system, or other approved location. The manual activation device shall
9 be located a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm)
10 above the floor. The manual activation device shall require a maximum force of 40 pounds
11 (178 N) and a maximum movement of 14 inches (356 mm) to activate the fire extinguishing
12 system. A sign or marking in accordance with FC Table 609.7 that clearly identifies the
13 commercial cooking appliances being protected shall be posted on or adjacent to the
14 manual activation device. The manual activation device shall be kept unobstructed at all
15 times.

16
17 **904.3.8.3 System interconnection.** The activation of the fire extinguishing system shall
18 automatically shut down the fuel and electrical power supply to the cooking equipment.
19 The fuel and electrical supply reset shall be manual.

20
21 **904.4 Installation [acceptance] inspection and testing.** Fire extinguishing systems shall be
22 inspected and tested upon completion of the installation [in accordance with this section] prior to
23 the installation acceptance testing required by [FC904.1.1] FC904.1.2.

24
25 **904.4.1 Inspection.** [Prior to conducting final acceptance tests, the following items shall be
26 inspected] The fire extinguishing system shall be inspected for the following conditions:

- 27
28 1. Hazard specification for consistency with design hazard.
29
30 2. Type, location and spacing of automatic- and manual- initiating devices.
31
32 3. Size, placement and position of nozzles or discharge orifices.
33
34 4. Location and identification of audible and visible alarm devices.
35
36 5. Identification of devices with proper designations.
37
38 6. Operating instructions, to ensure that the system is correctly operated during the
39 acceptance testing.

40
41 **904.4.2 Alarm testing.** Notification appliances, connections to fire alarm systems, and
42 connections to an approved central station shall be tested [in accordance with this section and
43 FC907] to verify proper operation[.], including the following conditions:

44
45 **[904.4.2.1 Audible and visible signals.** The audibility and visibility of notification
46 appliances signaling agent discharge or system operation, where required, shall be verified.
47

1 **904.4.3 Monitor testing.** Connections to central stations shall be tested to verify proper
2 identification and retransmission of alarms from fire extinguishing systems.]

3
4 1. The audibility and visibility of notification appliances signaling agent discharge or
5 system operation, where required, shall be verified.

6
7 2. Central station connections shall be tested to verify proper identification and
8 retransmission of alarms.

9
10 **[904.5 Wet chemical systems.** Wet chemical fire extinguishing systems shall be installed,
11 periodically inspected, tested and otherwise maintained in accordance with FC 901, 904.1.1 and
12 904.4, NFPA 17A, as modified by FC Appendix B, and their listing.

13
14 **904.5.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
15 and knowledgeable person to assess whether the system is in good working order. A licensed
16 master fire suppression piping contractor properly trained and having knowledge of the
17 installation, operation and maintenance of the specific fire extinguishing system shall inspect,
18 test, service and otherwise maintain such system in accordance with this section and the
19 manufacturer's specifications and servicing manuals at least on a semiannual basis. Tests shall
20 include a check of the detection system, alarms and releasing devices, including manual
21 stations and other associated equipment. Extinguishing agent containers shall be weighed to
22 verify the required amount of agent. Stored pressure-type units shall be checked for the
23 required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at
24 intervals specified by the manufacturer.

25
26 **904.5.2 Fusible link maintenance.** Fixed temperature- sensing elements shall be maintained
27 to ensure proper operation of the system.

28
29 **904.5.3 Commercial cooking installations.** Wet chemical fire extinguishing systems installed
30 to protect a commercial cooking operation shall additionally comply with the requirements of
31 FC904.11.

32
33 **904.6 Dry chemical systems.** Dry chemical fire extinguishing systems shall be installed,
34 periodically inspected, tested and otherwise maintained in accordance with FC 901, 904.1.1 and
35 904.4, NFPA 17, as modified by FC Appendix B, and their listing.

36
37 **904.6.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
38 and knowledgeable person to assess that the system is in good working order. A licensed master
39 fire suppression piping contractor properly trained and having knowledge of the installation,
40 operation and maintenance of the specific fire extinguishing system shall inspect, test, service
41 and otherwise maintain such system in accordance with this section and the manufacturer's
42 specifications and servicing manuals at least on a semiannual basis. Tests shall include a check
43 of the detection system, alarms and releasing devices, including manual stations and other
44 associated equipment. Extinguishing agent containers shall be checked to verify that the system
45 has not been discharged. Stored pressure-type units shall be checked for the required pressure.
46 The cartridge of cartridge-operated units shall be weighed and replaced at intervals specified
47 by the manufacturer.

1
2 **904.6.2 Fusible link maintenance.** Fixed temperature-sensing elements shall be maintained
3 to ensure proper operation of the system.
4

5 **904.7 Foam systems.** Foam fire extinguishing systems shall be installed, periodically inspected,
6 tested and otherwise maintained in accordance with FC 901, 904.1.1 and 904.4, NFPA 11, as
7 modified by FC Appendix B, and NFPA 16, as modified by FC Appendix B, and their listing.
8

9 **904.7.1 Maintenance.** At least once a month, an inspection shall be conducted by a certificate
10 of fitness holder to assess whether the system is in good working order. A licensed master fire
11 suppression piping contractor properly trained and having knowledge of the installation,
12 operation and maintenance of the specific fire extinguishing system, shall inspect, test, service
13 and otherwise maintain such system in accordance with this section and the manufacturer's
14 specifications and servicing manuals at least on an annual basis.
15

16 **904.7.2 Commercial cooking installations.** Foam fire extinguishing systems installed to
17 protect a commercial cooking operation shall additionally comply with the requirements of
18 FC904.11.
19

20 **904.8 Carbon dioxide systems.** Carbon dioxide fire extinguishing systems shall be installed,
21 periodically inspected, tested and otherwise maintained in accordance with FC 901, 904.1.1 and
22 904.4, NFPA 12, as modified by FC Appendix B, and their listing. Total flooding carbon dioxide
23 fire extinguishing systems shall not be installed to protect hazards within normally occupied areas.
24 Existing total flooding carbon dioxide fire extinguishing systems installed to protect normally
25 occupied areas prior to the effective date of this code may be continued in service until July 1,
26 2013, after which they shall be removed from service, and a replacement fire extinguishing system
27 shall be installed, where required, in accordance with the Building Code, this code or other
28 applicable laws, rules and regulations.
29

30 **904.8.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
31 and knowledgeable person to assess whether the system is in good working order. A licensed
32 master fire suppression piping contractor properly trained and having knowledge of the
33 installation, operation and maintenance of the specific fire extinguishing system shall inspect,
34 test, service and otherwise maintain such system in accordance with this section and the
35 manufacturer's specifications and servicing manuals at least on a semiannual basis.
36

37 **904.8.2 High-pressure cylinders.** High-pressure cylinders shall be weighed and the date of
38 the last hydrostatic test shall be verified at 6-month intervals. Where a container shows a loss
39 in original content of more than 10 percent, the cylinder shall be refilled or replaced.
40

41 **904.8.3 Low-pressure containers.** The liquid-level gauges of low-pressure containers shall
42 be observed at one-week intervals. Where a container shows a content loss of more than 10
43 percent, the container shall be refilled to maintain the minimum gas requirements.
44

45 **904.8.4 System hoses.** System hoses shall be examined at 12-month intervals for damage.
46 Damaged hoses shall be replaced or tested. At five-year intervals, all hoses shall be tested.
47

1 **904.8.4.1 Test procedure.** Hoses shall be tested at not less than 2,500 pounds per square
2 inch (psi) (17 238 kPa) for high-pressure systems and at not less than 900 psi (6206 kPa)
3 for low-pressure systems.
4

5 **904.8.5 Auxiliary equipment.** Auxiliary and supplementary components, such as switches,
6 door and window releases, interconnected valves, damper releases and supplementary alarms,
7 shall be manually operated at 12-month intervals to ensure that such components are in proper
8 operating condition.
9

10 **904.8.6 Safety precautions.** All areas whose atmospheres will be made hazardous by the
11 discharge of carbon dioxide shall be provided with:
12

- 13 1. Exit and exit routes that are kept clear at all times.
- 14
- 15 2. Lighting and exit directional signs in accordance with the construction codes, including
16 the Building Code.
- 17
- 18 3. Only outward swinging, self-closing doors at exits, and panic hardware on any such
19 doors that are secured with a locking or latching device.
- 20
- 21 4. A fixed emergency forced ventilation system able to clear the area. Such emergency
22 forced ventilation shall have sufficient capacity to accomplish at least 6 air changes per
23 hour.
- 24
- 25 5. Such other safety equipment as may be prescribed by the commissioner.
26

27 **904.8.7 Detection, activation, alarm and control.** Detection, pre-discharge alarms and
28 discharge alarms shall be provided within and outside the protected area and such other areas
29 that are made hazardous by a carbon dioxide discharge. Such alarms shall be audible and
30 visible.
31

32 **904.8.7.1 Automatic operation.** The carbon dioxide fire extinguishing system shall be
33 activated by an automatic cross-zoned detection system in which activation of a detection
34 device in one zone shall sound a local alarm and transmit an alarm to an approved central
35 station, and activation of a detection device in the cross zone shall initiate the pre-discharge
36 warning signal and after a time delay, initiate the discharge of carbon dioxide. The
37 pre-discharge warning signal time delay shall be of sufficient duration to allow for
38 evacuation from the protected area. Distinct alarms shall indicate the activation of a
39 detector in one zone, the activation of a detector in a cross zone (pre-discharge alarm) and
40 the discharge of carbon dioxide. Such alarms shall be continued until the atmosphere has
41 been returned to normal except that the alarm for the detector in one zone may be
42 discontinued when the alarm for the cross-zone detector is activated.
43

44 **Exceptions:**
45

- 1 1. A carbon dioxide fire extinguishing system activated solely by manual means
2 may be installed only if approved. Such a system may be approved upon a
3 showing satisfactory to the commissioner of the need for such a system.
4
- 5 2. A detection system that is not cross-zoned may be approved upon a showing
6 satisfactory to the commissioner of the need for such a detection and activation
7 system.
8

9 **904.8.7.2 Manual operation.** A manual pull station shall be provided which, upon
10 activation, transmits an alarm to an approved central station, overrides any delay other than
11 the predischage delay, and causes the carbon dioxide to discharge. Activation of a carbon
12 dioxide fire extinguishing system by means of a manual pull station shall result in a
13 complete predischage delay sequence prior to system discharge.
14

15 **904.8.7.3 Abort systems.** Abort systems may be installed, but shall be limited to systems
16 activated by smoke detectors. Abort controls shall be located in the protected area near the
17 means of egress for the area, and shall be designed to cause the discharge of carbon dioxide
18 after a time delay unless the abort control is reactivated for another cycle of delay. Abort
19 controls shall not interfere with transmission of local alarms or central station alarms.
20

21 **904.8.7.4 Power supply.** Power supply to the alarm system shall be in accordance with
22 applicable requirements of the construction codes, including the Building Code and the
23 Electrical Code.
24

25 **904.8.8 Pressure relief venting.** The protected area enclosure shall be provided with suitable
26 pressure relief venting which vents outdoors.
27

28 **Exception:** Such venting shall not be required when a registered design professional
29 certifies that the walls, ceilings and floors comprising the protected space have sufficient
30 porosity and leakage to prevent damage to the integrity of such space upon discharge of
31 the extinguishing agent, and that the inert gas agent leakage into other non-flooded rooms
32 and spaces will not reach dangerous concentrations.
33

34 **904.8.9 Commercial cooking installations.** Carbon dioxide fire extinguishing systems
35 installed to protect commercial cooking operations shall additionally comply with the
36 requirements of FC904.11.
37

38 **904.9 Halon systems.** It shall be unlawful to install a halon fire extinguishing system. Existing
39 halon fire extinguishing systems shall be periodically inspected, tested and otherwise maintained
40 in accordance with FC 901, 904.1.1 and 904.4, NFPA 12A and their listing.
41

42 **904.9.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
43 and knowledgeable person to assess whether the system is in good working order. A licensed
44 master fire suppression piping contractor properly trained and having knowledge of the
45 installation, operation and maintenance of the specific fire extinguishing system shall inspect,
46 test, service and otherwise maintain such system in accordance with this section and the
47 manufacturer's specifications and servicing manuals at least on a semiannual basis.

1
2 **904.9.2 Containers.** The extinguishing agent quantity and pressure of containers shall be
3 checked at least on a semiannual basis. Where a container shows a loss in original weight of
4 more than 5 percent or a loss in original pressure (adjusted for temperature) of more than 10
5 percent, the container shall be refilled or replaced. The weight and pressure of the container
6 shall be recorded on a tag attached to the container.
7

8 **904.9.3 System hoses.** System hoses shall be examined at 12-month intervals for damage.
9 Damaged hoses shall be replaced or tested. At 5-year intervals, all hoses shall be tested.
10

11 **904.9.3.1 Test procedure.** For Halon 1301 systems, hoses shall be tested at not less than
12 1,500 psi (10 343 kPa) for 600 psi (4137 kPa) charging pressure systems and not less than
13 900 psi (6206 kPa) for 360 psi (2482 kPa) charging pressure systems. For Halon 1211
14 hand-hose line systems, hoses shall be tested at 2,500 psi (17 238 kPa) for high-pressure
15 systems and 900 psi (6206 kPa) for low-pressure systems.
16

17 **904.9.4 Auxiliary equipment.** Auxiliary and supplementary components, such as switches,
18 door and window releases, interconnected valves, damper releases and supplementary alarms,
19 shall be manually operated at 12-month intervals to ensure such components are in proper
20 operating condition.
21

22 **904.10 Clean agent systems.** Clean agent fire extinguishing systems shall be installed,
23 periodically inspected, tested and otherwise maintained in accordance with FC 901, 904.1.1 and
24 904.4, NFPA 2001, as modified by FC Appendix B, and their listing. The use of a clean agent fire
25 extinguishing system shall be limited to automatic total flooding systems.
26

27 **904.10.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
28 and knowledgeable person to assess whether the system is in good working order. A licensed
29 master fire suppression piping contractor properly trained and having knowledge of the
30 installation, operation, and maintenance of the specific fire extinguishing system shall inspect,
31 test, service and otherwise maintain such system in accordance with this section and the
32 manufacturer's specifications and servicing manuals at least on a semiannual basis.
33

34 **904.10.2 Containers.** The extinguishing agent quantity and pressure of the containers shall be
35 checked at 6-month intervals. Where a container shows a loss in original weight of more than
36 5 percent or a loss in original pressure, adjusted for temperature, of more than 10 percent, the
37 container shall be refilled or replaced. The weight and pressure of the container shall be
38 recorded on a tag attached to the container.
39

40 **904.10.3 System hoses.** System hoses shall be examined at 12-month intervals for damage.
41 Damaged hoses shall be replaced or tested. All hoses shall be tested at 5-year intervals.
42

43 **904.10.4 System alarm and activation.** Audible and visible alarms shall be installed both
44 inside and outside the protected area to signal the activation of an automatic detection device
45 and the operation of the fire extinguishing system. Such signals shall continue until the
46 atmosphere has been returned to normal. Activation of a single automatic detection device
47 shall sound a local alarm and transmit an alarm to an approved central station. Unless the alarm

1 is cancelled by an abort system as set forth in FC904.10.5, activation of a second automatic
2 detection device shall, within 30 seconds, initiate the discharge of clean agent. Power supply
3 to the alarm system shall be in accordance with the construction codes, including the Building
4 Code, the Electrical Code and NFPA 2001, as modified by FC Appendix B.
5

6 **904.10.4.1 Warning and instruction signs.** Warning and instruction signs shall be posted
7 at entrances to and within the protected area subject to flooding.
8

9 **904.10.5 Abort systems.** Abort systems may be installed only on systems activated by
10 smoke detectors. Abort controls shall be manually operated, shall be located in the protected
11 area, and shall cause the dumping of the clean agent after a 2-minute delay unless the abort
12 control is reactivated for another cycle of delay. A manual pull station shall be provided
13 which, upon activation, shall transmit an alarm to an approved central station, override the
14 delay and cause the clean agent to dump immediately. Abort controls shall not interfere with
15 transmission of local alarms or central station alarms.
16

17 **904.10.6 Means of egress.** Where the protected area is normally occupied, provision shall be
18 made for adequate clear routes of exit with doors opening in direction of travel. Emergency
19 lighting shall be provided for such exits. Exit directional signs shall clearly indicate the path
20 of egress.
21

22 **904.10.7 Fixed emergency forced ventilation.** When the protected area is normally occupied,
23 a fixed emergency forced ventilation system sufficient to accomplish at least six air changes
24 per hour of the flooded protected area shall be provided unless all of the following apply:
25

- 26 1. The clean agent fire extinguishing system is used to extinguish a Class A fire.
- 27
- 28 2. The design concentration does not exceed the “no observable adverse effect level” for
29 halocarbon agents, or “no effect level” for inert gas agents as defined in NFPA 2001, as
30 modified by FC Appendix B.
- 31
- 32 3. If other than inert gas agents are used, the quantity of the thermal decomposition products
33 formed from such agents is below the dangerous toxic load (DTL) for humans as
34 described in Meldrum's “Toxicology of Substances in Relation to Major Hazards:
35 Hydrogen Fluoride” (HMSO, London, 1993). Upon request, documentation of hazard
36 assessment of thermal decomposition products formed from such agents shall be filed
37 with the department.
38

39 **904.10.8 Pressure relief venting.** Clean agent fire extinguishing systems using inert gas agents
40 shall be provided with suitable pressure relief venting for the flooded protected area that
41 discharges outdoors.
42

43 **Exception:** Such venting shall not be required when a registered design professional
44 certifies that the walls, ceilings and floors comprising the protected space have sufficient
45 porosity and leakage to prevent damage to the integrity of such space upon discharge of
46 the extinguishing agent, and that the inert gas agent leakage into other non-flooded rooms
47 and spaces will not reach dangerous concentrations.

1
2 **904.11 Commercial cooking systems.** The fire extinguishing system for commercial cooking
3 systems shall be designed and installed, and periodically inspected, tested and otherwise
4 maintained in accordance with the construction codes, including the Building Code, FC 901,
5 904.1.1 and 904.4, and this section. The fire extinguishing system for commercial cooking systems
6 shall be of an approved type recognized for protection of commercial cooking equipment and
7 exhaust systems of the type and arrangement protected. Preengineered wet chemical fire
8 extinguishing systems shall be tested in accordance with UL 300 and listed and labeled for the
9 intended application. Dry chemical fire extinguishing systems shall not be installed to protect
10 commercial cooking equipment and exhaust systems. Other types of fire extinguishing systems
11 shall be listed and labeled for specific use as protection for commercial cooking operations. The
12 system shall be installed in accordance with this code, its listing and the manufacturer's installation
13 instructions. Fire extinguishing systems of the following types shall be installed in accordance
14 with the referenced standard indicated, as follows:
15

- 16 1. Carbon dioxide fire extinguishing systems, NFPA 12, as modified by FC Appendix B.
- 17
- 18 2. Foam-water sprinkler system or foam-water spray systems, NFPA 16, as modified by FC
19 Appendix B.
- 20
- 21 3. Wet chemical fire extinguishing systems, NFPA 17A, as modified by FC Appendix B.
- 22

23 **904.11.1 Manual system operation.** A manual activation device shall be located at or near a
24 means of egress from the cooking area and a minimum of 10 feet (3048 mm) and a maximum
25 of 20 feet (6096 mm) from the kitchen exhaust system. The manual activation device shall be
26 located a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) above
27 the floor at its center. The manual activation shall require a maximum force of 40 pounds (178
28 N) and a maximum movement of 14 inches (356 mm) to activate the fire extinguishing system.
29 A sign or marking on or adjacent to the manual activation device shall clearly identify the
30 commercial cooking equipment being protected.

31
32 **Exception:** Sprinkler systems shall not be required to be equipped with a manual activation
33 device.
34

35 **904.11.2 System interconnection.** The activation of the fire extinguishing system shall
36 automatically shut down the fuel and electrical power supply to the cooking equipment. The
37 fuel and electrical supply reset shall be manual.

38
39 **904.11.3** Reserved.
40

41 **904.11.4 Acceptance testing.** Upon completion of the installation of a commercial cooking
42 system, such system shall be tested at the owner's risk, by his or her representative, to confirm
43 proper installation and operation of the system in compliance with the requirements of the
44 construction codes, including the Mechanical Code, and this code. The owner's representative
45 shall furnish the necessary equipment required to conduct the test. No permit shall be issued
46 for the operation of a commercial cooking system until satisfactory performance of the fire
47 extinguishing system is demonstrated, including compliance with the following requirements:

- 1
- 2
- 3 1. A performance test of the fire extinguishing system conducted before a representative of
- 4 the department, in accordance with the applicable installation standard set forth in this
- 5 chapter and its listing.
- 6
- 7 2. Chimneys serving masonry ovens shall be proved tight by a smoke test. A report of such
- 8 test shall be prepared by the installer and made available for inspection by a
- 9 representative of the department at the time the performance tests of the exhaust system
- 10 and fire extinguishing system are witnessed by such department representative.

11 **904.11.5 Staff training.** At least once every 6 months the owner or operator of the premises

12 shall review with all kitchen staff the manual operation of the fire extinguishing system.

13

14 **904.11.6 Maintenance.** At least once a month, an inspection shall be conducted by a trained

15 and knowledgeable person to assess that the system is in good working order. A licensed master

16 fire suppression piping contractor properly trained and having knowledge of the installation,

17 operation and maintenance of the specific fire extinguishing system shall inspect, test, service

18 and otherwise maintain such system in accordance with this section and the manufacturer's

19 specifications and servicing manuals at least on a semiannual basis. At a minimum, the

20 semiannual inspection, testing and servicing shall include:

21

- 22 1. Verification that the hazard has not changed.
- 23
- 24 2. Verification that the fire extinguishing system has not been altered.
- 25
- 26 3. Examination of all detectors, agent and gas containers, releasing devices, piping, hose
- 27 assemblies, nozzles, and all auxiliary equipment.
- 28
- 29 4. Verification that the agent distribution piping is not obstructed.
- 30
- 31 5. Verification that the extinguishing agent container and/or auxiliary pressure containers
- 32 have been, as applicable, inspected, retested and marked in conformance with the
- 33 requirements of the United States Department of Transportation.
- 34
- 35 6. A test of the system's automatic and manual releasing devices, including any associated
- 36 equipment.
- 37
- 38 7. A test of the gas and electric power source shutoff devices.
- 39
- 40 8. Preparation and submission to the owner of a written report of any system defects.
- 41
- 42 9. Upon satisfactory completion of the semiannual inspection and correction of all defects,
- 43 providing the owner with an inspection, testing and service compliance tag. Such tag
- 44 shall indicate the date issued, the name and license number of the licensed master fire
- 45 suppression piping contractor issuing the tag, and that the system was found to be in
- 46 compliance with the requirements of this section.
- 47

1 **904.11.6.1 Fusible link and sprinkler head replacement.** Fusible links and foam water
2 sprinkler heads shall be replaced at least annually, and other protection devices shall be
3 serviced or replaced in accordance with the manufacturer's instructions.
4

5 **Exception:** Frangible bulbs are not required to be replaced annually.
6

7 **904.11.6.2 Recordkeeping.** Records shall be maintained as set forth in FC901.6.2. Upon
8 satisfactory completion of each semiannual inspection required by FC904.11.6, and the
9 correction of all system defects, the master fire suppression piping contractor licensed by
10 the Department of Buildings shall issue and post in a conspicuous location in the cooking
11 area an inspection, testing and servicing compliance tag. A new compliance tag shall be
12 issued and posted for each required semiannual inspection.
13

14 **904.11.6.3 Signage.** Instructions for manual operation of the fire extinguishing system,
15 including a statement that the fire extinguishing system shall be manually activated prior
16 to using a portable fire extinguisher, shall be posted, under glass or laminated, near the
17 system's manual activation device. Information shall be clearly and concisely written, and
18 the posting shall be at least 8½ inches (216 mm) by 11 inches (279 mm) in size.
19

20 **904.12 Water-mist systems.** Water-mist fire extinguishing systems shall be installed, periodically
21 inspected, tested and maintained in accordance with FC 901 and 904.4, NFPA 750, as modified
22 by FC Appendix B, and their listing. All devices and appurtenances shall be listed and installed in
23 conformance to the terms of the listing.
24

25 **904.12.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
26 and knowledgeable person to assess whether the system is in good working order. A licensed
27 master fire suppression piping contractor properly trained and having knowledge of the
28 installation, operation and maintenance of the specific fire extinguishing system shall inspect,
29 test, service and otherwise maintain such system in accordance with this section and the
30 manufacturer's specifications and servicing manuals at least on an annual basis.
31

32 **904.13 Aerosol fire extinguishing systems.** Aerosol fire extinguishing systems shall be installed,
33 periodically inspected, tested and maintained in accordance with FC 901 and 904.4, NFPA 2010,
34 as modified by FC Appendix B, and their listing. All devices and appurtenances shall be listed and
35 installed in conformance to the terms of the listing.
36

37 **904.13.1 Maintenance.** At least once a month, an inspection shall be conducted by a trained
38 and knowledgeable person to assess whether the system is in good working order. A licensed
39 master fire suppression piping contractor properly trained and having knowledge of the
40 installation, operation and maintenance of the specific fire extinguishing system shall inspect,
41 test, service and otherwise maintain such system in accordance with this section and the
42 manufacturer's specifications and servicing manuals at least on an annual basis.]
43

44 **904.5 Maintenance of fire extinguishing systems.** Fire extinguishing systems shall be
45 periodically inspected, tested and otherwise maintained in accordance with FC 901, 904.1.1 and
46 904.4, the applicable NFPA standard, and the system listing. Additional maintenance shall be
47 performed as set forth in FC 904.5.1 through 904.5.13, FC Table 904.5.2, and the rules.

1
2 **904.5.1 Monthly inspection.** At least once a month, a visual inspection of the fire
3 extinguishing system shall be conducted by a trained and knowledgeable person to confirm
4 that the system appears to be in good working order, including the following conditions:
5

- 6 1. The fire extinguishing system is intact and undamaged, including the extinguishing agent
7 container, system piping, nozzles and protective nozzle caps.
8
- 9 2. Any fusible links or other fire detection devices are clean.
10
- 11 3. Access to each manual activation device, if required, for the fire extinguishing system is
12 not obstructed and any tamper indicator is intact.
13
- 14 4. Check the pressure gauge, control panel or control unit, as applicable, to determine
15 whether the fire extinguishing system is operational and whether there are any
16 supervisory or trouble signals.
17
- 18 5. If an automatic foam system or water mist system, check the water supply valve to
19 confirm that it is in the locked, open position; if the system is manually operated, confirm
20 that the water supply is in good working order.
21
- 22 6. The maintenance tag for the fire extinguishing system is in place and has not expired.
23

24 **904.5.2. Semiannual inspection.** A licensed master fire suppression piping contractor holding
25 a certificate of fitness properly trained and having knowledge of the installation, operation and
26 maintenance of the specific fire extinguishing system, or a person holding a certificate of
27 fitness under the direction and control of such license holder, shall inspect, test, service and
28 otherwise maintain such system in accordance with this section and the manufacturer's
29 specifications and servicing manuals at least on a semiannual basis. Such semiannual
30 inspection, testing and servicing shall include all procedures necessary to determine that the
31 system is in good working order, including the following actions:
32

- 33 1. Verification that the hazard has not changed.
34
- 35 2. Verification that the fire extinguishing system has not been altered.
36
- 37 3. Examination of all detection systems, alarms, manual stations, extinguishing agent
38 containers, releasing devices, piping, hose assemblies, nozzles, and all ancillary
39 equipment.
40
- 41 4. Verification that the extinguishing agent has not been discharged.
42
- 43 5. Verification that the agent distribution piping is not obstructed.
44
- 45 6. Verification that the extinguishing agent container and/or ancillary pressure containers
46 have been, as applicable, inspected, retested and marked in conformance with the
47 requirements of the United States Department of Transportation.

1
2 7. A test of the system's automatic and manual releasing devices, including any associated
3 equipment. Fixed temperature-sensing elements shall be maintained to ensure proper
4 operation of the system.

5
6 8. A test of the gas and electric power source shut-off (interlock) devices, if applicable.

7
8 9. Preparation and submission to the owner of a written report of any system defects.

9
10 10. Upon satisfactory completion of the semiannual inspection and correction of all defects,
11 providing the owner with an inspection, testing and service compliance tag. Such tag
12 shall indicate the date issued, the name and license number of the licensed master fire
13 suppression piping contractor issuing the tag and the certificate of fitness holder
14 conducting the inspection, and that the system was found to be in compliance with the
15 requirements of this section.

16
17 **FC TABLE 904.5.2**
18 **FIRE EXTINGUISHING SYSTEM**
19 **INSPECTION, TESTING AND MAINTENANCE SCHEDULE**

SYSTEM	INSPECTION	TESTING	OTHER MAINTENANCE
<u>Aerosol fire extinguishing systems</u>	<u>Monthly</u>		<u>Annually</u>
<u>Carbon dioxide fire extinguishing system</u>	<u>Monthly</u>	<u>Semiannually</u>	<u>Annually</u>
<u>Clean agent fire extinguishing systems</u>	<u>Monthly</u>	<u>Semiannually</u>	<u>Annually</u>
<u>Dry chemical fire extinguishing systems</u>	<u>Monthly</u>		<u>Semiannually</u>
<u>Expansion foam systems (low, medium and high)</u>	<u>Monthly</u>		<u>Annually</u>
<u>Foam water sprinkler and spray systems</u>		<u>See NFPA 25</u>	
<u>Halon 1301 fire extinguishing systems</u>	<u>Monthly</u>		<u>Semiannually</u>
<u>Water mist fire extinguishing systems</u>		<u>See NFPA 25</u>	
<u>Wet chemical fire extinguishing systems</u>	<u>Monthly</u>		<u>Semiannually</u>

20
21 **904.5.3 Five-year retest.** All fire extinguishing systems shall be retested once every five years
22 from the date of acceptance of the system. The first retest of fire extinguishing systems lawfully
23 existing on the effective date of this provision shall be conducted on or before the fifth
24 anniversary of the date of acceptance after such effective date. Such test shall be conducted,
25 and reported to the department, in the manner prescribed by rule, by a licensed master fire
26 suppression contractor holding a certificate of fitness, properly trained and having knowledge
27 of the installation, operation and maintenance of the specific fire extinguishing system, or a
28 person holding a certificate of fitness under the direction and control of such license holder.

29
30 **Exception:** Commercial cooking and domestic cooking fire extinguishing systems.

31
32 **904.6 Additional maintenance requirements.** The following fire extinguishing systems shall be
33 maintained in accordance with the additional maintenance requirements set forth in FC 904.6.1
34 through 904.6.10.

35
36 **904.6.1 Aerosol systems.** Aerosol fire extinguishing systems shall be maintained in
37 accordance with FC 901.6.1 and 904.5.

1 **904.6.2 Carbon dioxide systems.** Carbon dioxide systems shall be maintained in accordance
2 with FC 901.6.1, 904.5 and 904.6.2.1 through 904.6.2.4.

3
4 **904.6.2.1 High-pressure containers.** High-pressure containers shall be weighed and the
5 date of the last hydrostatic test shall be verified at 6-month intervals. Where a container
6 shows a loss in original content of more than 10 percent, the container shall be refilled or
7 replaced.

8
9 **904.6.2.2 Low-pressure containers.** The liquid-level gauges of low-pressure containers
10 shall be observed at one-week intervals. Where a container shows a content loss of more
11 than 10 percent, the container shall be refilled to maintain the minimum gas requirements.

12
13 **904.6.2.3 System hoses.** System hoses shall be examined at 12-month intervals for
14 damage. Damaged hoses shall be replaced or tested. At five-year intervals, all hoses shall
15 be tested.

16
17 **904.6.2.3.1 Test procedure.** Hoses shall be tested at not less than 2,500 pounds per
18 square inch (psi) (17 238 kPa) for high-pressure systems and at not less than 900 psi
19 (6206 kPa) for low-pressure systems.

20
21 **904.6.2.4 System components.** System components, such as switches, door and window
22 releases, interconnected valves, damper releases and supplementary alarms, shall be
23 manually operated at 12-month intervals to ensure that such components are in proper
24 operating condition.

25
26 **904.6.3 Clean agent systems.** Clean agent systems shall be maintained in accordance with FC
27 901.6.1, 904.5, 904.6.3.1 and 904.6.3.2.

28
29 **904.6.3.1 Containers.** The extinguishing agent quantity and pressure of the containers
30 shall be checked at 6-month intervals. Where a container shows a loss in original weight
31 of more than 5 percent or a loss in original pressure, adjusted for temperature, of more than
32 10 percent, the container shall be refilled or replaced. The weight and pressure of the
33 container shall be recorded on a tag attached to the container.

34
35 **904.6.3.2 System hoses.** System hoses shall be examined at 12-month intervals for
36 damage. Damaged hoses shall be replaced or tested. All hoses shall be tested at 5-year
37 intervals.

38
39 **904.6.4 Dry chemical systems.** Dry chemical systems shall be maintained in accordance with
40 FC 901.6.1, 904.5 and 904.6.4.1.

41
42 **904.6.4.1. Additional maintenance requirements.** Extinguishing agent containers shall
43 be weighed to verify the required amount of agent. Stored pressure-type units shall be
44 checked for the required pressure. The cartridge of cartridge-operated units shall be
45 weighed and replaced at intervals specified by the manufacturer.

1 **904.6.5 Foam systems.** Foam systems shall be maintained in accordance with FC 901.6.1,
2 904.5 and 904.6.5.1.

3
4 **904.6.5.1 Commercial cooking installations.** Foam fire extinguishing systems installed
5 to protect a commercial cooking operation shall additionally comply with the requirements
6 of FC904.3.8.

7
8 **904.6.6 Halon systems.** Lawfully existing halon systems shall be maintained in accordance
9 with FC 901.6.1, 904.5 and 904.6.6.1 through 904.6.6.3. All other halon systems shall be
10 removed in accordance with FC904.1.4.2.

11
12 **904.6.6.1 Containers.** The extinguishing agent quantity and pressure of containers shall
13 be checked at least on a semiannual basis. Where a container shows a loss in original weight
14 of more than 5 percent or a loss in original pressure (adjusted for temperature) of more than
15 10 percent, the container shall be refilled or replaced. The weight and pressure of the
16 container shall be recorded on a tag attached to the container.

17
18 **904.6.6.2 System hoses.** System hoses shall be examined at 12-month intervals for
19 damage. Damaged hoses shall be replaced or tested. At 5-year intervals, all hoses shall be
20 tested.

21
22 **904.6.6.2.1 Test procedure.** For Halon 1301 systems, hoses shall be tested at not less
23 than 1,500 psi (10 343 kPa) for 600 psi (4137 kPa) charging pressure systems and not
24 less than 900 psi (6206 kPa) for 360 psi (2482 kPa) charging pressure systems. For
25 Halon 1211 hand-hose line systems, hoses shall be tested at 2,500 psi (17 238 kPa) for
26 high-pressure systems and 900 psi (6206 kPa) for low-pressure systems.

27
28 **904.6.6.3 System components.** System components, such as switches, door and window
29 releases, interconnected valves, damper releases and supplementary alarms, shall be
30 manually operated at 12-month intervals to ensure such components are in proper operating
31 condition.

32
33 **904.6.7 Water mist systems.** Water mist systems shall be maintained in accordance with
34 FC 901.6.1, 904.5 and NFPA 750, as modified by FC Appendix B.

35
36 **904.6.8 Wet chemical systems.** Wet chemical systems shall be maintained in accordance with
37 FC 901.6.1, 904.5 and 904.6.8.1 through 904.6.8.3.

38
39 **904.6.8.1 Additional maintenance requirements.** Extinguishing agent containers shall
40 be weighed to verify the required amount of agent. Stored pressure-type units shall be
41 checked for the required pressure. The cartridge of cartridge-operated units shall be
42 weighed and replaced at intervals specified by the manufacturer.

43
44 **904.6.8.2 Fusible link maintenance.** Fixed temperature-sensing elements shall be
45 maintained to ensure proper operation of the system.

1 **904.6.8.3 Commercial cooking installations.** Wet chemical fire extinguishing systems
2 installed to protect a commercial cooking operation shall additionally comply with the
3 requirements of FC904.3.8.

4
5 **904.6.9 Commercial cooking systems.** Commercial cooking fire extinguishing systems shall
6 be maintained in accordance with FC 609, 901.6.1, 904.5 and 904.6.9.1.

7
8 **904.6.9.1 Fusible link and sprinkler head replacement.** Fusible links and foam water
9 sprinkler heads shall be replaced at least annually, and other protection devices shall be
10 serviced or replaced in accordance with the manufacturer's instructions.

11 **Exception:** Frangible bulbs are not required to be replaced annually.

12
13
14 **904.6.10 Domestic cooking systems.** Fire extinguishing systems installed on domestic
15 cooking hoods in Group I-2 occupancies, or in any other occupancy, shall be installed and
16 maintained in accordance with FC 904.6.10.1 and 904.6.10.2.

17
18 **904.6.10.1 Installation.** Such fire extinguishing systems shall be installed by a master fire
19 suppression piping contractor, who shall certify to the department that the installation is in
20 compliance with the construction codes and this code. Such certification shall be submitted
21 to the department in the manner prescribed by the department.

22
23 **904.6.10.2 Maintenance.** Such fire extinguishing systems shall be maintained in
24 accordance with FC 901.6.1 and 904.5.

25
26 **SECTION FC 905**
27 **STANDPIPE SYSTEMS**

28
29 **905.1 General.** Standpipe systems shall be provided where required by the construction codes,
30 including the Building Code, this code or the rules. Fire hose threads used in connection with
31 standpipe systems shall be approved by the commissioner. [The location of fire department hose
32 connections shall be approved by the commissioner.] Standpipe systems in buildings used for high-
33 piled combustible storage shall be in accordance with FC Chapter [23] 32.

34
35 **905.1.1 Standpipe system operator.** In buildings with a multi-zone standpipe system, such
36 system shall be continuously under the personal supervision of a person holding a certificate
37 of fitness, who shall be immediately available to assist the department in the operation of such
38 system.

39
40 **905.2 Installation standards.** Standpipe systems shall be installed in accordance with the
41 construction codes, including the Building Code.

42
43 **905.3 [through and including] Standpipe elevation markings.** The elevation above grade of
44 each floor level shall be conspicuously marked on or adjacent to the standpipe hose outlet on each
45 floor of a building or structure more than 240 feet in height. The elevation shall be indicated in
46 feet. In lieu of markings, durable signage may be posted adjacent to the standpipe hose outlet on
47 each floor.

1
2 **905.4 Standpipe elevation chart.** A chart listing the floor number (consistent with elevator
3 operation) and corresponding elevation above grade of each floor level of the building shall be
4 prepared for each building or structure more than 240 feet in height and kept at the fire command
5 center or other approved location.

6 **905.5 Fire department connections.** Fire department connections serving a standpipe system
7 shall be marked in accordance with FC912.

8
9 **905.6** Reserved.

10
11 **905.7 Cabinets.** Cabinets containing firefighting equipment, such as standpipes, fire hose, portable
12 fire extinguishers and water supply control valves, shall not be obstructed from use or obscured
13 from view.

14
15 **905.8** Reserved.

16
17 **905.9 Valve supervision.** Valves controlling water supplies shall be supervised in the open
18 position so that a change in the normal position of the valve will generate a supervisory signal at
19 the central station required by FC903.4. Where a fire alarm system is provided, a signal shall also
20 be transmitted to the fire alarm system control panel.

21
22 **Exceptions:**

- 23
24 1. Valves to underground key or hub valves in roadway boxes provided by the municipality
25 or public utility do not require supervision.
26
27 2. Valves locked in the normal position and inspected as provided in this code in buildings
28 not equipped with a fire alarm system.
29

30 **905.10 During construction.** Standpipe systems required during construction, alteration and
31 demolition operations shall be provided in accordance with Chapter 33 of the Building Code and
32 [FC1413] FC3313.

33
34 **905.11** Reserved.

35
36 **905.12 Maintenance.** Standpipe systems shall be maintained, including all required inspection,
37 testing and servicing, in accordance with this section, FC901.6 and NFPA 25.

38
39 **905.12.1 Standpipe hydrostatic pressure and flow tests.** Upon order of the commissioner,
40 but at least once every 5 years, the standpipe system shall be subjected to a hydrostatic pressure
41 test and a flow test to demonstrate its suitability for department use. These tests shall be
42 conducted in compliance with the requirements of the rules and shall be conducted at the
43 owner's risk, by his or her representative before a representative of the department.
44

45 **SECTION FC 906**
46 **PORTABLE FIRE EXTINGUISHERS**

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906.1 Where required. Portable fire extinguishers shall be installed in the following locations.

1. In all Group A, B, E, F, H, I, M, R-1, R-2 adult homes and enriched housing, and S occupancies.
2. Within 30 feet (9144 mm) of commercial cooking equipment.
3. In areas where flammable or combustible liquids are manufactured, stored, handled and used, including dispensing, in quantities requiring a permit pursuant to FC105.6.
4. On each floor of structures under construction, alteration or demolition, except detached Group R-3 occupancies, in accordance with [FC1415.1] FC3315.1.
5. Where required by the sections indicated in FC Table 906.1.
6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the commissioner.
7. Where required by other provisions of this code or the rules.

**FC TABLE 906.1
ADDITIONAL REQUIRED PORTABLE FIRE EXTINGUISHERS**

SECTION	SUBJECT
303.5	Tar kettles and asphalt melters
307.4	Open fires
[307.5] <u>307.5.4</u>	Portable outdoor barbecues
[308.3.1.5] <u>308.5.3.2</u>	Flaming food and [beverages] <u>beverage preparation</u> in Group A occupancies <u>and public gathering places</u>
<u>308.6.4</u>	<u>Alcohol fueled decorative open-flame device</u>
309.4 and <u>309.7</u>	Powered industrial trucks <u>and storage areas</u>
<u>310.7.3.4</u>	<u>Non-tobacco hookah establishment</u>
[315.3.4] <u>315.3.6</u>	Outdoor storage of combustible material
<u>317.5.2</u>	<u>Automotive salvage and wrecking facilities</u>
603.3.1	Fuel oil-burning equipment
<u>609.9</u>	<u>Commercial kitchen</u>
[1105.2] <u>2005.2</u>	Aircraft towing vehicles
[1105.3] <u>2005.3</u>	Aircraft welding apparatus
[1105.4] <u>2005.4</u>	Aircraft-fueling vehicles
[1105.5] <u>2005.5</u>	Aircraft hydrant-fueling vehicles
[1105.6] <u>2005.6</u>	Aircraft fuel-dispensing stations
[1107.7] <u>2007.7</u>	Heliports and helistops
[1110.6.2] <u>2010.6.2</u>	Helicopter lift operations
[1208.4] <u>2108.4</u>	Dry cleaning facilities
[1415.1]	[Buildings, structures, premises and facilities under construction, alteration or demolition]
[1417.3]	[Roofing operations]
[1418.1]	[Powder-actuated tool loads at a construction site]
<u>2305.5</u>	<u>Automotive liquid motor fuel-dispensing facilities</u>
<u>2308.7.4.2</u>	<u>CNG motor fuel-dispensing facilities</u>
<u>2310.6.4</u>	<u>Marine liquid motor fuel-dispensing facilities</u>
<u>2311.7</u> and <u>2311.8.7</u>	<u>Repair garages</u>
[1504.4.10] <u>2404.4.10</u>	Spraying spaces
[1504.5.5] <u>2404.5.5</u>	Limited spraying areas
[1505.5.3] <u>2405.5.3</u>	Dip-tank rooms and spaces
[1506.4.6] <u>2406.4.6</u>	Powder coating rooms and spaces

[1510.1.2] <u>2410.1.2</u>	Floor finishing operations
[1908.8] <u>2808.8</u>	Storage of wood chips and other wood waste materials
[1909.5] <u>2809.5</u>	Exterior lumber storage
[2003.5] <u>2903.5</u>	Organic-coating areas
[2106.3] <u>3006.3</u>	Industrial furnaces
[2205.5]	[Automotive liquid motor fuel-dispensing facilities]
[2208.7.4.2]	[CNG motor fuel-dispensing facilities]
[2210.6.4]	[Marine liquid motor fuel-dispensing facilities]
[2211.6]	[Repair garages]
<u>3104.12</u>	<u>Tents and other membrane structures</u>
[2306.10] <u>3206.10</u>	High-piled storage
[2404.12]	[Tents and other membrane structures]
<u>3315.1</u>	<u>Buildings, structures, premises and facilities under construction, alteration or demolition</u>
<u>3317.3</u>	<u>Roofing operations</u>
[2508.2] <u>3408.2</u>	Tire rebuilding/storage
[2604.2.6] <u>3504.2.6</u>	Welding and other hot work
<u>3605.2.3</u>	<u>Marina fire protection systems and equipment</u>
<u>3703.6 and 3706.6.4</u>	<u>Combustible fibers</u>
<u>4006.14</u>	<u>Distilleries</u>
[2707.9.3] <u>5007.9.3</u>	Transportation of flammable and combustible liquids in cargo tanks
[2903.6 and 2906.6.4]	[Combustible fibers]
<u>5306.7</u>	<u>Medical gas storage</u>
<u>5606.8</u>	<u>Powder-actuated tool loads at a construction site</u>
[3309.9.1] <u>5609.6.1</u>	Special effects
[3403.2.1] <u>5703.2.1</u>	Flammable and combustible liquids, general
[3404.3.3.1] <u>5704.3.3.1</u>	Indoor storage of flammable and combustible liquids
[3404.3.7.5.2] <u>5704.3.7.5.2</u>	Liquid storage rooms for flammable and combustible liquids
[3405.4.9] <u>5705.4.9</u>	Solvent distillation units
[3406.2.7] <u>5706.2.7</u>	Construction sites—flammable and combustible liquids storage
<u>5706.2.8</u>	<u>Construction sites—dispensing from cargo tanks</u>
[3406.4.10.1] <u>5706.4.10.1</u>	Bulk plants and terminals for flammable and combustible liquids
[3406.8.1(20)] <u>5706.8.1(20)</u>	Vapor recovery and processing equipment at bulk plants and terminals
<u>5707.8</u>	<u>Fleet fueling operations</u>
[3506.5] <u>5806.5</u>	Sterilizers using flammable gas containing ethylene oxide
[3808.2] <u>6108.2</u>	LPG

1
2 **906.2 General requirements.** Portable fire extinguishers shall be selected, installed and
3 maintained in accordance with this section and NFPA 10.
4

5 **Exceptions:**

- 6
7 1. The travel distance to reach a portable fire extinguisher shall not apply to the spectator
8 seating portions of Group A-5 occupancies.
9
10 2. In Group I-3, portable fire extinguishers may be provided at staff locations.
11

12 **906.2.1 Maintenance.** Portable fire extinguishers shall be maintained in accordance with
13 FC901.6 and this section.
14

15 **906.2.1.1 Monthly inspection.** An inspection to verify that the portable fire extinguishers
16 are readily available and in good working order shall be conducted at least once a month.
17 The person conducting such inspections shall keep records of all portable fire extinguishers
18 inspected, including the date the inspection was performed, the person performing the
19 inspection, and those portable fire extinguishers found to require corrective action. Such
20 recordkeeping shall be either kept on a tag or label securely attached to the portable fire

1 extinguisher, on an inspection checklist maintained on file or by an approved electronic
2 method that provides a permanent record.
3

4 **Exception:** An inspection to verify that the portable fire extinguishers are readily
5 available and in good working order shall be conducted at least once every 3 years for
6 dry-chemical or halogenated agent portable fire extinguishers that are monitored by a
7 listed and approved electronic monitoring device complying with all of the following
8 requirements:
9

- 10 1. The electronic monitoring device shall continuously confirm the proper
11 location and charge of each portable fire extinguisher so monitored.
12
- 13 2. Loss of power to the electronic monitoring device or other interruption of the
14 proper functioning of such device shall initiate a trouble signal at an approved
15 location on the premises at which the portable fire extinguisher being monitored
16 is installed.
17
- 18 3. The portable fire extinguisher being monitored shall be located indoors or in
19 cabinets outdoors. The portable fire extinguisher being monitored shall not be in
20 a corrosive environment.
21
- 22 4. The periodic inspection of the portable fire extinguisher shall include
23 inspection and testing of the electronic monitoring device.
24
- 25 5. An electronic record that the electronic monitoring of the portable fire
26 extinguisher is being maintained, and that the portable fire extinguisher is
27 properly located and charged, shall be maintained in accordance with FC107.7.
28

29 **906.2.1.2 Servicing.** Annual servicing and recharging shall be [performed] conducted in
30 accordance with NFPA 10 by [a person or] an approved portable fire extinguisher servicing
31 company and a technician meeting the requirements of FC901.6.3.1. [Records of servicing
32 and recharging of portable fire extinguishers shall be provided and maintained in
33 accordance with NFPA 10. The required tag or label for servicing shall also include the
34 following information:
35

- 36 1. The name and certificate of fitness number of the person who serviced the portable
37 fire extinguisher.
38
- 39 2. The month and year the portable fire extinguisher was serviced.
40
- 41 3. The name, street address and telephone number of the portable fire extinguisher
42 servicing company, if any, servicing the portable fire extinguisher.]
43

44 **906.2.1.3 Hydrostatic testing.** Periodic hydrostatic testing of portable fire extinguishers
45 shall be done in accordance with NFPA 10.
46

906.2.1.4 Proof of compliance. A portable fire extinguisher servicing company holding a company certificate shall document its servicing of a portable fire extinguisher by affixing to the portable fire extinguisher the proof of compliance approved for such purposes and in such other manner as may be required by the rules.

906.3 Size and distribution. The size and distribution of portable fire extinguishers shall be in accordance with FC 906.3.1 through 906.3.4.

906.3.1 Class A fire hazards. The minimum size, number and placement of portable fire extinguishers in occupancies in which there is a Class A fire hazard risk (ordinary combustible materials) shall be in accordance with FC Table 906.3.1.

906.3.1.1 Sprinklered areas. In buildings classified as Group A-3 occupancy houses of worship and Group B occupancy office buildings that are protected throughout by a sprinkler system, the maximum floor area per unit of A required by FC Table 906.3.1 may be doubled.

906.3.2 Class B fire hazards. The minimum size, number and placement of portable fire extinguishers in occupancies in which there is a Class B fire hazard risk (flammable or combustible liquids with depths of less than or equal to 0.25-inch (6.35 mm)) shall be in accordance with FC Table 906.3.2. The minimum size, number and placement of portable fire extinguishers in occupancies in which there is a Class B fire hazard risk (flammable or combustible liquids with depths greater than 0.25-inch (6.35 mm)) shall be in accordance with NFPA 10.

906.3.3 Class C fire hazards. The minimum size, number and placement of portable fire extinguishers in which there is a Class C fire hazard risk (energized electrical equipment) shall be in accordance with NFPA 10.

906.3.4 Class D fire hazards. The minimum size, number and placement of portable fire extinguishers in occupancies in which there is a Class D fire hazard risk (combustible metals) shall be in accordance with NFPA 10.

**FC TABLE 906.3.1
PORTABLE FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS**

	LIGHT (Low) HAZARD OCCUPANCY ^d	ORDINARY (Moderate) HAZARD OCCUPANCY ^d	EXTRA (High) HAZARD OCCUPANCY ^d
Minimum Rated Single Extinguisher	2-A ^c	2-A	4-A ^a
Maximum Floor Area Per Unit of A	3,000 square feet ^e	1,500 square feet	1,000 square feet
Maximum Travel Distance to Extinguisher	75 feet	75 feet	75 feet

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon = 3.785 L.

a. Two 2½-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher.

b. Reserved.

c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies.

d. For the purposes of FC Table 906.3.1, the terms “Light (Low) Hazard”, “Ordinary (Moderate) Hazard” and “Extra (High) Hazard” shall be as defined in NFPA 10.

e. In occupancies classified as Groups A-3, B, or E which are protected throughout by a sprinkler system, the maximum floor area per unit of A may be doubled.

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**FC TABLE 906.3.2
FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH DEPTHS OF LESS THAN OR EQUAL TO 0.25-INCH^a**

TYPE OF HAZARD	BASIC MINIMUM PORTABLE FIRE EXTINGUISHER RATING	MAXIMUM TRAVEL DISTANCE TO PORTABLE FIRE EXTINGUISHERS (feet)
Light (Low)	5-B	30
	10-B	50
Ordinary (Moderate)	10-B	30
	20-B	50
Extra (High)	40-B	30
	80-B	50

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. For requirements on water-soluble flammable liquids and alternative sizing criteria, see NFPA 10.

906.4 Cooking grease fires. Portable fire extinguishers provided for the protection of cooking grease fires shall be of an approved type compatible with the fire extinguishing system agent and in accordance with [FC609.6] FC609.9.

906.5 Conspicuous location. Portable fire extinguishers shall be located in conspicuous locations where they will be readily accessible and immediately available for use. These locations shall be along normal paths of travel, unless the commissioner determines that the hazard posed indicates the need for placement away from normal paths of travel.

Exceptions:

1. Portable fire extinguishers subject to theft, malicious use or damage may be located in locations approved by the commissioner.
2. In rooming houses and single room occupancies, as defined in the New York State Multiple Dwelling Law, with over 15 sleeping rooms, a 2-A rated portable fire extinguisher may be kept in the apartment of the manager or the building superintendent.

906.6 Unobstructed and unobscured. Portable fire extinguishers shall not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, signs or other markings shall be provided to indicate the locations of portable fire extinguishers.

906.7 Hangers and brackets. Hand-held portable fire extinguishers, not housed in cabinets, shall be installed on the hangers or brackets supplied. Hangers or brackets shall be securely anchored to the mounting surface in accordance with the manufacturer’s installation instructions.

906.8 Cabinets. Cabinets used to house portable fire extinguishers shall be readily identifiable and shall not be locked.

Exceptions:

1. Portable fire extinguishers subject to theft, malicious use or damage, if provided with an approved means of ready access.
2. Portable fire extinguishers in Group I-3 occupancies and in mental health areas in Group I-2 occupancies may be locked or located in staff locations, provided the staff of the institution has ready access to the cabinet or other storage location.

1 **906.9 Extinguisher installation.** The installation of portable fire extinguishers shall be in
2 accordance with FC 906.9.1 through 906.9.3.

3
4 **906.9.1 Extinguishers weighing 40 pounds or less.** Portable fire extinguishers having a gross
5 weight not exceeding 40 pounds (18 kg) shall be installed so that the top of the extinguisher is
6 not more than 5 feet (1524 mm) above the floor.

7
8 **906.9.2 Extinguishers weighing more than 40 pounds.** Hand-held portable fire extinguishers
9 having a gross weight exceeding 40 pounds (18 kg) shall be installed so that the top of the
10 extinguisher is not more than 3.5 feet (1067 mm) above the floor.

11
12 **906.9.3 Floor clearance.** The clearance between the floor and the bottom of installed hand-
13 held portable fire extinguishers shall not be less than 4 inches (102 mm).

14
15 **906.10 Wheeled units.** Wheeled portable fire extinguishers shall be kept in a designated location
16 that is readily accessible.

17
18 **SECTION FC 907**
19 **FIRE ALARM AND DETECTION SYSTEMS**
20

21 **907.1 General.** This section governs the design, installation, operation and maintenance of fire
22 alarm systems and their components.

23
24 **[907.1.1 Design and installation documents.** Design and installation documents for fire alarm
25 systems shall be submitted to the department for review and approval prior to system
26 installation. Design and installation documents shall include such design and installation
27 details as may be required by the construction codes, including the Building Code.]

28
29 **907.2 Where required.** An approved manual, automatic, or manual and automatic fire alarm
30 system shall be provided where required by the construction codes, including the Building Code
31 or this code.

32
33 **907.3 Design and installation.** An approved manual, automatic, or manual and automatic fire
34 [detection] alarm system shall be installed in accordance with the construction codes, including
35 the Building Code, the Electrical Code and NFPA 72, as modified by FC Appendix B.

36
37 **907.3.1 Design and installation documents.** Design and installation documents for fire alarm
38 systems shall be submitted to the department for review and approval prior to system
39 installation. Design and installation documents shall include such design and installation
40 details as may be required by the construction codes, including the Building Code, and this
41 code.

42
43 **907.3.2 Fire alarm system control panel.** Fire alarm system control panels shall be of a type
44 for which a certificate of approval has been issued in accordance with FC112 and the rules.
45 Fire alarm control panels shall be installed at an approved location and, when applicable, in
46 accordance with FC904.3.6. Fire alarm system control panel design and operation for mass
47 notification purposes shall require department approval.

1
2 **907.3.3 Fire extinguishing systems.** Fire extinguishing systems shall be connected to the
3 building fire alarm system whenever a fire alarm system is required or is otherwise installed.

4
5 **907.3.4 Manual fire alarm box protective covers.** The department may require the
6 installation of manual fire alarm box protective covers to prevent malicious false alarms or
7 provide the manual fire alarm box with protection from physical damage.

8
9 **[907.3] 907.4 Fire command center.** Where required by this code or the construction codes,
10 including the Building Code, a fire command center shall be provided for a building, structure or
11 premises.

12
13 **907.3.1 Location.** The location and layout of the fire command center shall be approved by
14 the department. A plan identifying the proposed location and layout of the fire command
15 center, including the location, model and certificate of approval number of the fire alarm
16 system control panel, shall be submitted to the department for approval prior to installation.

17
18 **907.3.2 Fire alarm system control panel.** The fire alarm system control panel shall be of a
19 type for which a certificate of approval has been issued, and shall be installed in accordance
20 with the Building Code.

21
22 **907.3.3 Maintenance.** The fire alarm system control panel shall be maintained in accordance
23 with NFPA 72, as modified by FC Appendix B.

24
25 **907.4 Manual fire alarm boxes.** Manual fire alarm boxes shall be installed in accordance with
26 the construction codes, including the Building Code.

27
28 **907.4.1 through and including 907.4.4** Reserved.

29
30 **907.4.5 Protective covers.** The commissioner may require the installation of manual fire alarm
31 box protective covers to prevent malicious false alarms or provide the manual fire alarm box
32 with protection from physical damage. The protective cover shall comply with the
33 requirements of the construction codes, including the Building Code.]

34
35 **907.4.1 Location.** A plan identifying the proposed location and layout of the fire command
36 center, including the location of the fire alarm system control panel, shall be submitted to the
37 department for approval prior to installation. The location and layout of the fire command
38 center shall be approved by the department in accordance with the following requirements and
39 such other design, installation, operational and maintenance requirements as it may prescribe:

40
41 1. The primary fire command center, as required by Sections 403 and 911 of the Building
42 Code, shall be installed in the building lobby at the main front entrance, mounted in the
43 front desk, on the wall behind the front desk, on a wall in the lobby that provides a clear
44 view of the elevators and lobby, or other approved location.

45
46 2. The secondary fire command center, when required by Appendix G to the Building Code
47 or voluntarily installed, shall be installed at a location above the flood elevation in close

1 proximity to the building lobby at the main front entrance, on the second floor near the
2 elevators and/or stairwells, or other approved location.

3
4 3. The fire command center shall not be installed in a room.

5
6 4. The fire command center fire alarm control unit display shall not be mounted more than
7 6 feet (1829 mm) above the finish floor.

8
9 5. A durable sign reading “Fire Command Center” in 2-inch red letters on a white
10 background shall be conspicuously posted at the fire command center.

11
12 **907.4.2 Fire command center printer.** Buildings with a fire command center shall be
13 equipped with a printer or other approved device connected to the fire alarm system control
14 panel to facilitate review by firefighting personnel of the incident history associated with an
15 alarm activation.

16
17 **907.4.3 Required documentation and other items for firefighting operations.** Access keys
18 for building rooms and areas and any other items that will assist firefighting or other emergency
19 response operations shall be kept at the fire command center, together with the following
20 documentation when required by the code or the rules:

21
22 1. Building information card.

23
24 2. Emergency preparedness plan.

25
26 3. Floor plans.

27
28 4. Non-sequential floor numbering chart.

29
30 5. Safety data sheets.

31
32 6. Standpipe elevation chart.

33
34 **907.5 through and including 907.7** Reserved.

35
36 **907.8 Presignal system.** Where a presignal system is installed, personal supervision shall be
37 provided at an approved location, in order that the alarm signal can be activated in the event of fire
38 or other emergency.

39
40 **907.9 through and including 907.12** Reserved.

41
42 **907.13 Access.** Access shall be provided to each detector for periodic inspection, testing and other
43 maintenance.

44
45 **907.14 [Fire extinguishing systems.** Fire extinguishing systems shall be connected to the building
46 fire alarm system where a fire alarm system is required or is otherwise installed.] Reserved.

1 **907.15 Monitoring.** Where required by this code, the rules or by the construction codes, including
2 the Building Code, such monitoring by a central station shall be performed in compliance with the
3 requirements of the rules.

4
5 **Exception:** Central station monitoring is not required for:

- 6
7 1. Single- and multiple-station smoke alarms required by Section 907.2.10 of the Building
8 Code.
- 9
10 2. Smoke detectors in Group I-3 occupancies.
- 11
12 3. Sprinkler systems in Group R-3 occupancies.

13
14 **907.15.1 Discontinuance or other change of service.** Notification shall be made to the
15 department in accordance with the rules upon discontinuance, change of service provider or
16 other change in service of central station monitoring.

17
18 **907.16 Automatic telephone-dialing devices.** Automatic telephone-dialing devices used to
19 transmit an emergency alarm shall not be connected to any department telephone number unless
20 approved by the commissioner.

21
22 **907.17 Acceptance testing.** Upon completion of the installation of a fire alarm system, including
23 alarm notification appliances and circuits, alarm-initiating devices and circuits, supervisory-signal
24 initiating devices and circuits, signaling line circuits, and primary and secondary power supplies,
25 such system shall be tested [at the owner's risk, by his or her representative, before a representative
26 of the department, to confirm its proper installation and operation of the system in compliance
27 with the requirements of the Building Code and this code] in accordance with FC901.5.

28
29 **907.18 Record of completion.** A record of completion in accordance with NFPA 72, as modified
30 by FC Appendix B, this code and the rules, verifying that the system has been installed in
31 accordance with the approved design and installation documents and specifications shall be
32 provided by the installing contractor.

33
34 **907.19 Instructions.** Inspection, testing, operation and maintenance instructions, as built design
35 and installation documents and equipment specifications shall be provided on site at an approved
36 location.

37
38 **907.20 Inspection, testing and other maintenance.** Fire alarm and fire alarm detection systems
39 shall be operated and maintained in accordance with this code, FC901, the rules and NFPA 72, as
40 modified by FC Appendix B.

41
42 **907.20.1** Reserved.

43
44 **907.20.2 Testing.** Testing shall be performed in accordance with the schedules in NFPA 72,
45 as modified by FC Appendix B, or more frequently where required by the commissioner.

1 **Exception:** Devices or equipment that are inaccessible for safety considerations shall be
2 tested during scheduled shutdowns where approved by the commissioner, but not less than
3 every 18 months.
4

5 **907.20.3 Detector sensitivity.** Detector sensitivity shall be checked in compliance with the
6 manufacturer's instructions and NFPA 72, as modified by FC Appendix B, and the rules.
7 Detectors which are connected to a fire alarm system that automatically transmit signals to the
8 department or to a central station shall, as applicable, also be checked in compliance with the
9 rules.
10

11 **907.20.4 Method.** To verify that each smoke detector is within its listed and marked sensitivity
12 range, it shall be tested using one of the following methods or types of equipment, and detectors
13 found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and
14 recalibrated or replaced:
15

- 16 1. A calibrated test method;
- 17
- 18 2. The manufacturer's calibrated sensitivity test instrument;
- 19
- 20 3. Listed control equipment arranged for the purpose;
- 21
- 22 4. A smoke detector/control unit arrangement whereby the detector causes a signal at the
23 control unit where its sensitivity is outside its acceptable sensitivity range; or
24
- 25 5. Another calibrated sensitivity test method acceptable to the commissioner.
26

27 **Exceptions:**

- 28
- 29 1. Detectors listed as field adjustable shall be allowed to be either adjusted within
30 the listed and marked sensitivity range and cleaned and recalibrated or they shall
31 be replaced.
32
- 33 2. This requirement shall not apply to single-station smoke alarms.
34

35 **907.20.4.1 Testing device.** Smoke detector sensitivity shall not be tested or measured using
36 a device that administers an unmeasured concentration of smoke or other aerosol into the
37 detector.
38

39 **907.20.5 Maintenance.** The owner shall maintain all types of fire alarm and [life safety]
40 detection systems in good working order at all times. Service personnel shall possess the
41 qualifications set forth in NFPA 72, as modified by FC Appendix B, and the rules, for
42 inspecting, testing, servicing and otherwise maintaining such systems. When required by the
43 rules, a smoke detector maintenance log book and an alarm log book shall be maintained.
44

45 **907.20.5.1 Five-year retest.** All fire alarm and other detection systems shall be retested
46 once every five years from the date of acceptance of the system. The first retest of fire
47 alarm and other detection systems lawfully existing on the effective date of this provision

1 shall be conducted on or before the fifth anniversary of the date of acceptance after such
2 effective date. Such test shall be conducted, and reported to the department, in the manner
3 prescribed by rule, by a person holding a certificate of fitness for professional certification
4 of fire alarm and emergency alarm installations and testing, as set forth in FC104.2.1(1)
5 and the rules, or a fire alarm system installer with NICET-Level II certification licensed by
6 or registered with the State of New York and holding a certificate of fitness in accordance
7 with the rules.
8

9 **907.20.6 Smoke detector maintenance.** The owner of any premises, or part thereof,
10 monitored by a fire alarm system or sub-system thereof, whether required or not required by
11 this code, which automatically transmits signals to the department or to a central station, shall
12 be responsible for preventing unnecessary and unwarranted alarms as set forth in rules.
13 Cleaning and testing of smoke detectors shall be performed as set forth in the rules.
14

15 **907.20.7 Hold-open devices.** The fire alarm system connections for hold-open devices
16 installed on fire doors pursuant to the Building Code, including hold-open devices provided
17 for vertical exit enclosure doors pursuant to the exception to Section BC 708.7 of the Building
18 Code, shall be inspected, tested and otherwise maintained in accordance with FC 703.2 and
19 907.20 and NFPA 72. Hold-open devices and automatic door closers provided for such vertical
20 exit enclosure doors shall be inspected and tested annually to ensure the proper functioning of:
21

- 22 1. the manual control on the fire alarm system control panel, or the fire command center
23 where a fire command center is required, that transmits a signal to release the hold-open
24 devices;
- 25 2. the fire alarm system output programming, which automatically transmits a signal to
26 release the hold-open devices upon activation of an automatic alarm initiating device or
27 manual elevator recall;
- 28 3. the circuitry for each hold-open device, which upon receipt of a manual or automatic
29 signal, releases the door; and
- 30 4. each automatic door closer, which, upon release of the door by the hold-open device,
31 mechanically moves the door to its fully closed position.
32

33 **SECTION FC 908**

34 **EMERGENCY ALARM SYSTEMS**

35
36
37
38
39 **[908.1 Group H occupancies.** Emergency alarms for the detection and notification of an
40 emergency condition in Group H occupancies shall be provided as required in FC Chapter 27.
41

42 **908.2 Group H-5 occupancy.** Emergency alarms for notification of an emergency condition in an
43 HPM facility shall be provided as required in FC1803.12. A continuous gas detection system shall
44 be provided for HPM gases in accordance with FC1803.13.
45

46 **908.3 Highly toxic and toxic materials.** Where required by FC3704.2.2.10, a gas detection system
47 shall be provided for indoor storage and use of highly toxic and toxic compressed gases.

1
2 **908.4 Ozone gas-generator rooms.** A gas detection system shall be provided in ozone gas-
3 generator rooms in accordance with FC3705.3.2.
4

5 **908.5 Repair garages.** A flammable-gas detection system shall be provided in repair garages for
6 vehicles fueled by non-odorized gases in accordance with FC2211.7.2.
7

8 **908.6 Refrigerating systems.** Refrigerating system machinery rooms shall be provided with a
9 refrigerant detector in accordance with FC606.8 and the Mechanical Code.
10

11 **908.7 Carbon monoxide.** Carbon monoxide alarms and carbon monoxide detectors shall be
12 installed where required by the construction codes, including the Building Code and, where
13 applicable, the requirements of the New York City Department of Housing Preservation and
14 Development.
15

16 **908.8 Medical gas systems.** Medical gas systems shall comply with the requirements of FC3006.4
17 and the construction codes, including the Building Code.
18

19 **908.9 Flammable gas.** Flammable gas detection systems shall be as set forth in the construction
20 codes, including the Building Code, this code or the rules.
21

22 **908.9.1 Flammable gas distribution piping.** Areas within buildings and structures containing
23 flammable gas distribution piping operating at levels above 15 pounds per square inch
24 (psig)(103.4 kPa) shall be provided with an approved flammable gas detection-alarm system.
25

26 **908.10 Maintenance.** Emergency alarm and detection systems governed by this section shall be
27 inspected, tested, serviced and otherwise maintained in accordance with the manufacturer's
28 specifications. Those approved for connection to a fire alarm system or which will transmit an
29 alarm to a central station shall additionally comply with the requirements of NFPA 72, as modified
30 by FC Appendix B, and the rules governing the operation and maintenance of such systems.
31

32 **908.10.1 Carbon monoxide.** Carbon monoxide detectors shall be inspected, tested, serviced
33 and otherwise maintained in compliance with the requirements of the construction codes,
34 including the Building Code, and, where applicable, the requirements of the New York City
35 Department of Housing Preservation and Development. Those connected to a fire alarm system
36 or which will transmit an alarm to a central station shall additionally comply with the
37 requirements of FC901.6, NFPA 72, as modified by FC Appendix B, NFPA 720 and the rules
38 governing the operation and maintenance of such systems.]
39

40 **908.1 General.** Emergency alarm systems required by the construction codes, this code or the
41 rules for the detection and notification of a release of a hazardous material or other hazardous
42 materials incident, or other physical or health hazard, including systems designed to detect
43 flammable, toxic, asphyxiant and other gases, shall be designed, installed, operated and maintained
44 in compliance with the construction codes, the Electrical Code, the code requirements referenced
45 in FC Table 908.1, this section and the manufacturer's instructions.
46

<u>HAZARD</u>	<u>OCCUPANCY/USE^a</u>	<u>SECTION</u>
<u>Carbon dioxide</u>	<u>Occupancies with a carbon dioxide beverage dispensing system</u>	<u>5307</u>
<u>Carbon monoxide</u>	<u>Residential occupancies; other occupancies with carbon monoxide-producing equipment</u>	<u>Building Code BC915</u>
<u>Flammable alcohol vapors</u>	<u>Distilleries</u>	<u>4003</u>
<u>Gaseous hydrogen</u>	<u>Hydrogen fuel gas rooms</u>	<u>5808</u>
<u>Hazardous materials</u>	<u>High-hazard occupancies (Group H)</u>	<u>5004 and 5005</u>
<u>Hazardous production materials</u>	<u>Semiconductor production facilities (Group H-5)</u>	<u>2703</u>
<u>Lighter-than-air motor fuels</u>	<u>Motor fuel-dispensing facilities; repair garages for vehicles fueled by lighter-than-air motor fuels</u>	<u>2308, 2309 and 2311</u>
<u>Medical gases</u>	<u>Hospitals, nursing homes and hyperbaric facilities with a medical gas system</u>	<u>5306</u>
<u>Natural gas and other flammable gases (except lighter-than-air motor fuels)</u>	<u>Mechanical rooms, microturbine rooms and power plants with flammable gas distribution piping operating above 15 psig; residential occupancies</u>	<u>5810; Building Code BC908</u>
<u>Ozone gas</u>	<u>Ozone gas-generator rooms</u>	<u>6005</u>
<u>Refrigerants</u>	<u>Mechanical rooms with a refrigerating system</u>	<u>606</u>
<u>Toxic/highly toxic materials</u>	<u>Group H-3 occupancies</u>	<u>6004</u>

a. Typical occupancy/use. Other occupancies/uses as approved.

908.2 Plan approval. Design and installation documents for emergency alarm systems shall be submitted for department review and approval when required by FC105.4 and the rules.

908.3 Signage. Signs shall be posted in a conspicuous location near the emergency alarm system control panel and each alarm notification device to inform building occupants in the affected area of the meaning of the alarm activation and the appropriate response.

908.4 Central station monitoring. Emergency alarm systems required to transmit an alarm signal to a central station shall transmit such signal through the central station-monitored fire alarm system for the building or occupancy, or through an approved central station-monitored control panel. Such central station connections shall be maintained in compliance with the requirements of NFPA 72, as modified by FC Appendix B, and the rules.

908.5 Periodic inspection and testing. Sensors and other mechanical and electrical components of emergency alarm systems shall be tested by a trained and knowledgeable person on not less than an annual basis to ensure that they are in good working order, and a record kept of such testing.

908.5.1 Five-year retest. All emergency alarm systems and other detection systems shall be retested once every five years from the date of acceptance of the system. The first retest of emergency alarm systems lawfully existing on the effective date of this provision shall be conducted on or before the fifth anniversary of the date of acceptance after such effective date. Such test shall be conducted, and reported to the department, in the manner prescribed by rule, by a person holding a certificate of fitness for professional certification of fire alarm and emergency alarm installations and testing, as set forth in FC104.2.1(1) and the rules, or a fire alarm system installer with NICET-Level II certification licensed by or registered with the State of New York and holding a certificate of fitness in accordance with the rules.

**SECTION FC 909
SMOKE CONTROL SYSTEMS**

1 **909.1 Smoke control systems.** Smoke control systems, including stairwell pressurization, shall be
2 provided as required by the construction codes, including the Building Code, and shall be designed,
3 installed and tested as required by such codes.
4

5 **909.1.1 Smoke control system maintenance.** Smoke control systems shall be maintained in
6 good working order. Periodic testing, inspection and other maintenance shall be performed in
7 accordance with the manufacturer's instructions and FC 909.1.1.1 through 909.1.1.3.
8

9 **909.1.1.1 Schedule.** A written maintenance program, including periodic inspection and
10 testing, shall be established and implemented immediately upon installation of the smoke
11 control system.
12

13 **909.1.1.2 Recordkeeping.** A logbook or other approved form of recordkeeping
14 documenting each inspection and test shall include the date of the maintenance,
15 identification of servicing personnel, description of any operating defects or deficiencies,
16 notifications made, corrective action taken, including parts replaced, and/or other
17 information prescribed by the department by rule.
18

19 **909.1.1.3 Testing.** Operational testing of the smoke control system shall include all
20 components of the system, including initiating devices, fans, dampers, controls, doors and
21 windows. Dedicated smoke control systems shall be tested semiannually. Nondedicated
22 smoke control systems shall be tested annually. All systems shall be tested under both
23 normal power and emergency power.
24

25 **909.2 Post-fire smoke purge systems.** Post-fire smoke purge systems shall be provided as
26 required by the construction codes, including the Building Code, and shall be designed, installed
27 and tested as required by such codes.
28

29 **909.2.1 Post-fire smoke purge system maintenance.** Post-fire smoke purge systems shall be
30 maintained in good working order. A record of inspections and tests shall be maintained in
31 accordance with FC107.7.
32

33 **SECTION FC 910** 34 **SMOKE AND HEAT VENTS** 35

36 **910.1 General.** Smoke and heat vents or, where approved by the Commissioner of Buildings,
37 mechanical smoke exhaust systems, and draft curtains shall be installed when required by the
38 construction codes, including the Building Code, this code or the rules, and shall be designed and
39 installed in accordance with the construction codes, including the Building Code.
40

41 **910.2 Maintenance.** Automatically and manually operated heat vents and engineered mechanical
42 smoke exhaust systems shall be inspected periodically and an operational test of each shall be
43 conducted at least once every 12 months. A record of each inspection and test shall be maintained
44 as required by FC 107.7 and 901.6.2.
45

46 **Exception:** Gravity operated drop out vents need only be inspected.
47

**SECTION FC 911
EXPLOSION CONTROL**

911.1 General. Explosion control shall be provided in the following locations:

1. Where a structure, room or space is occupied for purposes involving explosion hazards as set forth in FC Table 911.1.
2. Where quantities of hazardous materials specified in FC Table 911.1 exceed the maximum allowable quantities set forth in FC Table [2703.1.1(1)] 5003.1.1(1).

Such areas shall be provided with explosion (deflagration) venting, explosion (deflagration) prevention systems, or barricades in accordance with this section and NFPA 69 or NFPA 495, as applicable. Deflagration venting shall not be utilized as a means to protect buildings from detonation hazards.

**FC TABLE 911.1
EXPLOSION CONTROL REQUIREMENTS**

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade Construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems
Hazard Category			
Combustible dusts ^a	—	Not required	Required
Cryogenic fluids	Flammable	Not required	Required
Explosives	Division 1.1	Required	Not required
	Division 1.2	Required	Not required
	Division 1.3	Not required	Required
	Division 1.4	Not required	Required
	Division 1.5	Required	Not required
	Division 1.6	Required	Not required
Flammable gas	Gaseous	Not required	Required
	Liquefied	Not required	Required
Flammable liquids	IA ^b	Not required	Required
	IB ^c	Not required	Required
Organic peroxides ^c	Unclassified Detonable	Required	Not permitted
	I	Required	Not permitted
Oxidizer liquids and solids	4	Required	Not permitted
Pyrophoric material ^e	Detonable	Required	Not permitted
Pyrophoric gases ^e	Nondetonable	Not required	Required
Unstable (reactive) ^e	4	Required	Not permitted
	3 detonable	Required	Not permitted
	3 nondetonable	Not required	Required
Water-reactive liquids and solids ^e	3 detonable	Required	Not permitted
	3 nondetonable	Not required	Required
	2 detonable	Required	Not permitted
	2 nondetonable	Not required	Required
Special Uses			
Energy Storage System	—	Required	Required
Grain processing	—	Not required	Required
Where explosion hazards exist ^d	Detonation	Required	Not permitted
	Deflagration	Not required	Required

a. Combustible dusts that are generated during manufacturing or processing. See definition of Combustible Dust in FC Chapter 2.
 b. Storage or use.
 c. In open use or dispensing.
 d. Rooms containing dispensing and use of hazardous materials when an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.

1 e. Unclassified detonable organic peroxides (see FC Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable
2 (reactive) materials (see FC Chapter [43] 66) and detonable water-reactive materials (see FC Chapter [44] 67) are considered as explosives for
3 purposes of storage.
4

5 **911.2 Required deflagration venting.** Areas that are required to be provided with deflagration
6 venting shall comply with the following requirements:
7

8 1. Walls, ceilings and roofs exposing surrounding areas shall be designed to resist a minimum
9 internal pressure of 100 pounds per square foot (psf) (4788 Pa). The minimum internal design
10 pressure shall not be less than five times the maximum internal relief pressure specified in
11 FC911.2(5).
12

13 2. Deflagration venting shall be provided only in exterior walls and roofs.
14

15 **Exception:** Where sufficient exterior wall and roof venting cannot be provided because of
16 inadequate exterior wall or roof area, deflagration venting shall be allowed by specially
17 designed shafts vented to the exterior of the building.
18

19 3. Deflagration venting shall be designed to prevent unacceptable structural damage. Where
20 relieving a deflagration, vent closures shall not produce projectiles of sufficient velocity and
21 mass to cause life threatening injuries to the occupants or other persons on the property or
22 adjacent public streets.
23

24 4. The aggregate clear area of vents and venting devices shall be governed by the pressure
25 resistance of the construction assemblies specified in FC911.2(1) and the maximum internal
26 pressure allowed by FC911.2(5).
27

28 5. Vents shall be designed to withstand loads in accordance with the construction codes,
29 including the Building Code. Vents shall consist of any one or any combination of the
30 following to relieve at a maximum internal pressure of 20 pounds per square foot (958 Pa),
31 but not less than the loads required by the construction codes, including the Building Code:
32

33 5.1. Exterior walls designed to release outward.
34

35 5.2. Hatch covers.
36

37 5.3. Outward swinging doors.
38

39 5.4. Roofs designed to uplift.
40

41 5.5. Venting devices listed for the purpose.
42

43 6. Vents designed to release from the exterior walls or roofs of the building when venting a
44 deflagration shall discharge directly outdoors where an unoccupied space not less than 50
45 feet (15 240 mm) in width is provided between the exterior walls of the building and the
46 property line.
47

48 **Exception:** Vents complying with the requirements of FC911.2(7).
49

1
2 7. Vents designed to remain attached to the building when venting a deflagration shall be so
3 located that the discharge opening shall not be less than 10 feet (3048 mm) vertically from
4 window openings and exits in the building and 20 feet (6096 mm) horizontally from exits in
5 the building, from window openings and exits in adjacent buildings on the same property,
6 and from the property line.
7

8 8. Vent lines shall discharge outdoors.
9

10 **911.3 Explosion prevention systems.** Explosion prevention systems shall be of an approved type
11 and installed in accordance with this code and NFPA 69. Where the building or structure or part
12 thereof is provided with a fire alarm system, explosion prevention system alarms shall be
13 transmitted to the fire alarm system control panel and to an approved central station.
14

15 **911.4 Barricades.** Barricades shall be designed and installed in accordance with NFPA 495.
16

17 **SECTION FC 912**
18 **FIRE DEPARTMENT CONNECTIONS**
19

20 **912.1 Installation.** Fire department connections shall be installed in accordance with the
21 construction codes, including the Building Code.
22

23 **912.2 Location.** The location of fire department connections shall be in accordance with the
24 Building Code.
25

26 **912.2.1 Visible location.** Fire department connections shall be located on the street side of
27 buildings, fully visible and recognizable from the street or nearest point of fire department
28 apparatus access, or as otherwise approved by the commissioner.
29

30 **912.2.2 Distance from hydrant.** Fire department connections shall be located at a distance
31 from the nearest fire hydrant as required by the Building Code.
32

33 **912.3 Access.** Immediate access to fire department connections shall be maintained at all times,
34 without obstruction by fences, posts, bushes, trees, rubbish containers, vehicles, walls or other
35 objects.
36

37 **Exception:** Access to fire department connections may be obstructed by a fence, provided
38 that such fence has an approved access gate complying with the design, installation,
39 operation and maintenance requirements of FC912, including signage complying with
40 FC912.4, and a means of emergency operation.
41

42 **912.3.1 Locking fire department connection caps.** The commissioner may require locking
43 caps on fire department connections for sprinkler and standpipe systems.
44

45 **912.3.2 Clear space around connections.** A working space of not less than 36 inches
46 (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall

1 be provided and maintained in front of and around wall-mounted and free-standing fire
2 department connections, except as otherwise required or approved.

3
4 **912.3.3 Physical protection.** Where fire department connections are subject to impact by a
5 motor vehicle whose normal operation brings it into proximity with such connections, such
6 as when fire department connections are located curbside or adjacent to loading or parking
7 areas, vehicle impact protection shall be provided in accordance with FC312.
8

9 **912.4 [Marking.** Wall hydrants and fire pump test headers located on the exterior of buildings
10 shall be conspicuously marked to indicate their function.] **Signs and markings.** Fire department
11 connections shall be marked [as follows:
12

- 13 1. Fire department connections serving a standpipe system shall be provided with caps painted
14 red, and shall have the word “STANDPIPE” in letters 1 inch (25 mm) high and 1/8 inch (3.2
15 mm) deep cast in the body or on a non-ferrous metal plate secured to the connections or
16 mounted on the wall in a visible location, except that caps of fire department connections
17 used for combination standpipe and sprinkler systems shall be painted yellow and the words
18 shall read: “COMBINATION STANDPIPE AND SPRINKLER SYSTEMS.”
19
- 20 2. Fire department connections serving a sprinkler system protecting an entire building or
21 structure shall be provided with caps painted green and shall have the word “SPRINKLER”
22 in letters 1 inch (25 mm) high and 1/8 inch (3.2 mm) deep cast in the body or on a non-
23 ferrous metal plate secured to the connections or mounted on the wall in a visible location,
24 except that caps of fire department connections used for combination standpipe and sprinkler
25 systems shall be painted yellow and the words shall read: “COMBINATION STANDPIPE
26 AND SPRINKLER SYSTEMS.”
27
- 28 3. Fire department connections serving a non-automatic sprinkler system shall have the entire
29 connection painted silver.
30
- 31 4. Fire department connections serving a sprinkler system protecting only a portion of a
32 building or structure shall have durable metal signs securely fastened to, or above, the
33 connection indicating the portion of the building or structure protected.] in accordance with
34 FC 912.4.1 and 912.4.2.
35

36 **912.4.1 Identification of fire department connections.** Fire department connections serving:
37

- 38 1. only a standpipe system shall be provided with caps painted red and identified by
39 markings and signage that reads “STANDPIPE”;
40
- 41 2. only an automatic sprinkler system shall be provided with caps painted green and
42 identified by markings or signage that reads “SPRINKLER,” provided, however, that if
43 the automatic sprinkler system only serves a portion of the building, a sign shall
44 additionally identify the portion of the building protected;
45
- 46 3. only a non-automatic (manually activated) sprinkler system shall be provided with caps
47 painted silver and identified by markings or signage that reads “SPRINKLER”, provided,

1 however, that if the non-automatic sprinkler system only serves a portion of the building,
2 a sign shall additionally identify the portion of the building protected;

3
4 4. combination standpipe and sprinkler systems shall be provided with caps painted yellow
5 and identified by markings or signage that reads “COMBINATION STANDPIPE AND
6 SPRINKLER SYSTEMS”;

7
8 5. in addition to the foregoing, a standpipe, sprinkler or combination system in a building
9 other than the building upon which the fire department connection is mounted shall be
10 provided with a sign identifying the address of the other building served by the fire
11 department connection; and

12
13 6. in addition to the foregoing, a standpipe, sprinkler or combination system serving more
14 than one zone in a single building shall be provided with a sign identifying each zone
15 served by the fire department connection. Such sign shall specify the maximum height
16 (in feet) above grade of each zone and any other necessary identifying information.

17
18 **912.4.2 Design of signs and markings.** Cap markings on fire department connections shall be
19 deep cast in the body of the cap in letters 1 inch (25 mm) high and 1/8 inch (3.2 mm) deep.
20 Alternatively, fire department connections may be identified by a durable non-ferrous metal
21 plate secured to the connections or conspicuously mounted on the wall.

22
23 **912.5 [Backflow protection.** The potable water supply to all sprinkler systems and standpipe
24 systems shall be protected against backflow as required by the construction codes, including the
25 Plumbing Code, and the requirements of the Department of Environmental Protection.] Reserved.

26
27 **912.6 Maintenance.** Sprinkler system and standpipe system fire department connections shall be
28 periodically inspected, tested, serviced and otherwise maintained in accordance with FC901.6 and
29 NFPA 25. Upon order of the commissioner, but at least once every 5 years, such fire department
30 connections shall be subjected to a hydrostatic pressure test to demonstrate their suitability for
31 department use. The test shall be conducted in accordance with the rules and at the owner's risk,
32 by his or her representative before a representative of the department.

33
34 **SECTION FC 913**
35 **FIRE PUMPS**

36
37 **913.1 General.** Where provided, fire pumps shall be installed in accordance with this section, the
38 construction codes, including the Building Code, and NFPA 20.

39
40 **913.2 Protection against interruption of service.** The fire pump, driver, and controller shall be
41 protected in accordance with NFPA 20 against possible interruption of service through damage
42 caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and
43 other adverse conditions.

44
45 **913.3 Temperature of pump room.** Suitable means shall be provided for maintaining the
46 temperature of a pump room or pump house, where required, above 40°F (5°C).

1 **913.3.1 Engine manufacturer's recommendation.** Temperature of the pump room, pump
2 house or area where engines are installed shall never be less than the minimum recommended
3 by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall
4 be followed.

5
6 **913.4 Valve supervision.** Where provided, the fire pump suction, discharge and bypass valves,
7 and the isolation valves on the backflow prevention device or assembly shall be supervised open
8 by a fire alarm system and monitored by an approved central station.

9
10 **913.4.1 Test outlet valve supervision.** Fire pump test outlet valves shall be supervised in the
11 closed position.

12
13 **913.5 Operation and maintenance.** Fire pumps shall be operated and maintained in compliance
14 with the requirements of this section, FC901.6 and NFPA 25, including all required inspection,
15 testing and servicing.

16
17 **913.5.1 Acceptance test.** Acceptance testing shall be done in accordance with FC901.5 and
18 NFPA 20. Acceptance tests shall be conducted at the owner's risk by his or her representative
19 before a representative of the department.

20
21 **913.5.2 Generator sets.** Engine generator sets supplying emergency power to fire pump
22 assemblies shall be periodically tested in accordance with FC604 and the Electrical Code.

23
24 **913.5.3 Transfer switches.** Automatic transfer switches shall be periodically tested in
25 accordance with FC604 and the Electrical Code.

26
27 **913.5.4 Pump room environmental conditions.** Tests of pump room environmental
28 conditions, including heating, ventilation and illumination shall be made to ensure proper
29 manual or automatic operation of the associated equipment.

30
31 **913.6 Fire pump supervision.** The following fire pump operations shall be electrically supervised
32 by the fire alarm system in accordance with the Electrical Code and NFPA 20; and monitored by
33 a central station in accordance with this code and the rules:

- 34
35 1. Pump running.
36
37 2. Pump power failed.
38
39 3. Pump phase reversal.

40
41 **SECTION FC 914**
42 **YARD HYDRANT SYSTEMS**

43
44 **914.1 General.** Yard hydrant systems shall be installed where required by the construction codes,
45 including the Building Code, this code, including [FC508.2.3] FC507.2.3, or the rules.

1 **914.2 Operation and maintenance.** Yard hydrant systems shall be operated and maintained in
2 accordance with FC901.6 and NFPA 25.

3
4 **914.3 Supervision.** At all times when the area served by the yard hydrant system is in use, the
5 system shall be under the personal supervision of a certificate of fitness holder, who shall be
6 available to assist the department in the operation of such system.
7

8
9
10 **CHAPTER 10**
11 **MEANS OF EGRESS**

12 **SECTION FC 1001**
13 **GENERAL**

14
15 **1001.1 Scope.** This chapter shall govern the maintenance of means of egress from all buildings,
16 structures and premises in all occupancy classifications.
17

18 **1001.2 General.** Buildings, structures and premises, or parts thereof, shall be provided with a
19 means of egress system as required by the construction codes, including the Building Code. The
20 maintenance of means of egress from all buildings, structures and premises and all occupancies
21 shall be in accordance with this chapter.
22

23 **SECTION FC 1002**
24 **DEFINITIONS**

25
26 **1002.1 Definitions.** The following terms shall, for the purposes of this chapter and as used
27 elsewhere in this code, have the meanings [shown herein] set forth in FC202.
28

29 **EMERGENCY ESCAPE AND RESCUE OPENING.** [An operable window, door or other
30 similar device that provides for a means of escape and access for rescue in the event of an
31 emergency.]
32

33 **EXIT.** [That portion of a means of egress system which is separated from other interior spaces of
34 a building or structure by fire-resistance-rated construction and opening protectives as required to
35 provide a protected path of egress travel between the exit access and the exit discharge. Exits
36 include vertical exits, exterior exit doors at the level of exit discharge, vertical exit enclosures, exit
37 passageways, exterior exit stairs, exterior exit ramps and horizontal exits, but do not include access
38 stairways, aisles, exit access doors opening to corridors or corridors. This term shall include the
39 locations on a premises at which egress may be had from an enclosed outdoor space.]
40

41 **EXIT ACCESS.** [That portion of a means of egress system that leads from any occupied portion
42 of a building, structure or premises to an exit.]
43

44 **EXIT DISCHARGE.** [That portion of a means of egress system between the termination of an
45 exit and a public way.]
46

1 **EXIT DISCHARGE, LEVEL OF.** [The story at the point at which an exit terminates and an
2 exit discharge begins.]

3
4 **MEANS OF EGRESS.** [A continuous and unobstructed path of vertical and horizontal egress
5 travel from any occupied portion of a building, structure or premises to a public way. A means of
6 egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.]

7
8 **SECTIONS FC 1003**
9 **THROUGH AND INCLUDING**
10 **SECTION FC 1024**
11 **RESERVED**

12
13 **SECTION FC 1025**
14 **EMERGENCY ESCAPE AND RESCUE**

15
16 **1025.1 General.** Emergency escape and rescue openings as required by the Building Code shall
17 be provided in Group R occupancies.

18
19 **1025.2** Reserved.

20
21 **1025.3** Reserved.

22
23 **1025.4 Operational constraints.** Emergency escape and rescue openings and windows or other
24 openings onto fire escapes, as that term is defined in the New York State Multiple Dwelling Law,
25 shall be operational from the inside of the room without the use of keys or tools. Bars, grilles,
26 grates or similar devices are allowed to be placed over emergency escape and rescue openings and
27 windows or other openings onto fire escapes, provided the minimum net clear opening size
28 complies with the requirements of the construction codes, including the Building Code and the
29 New York State Multiple Dwelling Law, and such devices are releasable or removable from inside
30 of the room without the use of a key, tool or force greater than that which is required for normal
31 operation of the escape and rescue opening, window or other opening.

32
33 **1025.5 Certificate of approval.** Bars, grilles, grates or similar devices placed over emergency
34 escape and rescue openings, and windows or other openings onto fire escapes, shall be of a type
35 for which a certificate of approval has been issued in accordance with this code and the rules.

36
37 **SECTION FC 1026**
38 **RESERVED**

39
40 **SECTION FC 1027**
41 **MAINTENANCE OF THE MEANS OF EGRESS**

42
43 **1027.1 General.** The means of egress for buildings, structures or premises, or parts thereof, shall
44 be maintained in accordance with the construction codes, including the Building Code and this
45 section.

1 **1027.2 Prohibition.** It shall be unlawful to obstruct or impede access to any required means of
2 egress, including any exit, exit access or exit discharge.
3

4 **1027.3 Unobstructed and unimpeded egress required.** All required means of egress, including
5 each exit, exit access and exit discharge, shall be continuously maintained free from obstructions
6 and impediments to immediate use in the event of fire or other emergency. An exit or exit
7 passageway shall not be used for any purpose inconsistent with its use as a means of egress,
8 including storage of combustible or noncombustible materials, except as authorized by law, rule
9 or regulation.
10

11 **1027.3.1 Door hardware.** Door hardware and other devices and physical components of the
12 means of egress shall be maintained in good working order at all times.
13

14 **1027.3.2 Security devices.** Security devices affecting means of egress shall be subject to the
15 approval of the Commissioner of Buildings in consultation with the [commissioner]
16 department.
17

18 **1027.3.3 Snow and ice.** All required means of egress shall be maintained free from the
19 accumulation of snow and ice.
20

21 **1027.3.4 Overcrowding.** Premises shall not be caused, allowed or maintained in such a
22 manner as to become overcrowded, such that the number of persons present on the premises
23 and/or their location thereon obstructs or impedes access to any means of egress.
24

25 **1027.3.5 Furnishings and decorations.** Furnishings, decorations or other objects shall not be
26 placed so as to obstruct exits, access thereto, egress therefrom, or visibility thereof. Furnishings
27 and decorations shall not be placed in building hallway corridors or elevator lobbies except as
28 authorized by FC1027.4 or other provision of this code. Hangings and draperies shall not be
29 placed over exit doors or otherwise be located to conceal or obstruct an exit except as
30 authorized by the commissioner. Mirrors shall not be placed on exit doors. Mirrors shall not
31 be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.
32

33 **1027.3.6 Corridor storage.** It shall be unlawful to store combustible materials or combustible
34 waste in corridors except as authorized by FC1027.4 or other provision of this code or by the
35 commissioner by rule.
36

37 **1027.3.7 Fire escapes.** Access to fire escapes shall be maintained in accordance with
38 [FC1027.6] FC1027.7.
39

40 **1027.3.8 Security grilles.** When the installation of security grilles is allowed by the Building
41 Code, such grilles shall be secured in the full-open position during the period of occupancy,
42 except when the Building Code provides otherwise.
43

44 **1027.4 Residential building hallway corridor and elevator lobby furnishings, decorations and**
45 **storage.** This section governs the placement of furnishings and decorations, and storage of
46 combustible materials in building hallway corridors (excluding hallways within dwelling units)
47 and in elevator lobbies above the street level, in Group R-2 buildings and occupancies. The

1 department may by rule prohibit any type of building hallway corridor or elevator lobby furnishing,
2 decoration or storage allowed by this section, or by order direct removal from a particular premises
3 of any such furnishing, decoration or stored item, upon a determination that the size, materials or
4 location of such furnishing, decoration or stored item presents an undue fire hazard.

5
6 **1027.4.1 Incidental furnishings.** A building hallway corridor or elevator lobby may be
7 furnished with a console table, console bench, mirror, and umbrella stand, provided that the
8 minimum required egress width is maintained. All such furnishings must be incidental to
9 hallway use in that the purpose of such furnishings is primarily decorative and/or for the
10 convenience of persons passing through the hallways. Incidental furnishings shall not include
11 furniture used to hold or store clothing or other combustible items, or storage in the hallway of
12 furniture, such as beds and dining room tables, whose primary purpose is not decorative or for
13 the temporary accommodation of passersby.

14
15 **1027.4.2 Draperies, area rugs and decorative greens.** Draperies, area rugs and decorative
16 greens shall be installed and maintained in building hallway corridors in compliance with the
17 requirements of FC Chapter 8, including the requirement that they be inherently
18 noncombustible or flameproofed by an approved method, and the prohibition against the
19 display in building hallway corridors of Christmas trees and other conifers, and wreathes made
20 of conifers.

21
22 **1027.4.3 Artwork.** The walls of building hallway corridors may be decorated with
23 combustible artwork, including artworks made of paper, canvas, wood or fabric, when in
24 compliance with the requirements of FC805.1.

25
26 **1027.4.4 Carpeting.** Carpeting and other interior finishes shall comply with the requirements
27 of Chapter 8 of the Building Code.

28
29 **1027.4.5 Personal property.** Bicycles, baby strollers, clothing and other items of personal
30 property, excluding those set forth in FC 1027.4.1 through 1027.4.4, shall not be stored in
31 building hallway corridors, except as may be authorized or allowed by the department.

32
33 **1027.4.6 Rubbish.** Household rubbish, including trash cans, shall not be stored in building
34 hallway corridors. All such items shall be stored in compactor rooms or other lawful storage
35 areas.

36
37 **1027.5 Educational and day care building hallway corridor and elevator lobby decorations**
38 **and storage.** Artwork and other decorations shall be displayed and maintained in the corridors and
39 lobbies of Group E and I-4 occupancies in accordance with FC Chapter 8. Clothing and personal
40 effects shall not be stored in corridors and lobbies of such occupancies, unless stored in metal
41 lockers or in corridors protected throughout by a sprinkler system and the minimum required
42 egress width is maintained.

43
44 **1027.6 Group I-2 building hallway corridors.** This section governs the placement of equipment
45 for patient care use in Group I-2 building hallway corridors designed for patient bed movement,
46 with a minimum corridor width of 96 inches (2438 mm). The following equipment, up to a
47 maximum of one item of equipment per patient sleeping room or patient care room per smoke

1 compartment, may be placed and kept in such corridors for patient use where all the following
2 conditions are met:

- 3
- 4 1. The entire corridor shall be protected throughout by a sprinkler system.
- 5
- 6 2. The equipment does not reduce the effective clear width for egress to less than 5 feet
7 (1524 mm) and such width is clearly indicated by approved floor markings.
- 8
- 9 3. The equipment is low hazard, wheeled and designed to be used for the following purposes:
 - 10
 - 11 3.1. Computer and other patient recordkeeping stations;
 - 12
 - 13 3.2. Equipment and carts for medical emergencies and infection control;
 - 14
 - 15 3.3. Other equipment and carts while in active use in providing patient care; and
 - 16
 - 17 3.4. Stretchers, wheelchairs and other patient lift and transportation equipment.
- 18
- 19 4. Where feasible, all large equipment, including patient lifts, stretchers and medical
20 emergency and infection control carts, shall be kept on one side of the corridor.

21
22 **[1027.6] 1027.7 Fire escapes.** Fire escapes, and access thereto, shall be maintained in a safe and
23 operational condition, and continuously maintained free from obstructions and impediments to
24 immediate use in the event of fire or other emergency.

25
26 **[1027.6.1] 1027.7.1 Maintenance.** All fire escape components shall be painted or otherwise
27 protected from deterioration and all moving parts shall be maintained in good working order.

28
29 **[1027.6.2] 1027.7.2 Window gates.** Bars, grilles, grates or similar devices placed over
30 windows or other openings onto fire escapes shall be maintained in good working order.

31
32 **[1027.6.3] 1027.7.3 Air conditioners.** An air conditioner shall not be installed in a window
33 providing access to a fire escape unless such fire escape may be accessed from another window
34 in the same room that is unobstructed and of the size required for such purpose by the Building
35 Code, New York State Multiple Dwelling Law, or other applicable law, rule or regulation. Air
36 conditioners installed in windows adjoining fire escapes shall not obstruct the path of egress
37 on the fire escape.

38
39 **[1027.6.4] 1027.7.4 Fire escape ladders.** The operation of a fire escape ladder, including a
40 drop ladder that is lowered vertically to the ground, or a counterbalanced stair ladder which
41 swings to the ground, shall not be obstructed by awnings, stationary furniture, portable fueled
42 space heaters, parked cars, or other obstructions. Where construction work is being performed
43 at a location adjoining a fire escape, provision shall be made for safe egress from the fire escape
44 ladder.

45
46 **[1027.7] 1027.8 Nonexit door identification.** Any door that is not an exit or otherwise part of the
47 means of egress from a building, structure or premises, but which, by reason of its proximity or

1 similar construction, can be confused with an exit door or other door that is part of the means of
2 egress, shall be identified with an approved sign that reads “Not An Exit” and identifies the room
3 into which the nonexit door provides access.
4

5 **1027.9 Emergency Lighting.** Emergency lighting for means of egress shall be maintained in
6 accordance with FC107 and periodically inspected and tested in accordance with FC 1027.9.1 and
7 1027.9.2.
8

9 **1027.9.1 Activation test.** Emergency lighting equipment shall be tested by a trained and
10 knowledgeable person for a duration of not less than 30 seconds. The test shall be conducted
11 manually at least once a month, unless the equipment is designed with an automated self-
12 testing and self-diagnostic feature. When the equipment is tested by such an automated feature,
13 a visual inspection of the emergency lighting equipment shall be conducted at least once a
14 month to check the display for a supervisory or trouble signal, or for any other indication that
15 the equipment is not in good working order.
16

17 **1027.9.2 Power test.** Battery-powered emergency lighting equipment shall be tested by a
18 qualified person in accordance with FC604.5 by operating the equipment on battery power for
19 not less than 90 minutes. The test shall be conducted at least once a year.
20

21
22 **CHAPTERS 11 THROUGH 19**
23 **RESERVED**
24

25
26 **CHAPTER 20**
27 **AVIATION FACILITIES AND OPERATIONS**
28

29 **SECTION FC [1101] 2001**
30 **GENERAL**
31

32 **[1101.1] 2001.1 Scope.** This chapter shall govern the design, installation, operation and
33 maintenance of aviation facilities, including aircraft landing sites, airports, heliports, helistops,
34 helicopter landings, seaplane bases and helicopter lift operations.
35

36 **[1101.2] 2001.2 Regulations not covered.** Except as otherwise provided in this chapter or any
37 other federal, state or local law, rule or regulation, aviation facilities and related operations shall
38 be operated or conducted in accordance with nationally recognized standards.
39

40 **[1101.3] 2001.3 General.** Aircraft landing sites, airports, heliports, helistops and seaplane bases
41 shall be designed, installed, operated and maintained in accordance with this chapter. Aviation
42 operations, including helicopter landings, helicopter lift operations and hot air balloon operations,
43 shall be conducted in accordance with this chapter.
44

45 **[1101.4] 2001.4 Permits.** Permits shall be obtained for aircraft fueling vehicles, helicopter landing
46 operations, helicopter lift operations and hot air balloon operations, as set forth in FC105.6.
47

1 **SECTION FC [1102] 2002**
2 **DEFINITIONS**
3

4 **[1102.1] 2002.1 Definitions.** The following terms shall, for the purposes of this chapter and as
5 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
6

7 **AIRCRAFT LANDING SITE.** [An area of land or water or a structural surface that is designed
8 or used for the landing or takeoff of aircraft, other than helicopters, and any appurtenant areas, but
9 which is not designed or used for fueling, defueling, maintenance, repairs or storage of such
10 aircraft.]

11
12 **AIRCRAFT OPERATION AREA.** [Any area used or intended for use for the parking, taxiing,
13 takeoff, landing or other aviation-related operations.]
14

15 **AIRPORT.** [An area of land or structural surface that is designed or used for the landing and
16 takeoff of aircraft with an overall length greater than 39 feet (11 887 mm) and an overall exterior
17 fuselage width greater than 6.6 feet (2012 mm), and any appurtenant areas that are designed or
18 used for aviation facilities and operations.]
19

20 **AVIATION FACILITY.** [Any premises upon which an aircraft landing site, airport, heliport,
21 helistop, seaplane base or other aviation-related operation is located or conducted.]
22

23 **DISCHARGE AREA.** [Any portion of a premises or other location to which an external load is
24 to be delivered by helicopter.]
25

26 **EXTERNAL LOAD.** [Cargo transported by, but not within, the helicopter.]
27

28 **HELICOPTER LIFT OPERATION.** [The movement of an external load with the use of a
29 helicopter.]
30

31 **HELIPORT.** [An area of land or water or a structural surface that is designed or used for the
32 landing and takeoff of helicopters, and any appurtenant areas which are designed or used for
33 heliport facilities and operations.]
34

35 **HELISTOP.** [An area of land or water or a structural surface that is designed or used for the
36 landing or takeoff of helicopters, but which is not designed or used for fueling, defueling,
37 maintenance, repairs or storage of helicopters, including any staging or other appurtenant areas.]
38

39 **HOT AIR BALLOON OPERATION.** [The filling of balloons with hot air for purposes of
40 display or flight.]
41

42 **HYDRANT-FUELING VEHICLE.** [A type of aircraft fueling vehicle that is equipped to transfer
43 fuel between a fuel hydrant and an aircraft.]
44

45 **SEAPLANE BASE.** [An area of water that is used for the landing or takeoff of airplanes, and any
46 appurtenant areas of land or water designed or used for fueling, defueling, maintenance, repair or
47 storage of seaplanes.]

1
2 **STAGING AREA.** [Any portion of a premises or other location from where an external load is to
3 be lifted by helicopter.]
4

5 **SECTION FC [1103] 2003**
6 **GENERAL PRECAUTIONS**
7

8 **[1103.1] 2003.1 Sources of ignition.** It shall be unlawful to use or maintain an open flame, flame-
9 producing device or other source of ignition in an aircraft hangar or other location within 50 feet
10 (15 240 mm) of an aircraft-fueling or defueling operation.
11

12 **[1103.2] 2003.2 Smoking.** It shall be unlawful to smoke in an aircraft hangar or other location
13 used for aircraft fueling or defueling, cleaning, paint removal or painting operations. “No
14 Smoking” signs shall be provided in accordance with FC310.
15

16 **[1103.3] 2003.3 Maintenance.** The aircraft operation area and related areas shall be kept free from
17 combustible waste at all times.
18

19 **[1103.4] 2003.4 Fire apparatus access roads.** Fire apparatus access roads shall be provided and
20 maintained in accordance with FC Chapter 5 and the construction codes, including the Building
21 Code. Fire apparatus access roads and aircraft parking positions shall be designed in a manner so
22 as to preclude the possibility of fire vehicles traveling under any portion of a parked aircraft.
23

24 **[1103.5] 2003.5 Dispensing of flammable and combustible liquids.** Flammable and combustible
25 liquids shall be dispensed and otherwise stored, handled and used in accordance with this chapter
26 and FC Chapter [34] 57. Automotive liquid motor fuel-dispensing facilities shall be designed,
27 installed, operated and maintained in accordance with FC Chapter [22] 23.
28

29 **[1103.6] 2003.6 Combustible material storage.** Combustible materials stored in aircraft hangars
30 shall be stored in approved locations and containers.
31

32 **[1103.7] 2003.7 Hazardous material storage.** Hazardous materials shall be stored in accordance
33 with FC Chapter [27] 50.
34

35 **SECTION FC [1104] 2004**
36 **AIRCRAFT MAINTENANCE**
37

38 **[1104.1] 2004.1 Transferring flammable and combustible liquids.** Flammable and combustible
39 liquids shall not be dispensed into or removed from a container, tank, vehicle or aircraft, except in
40 approved locations.
41

42 **[1104.2] 2004.2 Application of flammable and combustible liquid finishes.** The application of
43 flammable or Class II combustible liquid finishes shall be conducted in an approved location, using
44 methods and procedures in accordance with FC Chapter [15] 24.
45

1 **[1104.3] 2004.3 Cleaning parts.** Class IA flammable liquids shall not be used to clean aircraft,
2 aircraft parts or aircraft engines. Cleaning with other flammable and combustible liquids shall be
3 in accordance with [FC3405.3.6] FC5705.3.6.

4
5 **[1104.4] 2004.4 Spills.** The following actions shall be taken in response to spills of flammable and
6 combustible liquids and other hazardous materials, in addition to the procedures set forth in
7 [FC1106.11] FC2006.11.

8
9 **[1104.4.1] 2004.4.1 Cessation of work.** Activities in the affected area not related to the
10 mitigation of the spill shall cease until the spilled material has been removed or the hazard has
11 been mitigated.

12
13 **[1104.4.2] 2004.4.2 Vehicle movement.** Aircraft or other vehicles shall not be moved through
14 the spill area until the spilled material has been removed or the hazard has been mitigated.

15
16 **[1104.4.3] 2004.4.3 Mitigation.** Spills shall be reported, documented and mitigated in
17 accordance with this chapter and [FC2703.3] FC5003.3, and any other applicable law, rule or
18 regulation.

19
20 **[1104.5] 2004.5 Running engines.** Aircraft engines shall not be operated in aircraft hangars,
21 except in approved engine test areas.

22
23 **[1104.6] 2004.6 Open flame.** Repair of aircraft requiring the use of open flames, spark-producing
24 devices or the heating of parts above 500°F (260°C) shall only be performed outdoors or in an area
25 complying with the requirements of the construction codes, including the requirements of the
26 Building Code for a Group F-1 occupancy.

27
28 **SECTION FC [1105] 2005**
29 **PORTABLE FIRE EXTINGUISHERS**

30
31 **[1105.1] 2005.1 General.** Portable fire extinguishers suitable for flammable or combustible liquid
32 and electrical-type fires shall be provided as set forth in FC [1105.2] 2005.2 through [1105.7]
33 2005.7, and 906. Portable fire extinguishers required by this section shall be inspected and
34 maintained in accordance with FC906.

35
36 **[1105.2] 2005.2 Towing vehicles.** Vehicles used for towing aircraft shall be equipped with a
37 minimum of one listed portable fire extinguisher complying with the requirements of FC906 and
38 having a minimum rating of 20-B:C.

39
40 **[1105.3] 2005.3 Welding apparatus.** Welding apparatus shall be equipped with a minimum of
41 one listed portable fire extinguisher complying with the requirements of FC906 and having a
42 minimum rating of 2-A:20-B:C.

43
44 **[1105.4] 2005.4 Aircraft-fueling vehicles.** Aircraft-fueling vehicles shall be equipped with a
45 minimum of two listed portable fire extinguishers complying with the requirements of FC906,
46 each having a minimum rating of 20-B:C. A portable fire extinguisher shall be readily accessible
47 from either side of the vehicle.

1
2 **[1105.5] 2005.5 Hydrant-fueling vehicles.** Hydrant-fueling vehicles shall be equipped with a
3 minimum of one listed portable fire extinguisher complying with the requirements of FC906, and
4 having a minimum rating of 20-B:C.

5
6 **[1105.6] 2005.6 Fuel-dispensing stations.** Portable fire extinguishers shall be provided as
7 follows:

- 8
9 1. Where the open-hose discharge capacity of the fueling system is not more than 200 gallons
10 per minute (13 L/s), a minimum of two listed portable fire extinguishers complying with the
11 requirements of FC906 and having a minimum rating of 20-B:C shall be provided.
12
13 2. Where the open-hose discharge capacity of the fueling system is more than 200 gallons per
14 minute (13 L/s) but not more than 350 gallons per minute (22 L/s), a minimum of one listed
15 wheeled portable fire extinguisher complying with the requirements of FC906 and having a
16 minimum rating of 80-B:C, and a minimum agent capacity of 125 pounds (57 kg), shall be
17 provided.
18
19 3. Where the open-hose discharge capacity of the fueling system is more than 350 gallons per
20 minute (22 L/s), a minimum of two listed wheeled portable fire extinguishers complying
21 with the requirements of FC906 and having a minimum rating of 80-B:C each, and a
22 minimum agent capacity of 125 pounds (57 kg) of each, shall be provided.

23
24 **[1105.6.1] 2005.6.1 Location of portable fire extinguishers.** Portable fire extinguishers at
25 aircraft fuel-dispensing stations shall be located such that pumps or dispensers are not more
26 than 75 feet (22 860 mm) from one such extinguisher.

27
28 **[1105.7] 2005.7 Fire extinguisher access.** Portable fire extinguishers required by this chapter shall
29 be accessible at all times. Where necessary, provisions shall be made to clear accumulations of
30 snow, ice and other forms of weather-related obstructions.

31
32 **[1105.7.1] 2005.7.1 Cabinets.** Cabinets and enclosed compartments used to house portable
33 fire extinguishers shall be clearly marked with the words "FIRE EXTINGUISHER" in letters
34 at least 2 inches (51 mm) high. Cabinets and compartments shall be readily accessible at all
35 times.

36
37 **SECTION FC [1106] 2006**
38 **AIRCRAFT AND MOTOR VEHICLE FUELING**
39

40 **[1106.1] 2006.1 Motor vehicle fuel-dispensing facilities.** Motor vehicle fuel-dispensing facilities
41 at aviation facilities shall be designed, installed, operated and maintained in accordance with FC
42 Chapter [22] 23.

43
44 **[1106.2] 2006.2 Aircraft-fueling systems.** Aircraft-fueling systems shall be designed and
45 constructed in accordance with NFPA 407.
46

1 **Exception:** Aircraft fueling systems may be designed and constructed as a full service
2 automotive liquid motor vehicle fuel-dispensing facility in accordance with FC Chapter [22]
3 23, subject to such conditions as the commissioner may require.
4

5 **[1106.3] 2006.3 Design of aircraft-fueling vehicles.** Aircraft-fueling vehicles shall be designed
6 in accordance with [FC1106] FC2006 and NFPA 407.
7

8 **[1106.3.1] 2006.3.1 Transfer apparatus.** Aircraft-fueling vehicles shall be equipped and
9 maintained with an approved transfer apparatus.
10

11 **[1106.3.1.1] 2006.3.1.1 Internal combustion type.** Where such transfer apparatus is
12 operated by an individual unit of the internal-combustion-motor type, such power unit shall
13 be located as remotely as practicable from pumps, piping, meters, air eliminators, water
14 separators, hose reels, and similar equipment, and shall be housed in a separate
15 compartment from any of the aforementioned items. The fuel tank in connection therewith
16 shall be suitably designed and installed, and the maximum fuel capacity shall not exceed 5
17 gallons (19 L) where the tank is installed on the engine. The exhaust pipe, muffler and tail
18 pipe shall be shielded.
19

20 **[1106.3.1.2] 2006.3.1.2 Gear operated.** Where operated by gears or chains, the gears,
21 chains, shafts, bearings, housing and all parts thereof shall be of an approved design and
22 shall be installed and maintained in an approved manner.
23

24 **[1106.3.1.3] 2006.3.1.3 Vibration isolation.** Flexible connections for the purpose of
25 eliminating vibration are allowed if the material used therein is designed, installed,
26 operated and maintained in an approved manner, provided such connections do not exceed
27 24 inches (610 mm) in length.
28

29 **[1106.3.2] 2006.3.2 Pumps.** Pumps of a positive-displacement type shall be provided with a
30 bypass relief valve set at a pressure of not more than 35 percent in excess of the normal working
31 pressure of such unit. Such units shall be equipped and maintained with a pressure gauge on
32 the discharge side of the pump.
33

34 **[1106.3.3] 2006.3.3 Dispensing hoses and nozzles.** Hoses shall be designed for the
35 transferring of hydrocarbon liquids and shall not be any longer than necessary to provide
36 efficient fuel transfer operations. Hoses shall be equipped with an approved shutoff nozzle.
37 Fuel-transfer nozzles shall be self-closing and designed to be actuated by hand pressure only.
38 Notches and other devices shall not be used for holding a nozzle valve handle in the open
39 position. Nozzles shall be equipped with a bonding cable complete with proper attachment for
40 aircraft to be serviced.
41

42 **[1106.3.4] 2006.3.4 Protection of electrical equipment.** Electric wiring, switches, lights and
43 other sources of ignition, when located in a compartment housing piping, pumps, air
44 eliminators, water separators, hose reels or similar equipment, shall be enclosed in a vapor-
45 tight housing. Electrical motors located in such a compartment shall be of a type approved for
46 use as specified in the Electrical Code.
47

1 **[1106.3.5] 2006.3.5 Venting of equipment compartments.** Compartments housing piping,
2 pumps, air eliminators, water separators, hose reels and similar equipment shall be adequately
3 ventilated at floor level or within the floor itself.
4

5 **[1106.3.6] 2006.3.6 Accessory equipment.** Ladders, hose reels and similar accessory
6 equipment used for aircraft-fueling operations shall be of an approved type, as follows:
7

8 1. Ladders constructed of noncombustible material are allowed to be used with or attached
9 to aircraft-fueling vehicles, provided the manner of attachment or use of such ladders is
10 approved and does not constitute an additional fire or accident hazard in the operation of
11 such fueling vehicles.
12

13 2. Hose reels used in connection with fueling vehicles shall be constructed of
14 noncombustible materials and shall be provided with a packing gland or other device
15 which will preclude fuel leakage between reels and fuel manifolds.
16

17 **[1106.3.7] 2006.3.7 Electrical bonding provisions.** Transfer apparatus shall be metallicly
18 interconnected with tanks, chassis, axles and springs of aircraft-fueling vehicles.
19

20 **[1106.3.7.1] 2006.3.7.1 Bonding cables.** Aircraft-fueling vehicles shall be provided and
21 maintained with a substantial heavy-duty electrical cable of sufficient length to be bonded
22 to the aircraft to be serviced. Such cable shall be metallicly connected to the transfer
23 apparatus or chassis of the aircraft-fueling vehicle on one end and shall be provided with a
24 suitable metal clamp on the other end, to be fixed to the aircraft.
25

26 **[1106.3.7.2] 2006.3.7.2 Bonding cable protection.** The bonding cable shall be bare or
27 have a transparent protective sleeve and be stored on a reel or in a compartment provided
28 for no other purpose. It shall be carried in such a manner that it will not be subjected to
29 sharp kinks or accidental breakage under conditions of general use.
30

31 **[1106.3.8] 2006.3.8 Smoking.** It shall be unlawful to smoke in aircraft-fueling vehicles. Signs
32 to this effect shall be conspicuously posted in the driver's compartment of all fueling vehicles.
33

34 **[1106.3.9] 2006.3.9 Smoking equipment.** Smoking equipment such as cigarette lighters and
35 ash trays shall not be provided in aircraft-fueling vehicles.
36

37 **[1106.4] 2006.4 Operation, maintenance and use of aircraft-fueling vehicles.** The operation,
38 maintenance and use of aircraft-fueling vehicles shall be in accordance with FC [1106.4.1]
39 2006.4.1 through [1106.4.5] 2006.4.5 and other applicable provisions of this chapter.
40

41 **[1106.4.1] 2006.4.1 Proper maintenance.** Aircraft-fueling vehicles and all related equipment
42 shall be properly maintained and kept in good repair. Oil, grease, fuel and other flammable or
43 combustible waste shall not be allowed to accumulate. Maintenance and servicing of such
44 equipment shall be accomplished in approved areas.
45

46 **[1106.4.2] 2006.4.2 Vehicle integrity.** Tanks, pipes, hoses, valves and other fueling equipment
47 shall be maintained leak free at all times.

1
2 **[1106.4.3] 2006.4.3 Removal from service.** Aircraft-fueling vehicles and related equipment
3 which are in violation of FC [1106.4.1] 2006.4.1 or [1106.4.2] 2006.4.2 shall be immediately
4 defueled, removed from service and properly repaired or disposed of.
5

6 **[1106.4.4] 2006.4.4 Identification of operator.** Aircraft-fueling vehicles that are operated by
7 a person, firm or corporation other than the permittee or the permittee's authorized employee
8 shall be provided with a legible sign visible from outside the vehicle showing the name of the
9 person, firm or corporation operating such unit.
10

11 **[1106.4.5] 2006.4.5 Training.** Aircraft-fueling vehicles shall be attended and operated by
12 competent personnel familiar with the safety hazards of each type of fuel used at the facility.
13

14 **[1106.5] 2006.5 Fueling and defueling.** Aircraft-fueling and defueling operations shall be
15 conducted in accordance with FC [1106.5.1] 2006.5.1 through [1106.5.4] 2006.5.4.
16

17 **[1106.5.1] 2006.5.1 Positioning of aircraft-fueling vehicles.** Aircraft-fueling vehicles shall
18 not be parked or otherwise allowed to stop or stand in a position where such vehicle would
19 obstruct egress from an aircraft, including emergency exits. Aircraft-fueling vehicles shall not
20 be parked or otherwise allowed to stop or stand under any portion of an aircraft.
21

22 **Exception:** Aircraft-fueling vehicles shall be allowed to be located under aircraft wings
23 during underwing fueling of turbine-engine powered aircraft.
24

25 **[1106.5.1.1] 2006.5.1.1 Fueling vehicle egress.** A clear path shall be maintained for
26 aircraft-fueling vehicles to allow ready access to and egress from the fueling area.
27

28 **[1106.5.1.2] 2006.5.1.2 Aircraft vent openings.** A clear space of at least 10 feet
29 (3048 mm) shall be maintained between aircraft fuel-system vent openings and an aircraft-
30 fueling vehicle.
31

32 **[1106.5.1.3] 2006.5.1.3 Parking.** Prior to leaving the cab, the operator of an aircraft-
33 fueling vehicle shall set the parking brake. At least two chock blocks not less than 5 inches
34 by 5 inches by 12 inches (127 mm by 127 mm by 305 mm) in size and dished to fit the
35 contour of the tires shall be utilized and positioned in such a manner so as to preclude
36 movement of the vehicle in any direction.
37

38 **[1106.5.2] 2006.5.2 Electrical bonding.** Aircraft-fueling vehicles shall be electrically bonded
39 to the aircraft being fueled or defueled. Bonding connections shall be made prior to making
40 fueling connections and shall not be disconnected until the fuel-transfer operations are
41 completed and the fueling connections have been removed. Where a hydrant service vehicle
42 or cart is used for fueling, the hydrant coupler shall be connected to the hydrant system prior
43 to bonding the fueling equipment to the aircraft.
44

45 **[1106.5.2.1] 2006.5.2.1 Conductive hose.** In addition to the bonding cable required by
46 [FC1106.5.2] FC2006.5.2, conductive hose shall be used for all fueling operations.
47

1 [1106.5.2.2] **2006.5.2.2 Bonding conductors on transfer nozzles.** Transfer nozzles shall
2 be equipped with approved bonding conductors which shall be clipped or otherwise
3 positively engaged with the bonding attachment provided on the aircraft adjacent to the
4 fuel tank cap prior to removal of the cap.
5

6 **Exception:** In the case of overwing fueling where no appropriate bonding attachment
7 adjacent to the fuel fill port has been provided on the aircraft, the fueling operator shall
8 touch the fuel tank cap with the nozzle spout prior to removal of the cap. The nozzle
9 shall be kept in contact with the fill port until fueling is completed.
10

11 [1106.5.2.3] **2006.5.2.3 Funnels.** It shall be unlawful to use funnels in aircraft-fueling
12 operations.
13

14 [1106.5.3] **2006.5.3 Training.** All personnel engaged in fuel storage and aircraft-fueling
15 operations shall receive appropriate hazard and fire safety training relating to such storage and
16 fueling operation, including training in the use of fire extinguishing equipment. The owner or
17 operator of the aviation facilities shall maintain on the premises a record of all such training in
18 accordance with FC107.7.
19

20 [1106.5.4] **2006.5.4 Transfer personnel.** During fuel-transfer operations, a qualified person
21 shall be in control of each transfer nozzle and another qualified person shall be in immediate
22 control of the fuel-pumping equipment to shut off or otherwise control the flow of fuel from
23 the time fueling operations are begun until they are completed.
24

25 **Exceptions:**

- 26
- 27 1. For underwing refueling, the person stationed at the point of fuel intake is not
28 required.
29
 - 30 2. For overwing refueling, the person stationed at the fuel pumping equipment shall not
31 be required when the person at the fuel dispensing device is within 75 feet (22 800
32 mm) of the emergency shutoff device, is not on the wing of the aircraft and has a
33 clear and unencumbered path to the fuel pumping equipment; and, the fuel dispensing
34 line does not exceed 50 feet (15 240 mm) in length.
35

36 [1106.5.4.1] **2006.5.4.1 Monitoring during fueling.** The fueling operator shall monitor
37 the panel of the fueling equipment and the aircraft control panel during pressure fueling or
38 shall monitor the fill port during overwing fueling.
39

40 [1106.6] **2006.6 Emergency fuel shutoff.** Emergency fuel shutoff controls and procedures shall
41 comply with the requirements of FC [1106.6.1] **2006.6.1** through [1106.6.4] **2006.6.4**.
42

43 [1106.6.1] **2006.6.1 Accessibility.** Emergency fuel shutoff controls shall be readily accessible
44 at all times when the fueling system is being operated.
45

1 [1106.6.2] **2006.6.2 Notification of the department.** The owner or operator of the aviation
2 facility shall establish a procedure by which the department will be notified in the event of an
3 emergency involving the activation of an emergency fuel shutoff control.

4
5 [1106.6.3] **2006.6.3 Determining cause.** Prior to reestablishment of normal fuel flow, the
6 cause of emergency fuel shutoff conditions shall be determined and corrected.

7
8 [1106.6.4] **2006.6.4 Testing.** Emergency fuel shutoff devices shall be operationally tested at
9 intervals not exceeding 3 months. The fueling-system operator shall maintain suitable records
10 of these tests.

11
12 [1106.7] **2006.7 Protection of hoses.** Before an aircraft-fueling vehicle is moved, fuel transfer
13 hoses shall be properly placed on the approved reel or in the compartment provided, or stored on
14 the top decking of the fueling vehicle if proper height rail is provided for security and protection
15 of such equipment. Fuel-transfer hose shall not be looped or draped over any part of the fueling
16 vehicle, except as herein provided. Fuel-transfer hose shall not be dragged when a fueling vehicle
17 is moved from one fueling position to another.

18
19 [1106.8] **2006.8 Loading and unloading of aircraft-fueling vehicles.** Aircraft-fueling vehicles
20 shall be loaded only at an approved loading rack, except that aircraft-fueling vehicles may be
21 loaded from the fuel tanks of an aircraft during defueling operations. Such loading racks shall be
22 in accordance with FC Chapter [34] 57.

23
24 [1106.8.1] **2006.8.1 Unloading of aircraft-fueling vehicles.** The fuel cargo of such vehicles
25 shall be unloaded only by approved transfer apparatus into the fuel tanks of aircraft, approved
26 underground storage tanks or approved aboveground storage tanks.

27
28 [1106.9] **2006.9 Passengers.** Passenger traffic is not allowed during the time that fuel transfer
29 operations are in progress.

30
31 [1106.10] **2006.10 Sources of ignition.** It shall be unlawful to smoke, or light or maintain an open
32 flame, within 50 feet (15 240 mm) of any location where fuel is being transferred. Electrical and
33 motor-driven devices shall not be connected to or disconnected from an aircraft at any time fueling
34 operations are in progress on such aircraft.

35
36 [1106.11] **2006.11 Fuel spill prevention and procedures.** Fuel spill prevention and the
37 procedures for handling spills shall comply with the requirements of FC [1106.11.1] 2006.11.1
38 through [1106.11.7] 2006.11.7.

39
40 [1106.11.1] **2006.11.1 Fueling equipment maintenance.** Aircraft fueling equipment shall be
41 maintained and kept free from leaks. Fueling equipment that malfunctions or leaks shall be
42 immediately defueled, removed from service and properly repaired or disposed of.

43
44 [1106.11.2] **2006.11.2 Transporting fuel nozzles.** Fuel nozzles shall be carried utilizing
45 appropriate handles. Dragging fuel nozzles along the ground is prohibited.

46
47 [1106.11.3] **2006.11.3 Drum fueling.** Fueling from drums or other containers is prohibited.

1
2 **[1106.11.4] 2006.11.4 Fuel spill procedures.** The owner or operator of the aviation facility
3 shall establish comprehensive procedures to implement in the event of a fuel spill, which shall
4 include the following actions:

- 5
6 1. Upon observation of a fuel spill, the aircraft-fueling operator shall immediately stop the
7 delivery of fuel by releasing hand pressure from the fuel flow-control valve.
8
9 2. Failure of the fuel control valve to stop the continued spillage of fuel shall be cause for
10 the activation of the appropriate emergency fuel shutoff device.
11
12 3. A supervisor shall respond to the fuel spill area immediately.

13
14 **[1106.11.5] 2006.11.5 Notification of the department.** The department shall be notified of
15 any fuel spill which is considered a hazard to people or property or which meets one or more
16 of the following criteria:

- 17
18 1. Any dimension of the spill is greater than 10 feet (3048 mm).
19
20 2. The spill area is greater than 50 square feet (4.65 m²).
21
22 3. The release of fuel is continuing.

23
24 **[1106.11.6] 2006.11.6 Investigation required.** An investigation shall be conducted by the
25 owner or operator of the aviation facility into the cause of all spills requiring notification of
26 the department, the response thereto by the persons in charge of the aircraft fueling operation
27 and other aviation facility personnel. Should it be determined that corrective measures are
28 necessary to prevent future incidents of the same nature, such measures shall be implemented
29 in a timely manner.

30
31 **[1106.11.7] 2006.11.7 Multiple fuel delivery vehicles.** Simultaneous delivery of fuel from
32 more than one aircraft-fueling vehicle to a single aircraft-fueling manifold is prohibited unless
33 proper backflow prevention devices are installed to prevent fuel flow into the aircraft-fueling
34 vehicles.

35
36 **[1106.12] 2006.12 Aircraft engines and heaters.** Aircraft onboard engines and combustion
37 heaters shall be shut down prior to commencing fueling operations and shall remain off until the
38 fueling operation is completed.

39
40 **Exception:** In an emergency, a single jet engine is allowed to be operated with the onboard
41 engine running during fueling operations where all of the following conditions are met:

- 42
43 1. The emergency shall have resulted from an onboard failure of the aircraft's auxiliary
44 power unit.
45
46 2. Restoration of auxiliary power to the aircraft by ground support services is not available.
47

1 3. The engine to be operated is either at the rear of the aircraft or on the opposite side of
2 the aircraft from the fueling operations.

3
4 4. The emergency operation is in accordance with a written procedure approved by the
5 commissioner.

6
7 **[1106.13] 2006.13 Vehicle and equipment restrictions.** During aircraft-fueling operations, only
8 aircraft-fueling vehicles or other equipment actively involved in the fueling operation are allowed
9 within 50 feet (15 240 mm) of the aircraft being fueled. Other aircraft-fueling vehicles or
10 equipment are prohibited in this area until the fueling operation is complete.

11
12 **Exception:** Aircraft-fueling operations utilizing single-point refueling with a sealed,
13 mechanically locked fuel line connection and the fuel is not a flammable liquid.

14
15 **[1106.13.1] 2006.13.1 Overwing fueling.** Vehicles or equipment shall not be allowed beneath
16 the trailing edge of the wing when aircraft fueling takes place over the wing and the aircraft
17 fuel-system vents are located on the upper surface of the wing.

18
19 **[1106.14] 2006.14 Electrical equipment.** Electrical equipment, including but not limited to,
20 battery chargers, ground or auxiliary power units, fans, compressors or tools, shall not be operated,
21 nor shall they be connected or disconnected from their power source, during fueling operations.

22
23 **[1106.14.1] 2006.14.1 Other equipment.** Electrical or other spark-producing equipment shall
24 not be used within 10 feet (3048 mm) of fueling equipment, aircraft fill or vent points, or spill
25 areas unless such equipment is intrinsically safe and approved for use in an explosive
26 atmosphere.

27
28 **[1106.15] 2006.15** Reserved.

29
30 **[1106.16] 2006.16 Lightning.** The commissioner may require the owner or operator of an aviation
31 facility to establish criteria for the suspension and resumption of aircraft-fueling operations and
32 other written procedures to implement in the event of lightning flashes at or near the aviation
33 facility.

34
35 **[1106.17] 2006.17 Fuel-transfer locations.** It shall be unlawful to conduct aircraft-fueling
36 operations indoors.

37
38 **Exception:** In aircraft hangars designed in accordance with the Building Code for Group F-1
39 occupancies, aircraft fuel-transfer operations are allowed where:

- 40
41 1. Such operation is necessary to accomplish aircraft fuel-system maintenance operations.
42 Such operations shall be performed in accordance with nationally recognized standards;
43 or
44
45 2. The fuel being used has a flash point greater than 100°F (37.8°C).
46

1 **[1106.17.1] 2006.17.1 Position of aircraft.** Aircraft being fueled shall be positioned such that
2 any fuel system vents and other fuel tank openings are a minimum of:

- 3
- 4 1. Twenty-five feet (7620 mm) from buildings or structures other than jet bridges; and
- 5
- 6 2. Fifty feet (15 240 mm) from air intake vents for boiler, heater or incinerator rooms.
- 7

8 **[1106.17.2] 2006.17.2 Fire equipment access.** Access for fire service equipment to aircraft
9 shall be maintained during aircraft-fueling operations.

10

11 **[1106.18] 2006.18 Defueling operations.** The requirements for aircraft-fueling operations
12 contained in this section shall also apply to aircraft-defueling operations. Additional procedures
13 shall be established by the owner or operator of the aviation facility to prevent overfilling of the
14 cargo tank or other vehicle used in the defueling operation.

15

16 **[1106.19] 2006.19 Maintenance of aircraft-fueling hose.** Aircraft-fueling hoses shall be
17 maintained in accordance with FC [1106.19.1] 2006.19.1 through [1106.19.4] 2006.19.4.

18

19 **[1106.19.1] 2006.19.1 Inspections.** Hoses used to fuel or defuel aircraft shall be inspected
20 periodically to ensure their serviceability and suitability for continued service.

21

22 **[1106.19.1.1] 2006.19.1.1 Daily inspection.** Hoses shall be inspected daily. This
23 inspection shall include a complete visual scan of the exterior for evidence of damage,
24 blistering or leakage. Each coupling shall be inspected for evidence of leaks, slippage or
25 misalignment.

26

27 **[1106.19.1.2] 2006.19.1.2 Monthly inspection.** A more thorough inspection, including
28 pressure testing, shall be performed on each hose on a monthly basis. This inspection shall
29 include examination of the fuel delivery inlet screen for rubber particles, which may
30 indicate deterioration of the hose lining.

31

32 **[1106.19.2] 2006.19.2 Damaged hose.** Hose that has been damaged shall be immediately
33 removed from service.

34

35 **[1106.19.3] 2006.19.3 Repairing hose.** Hoses are allowed to be repaired by removing the
36 damaged portion and recoupling the undamaged end. When recoupling hoses, only couplings
37 designed and approved for the size and type of hose in question shall be used. Hoses repaired
38 in this manner shall be visually inspected and hydrostatically tested prior to being placed back
39 in service.

40

41 **[1106.19.4] 2006.19.4 New hose.** New hose shall be visually inspected prior to being placed
42 into service.

43

44 **[1106.20] 2006.20 Aircraft-fueling vehicles parking.** Unattended aircraft-fueling vehicles shall
45 be parked in areas that provide for both the unencumbered dispersal of vehicles in the event of an
46 emergency and the control of leakage such that adjacent buildings and storm drains are not
47 contaminated by leaking fuel.

1
2 **[1106.20.1] 2006.20.1 Parking area design.** Parking areas for aircraft-fueling vehicles shall
3 be designed and utilized such that a clearance of 10 feet (3048 mm) is maintained between
4 each parked vehicle for department access. In addition, a minimum clearance of 50 feet (15 240
5 mm) shall be maintained between aircraft-fueling vehicles and parked aircraft and structures
6 other than those used for the maintenance of aircraft-fueling vehicles. Aircraft-fueling vehicles
7 shall not be stored indoors.
8

9 **[1106.21] 2006.21 Radar equipment.** Aircraft-fueling operations shall be prohibited while the
10 weather-mapping radar of that aircraft is operating. Aircraft-fueling or other operations in which
11 flammable liquids, vapors or mists may be present shall not be conducted within 300 feet (91 440
12 mm) of an operating aircraft surveillance radar. Aircraft-fueling operations shall not be conducted
13 within 300 feet (91 440 mm) of airport flight traffic surveillance radar equipment. Aircraft-fueling
14 or other operations in which flammable liquids, vapors or mists may be present shall not be
15 conducted within 100 feet (30 480 mm) of airport ground traffic surveillance radar equipment.
16

17 **[1106.21.1] 2006.21.1 Direction of radar beams.** The beam from ground radar equipment
18 shall not be directed toward fuel storage or loading racks.
19

20 **Exceptions:**

- 21
- 22 1. Fuel storage and loading racks in excess of 300 feet (91 440mm) from airport flight
23 traffic surveillance equipment.
 - 24
 - 25 2. Fuel storage and loading racks in excess of 100 feet (30 480 mm) from airport ground
26 traffic surveillance equipment.
27

28 **SECTION FC [1107] 2007**
29 **HELISTOPS AND HELIPORTS**
30

31 **[1107.1] 2007.1 General.** Helistops and heliports shall be maintained in accordance with this
32 section. Helistops and heliports on buildings or structures shall be constructed in accordance with
33 the construction codes, including the Building Code.
34

35 **[1107.2] 2007.2 Clearances.** The touchdown area shall be surrounded on all sides by a clear area
36 having minimum average width at roof level of 15 feet (4572 mm) but no width less than 5 feet
37 (1524 mm). The clear area shall be maintained.
38

39 **[1107.3] 2007.3 Flammable and Class II combustible liquid spillage.** Landing areas on
40 buildings or structures shall be maintained so as to confine flammable or Class II combustible
41 liquid spillage to the landing area itself, and provisions shall be made to drain such spillage away
42 from exits or stairways serving the helicopter landing area or from a structure housing such exit or
43 stairway.
44

45 **[1107.4] 2007.4 Exits.** Exits and stairways shall be maintained in accordance with the construction
46 codes, including the Building Code.
47

1 [1107.5] **2007.5 Standpipe systems.** Where a building with a rooftop helistop or heliport is
2 equipped with a standpipe system, the system shall be extended to the roof level on which the
3 helistop or heliport is located. All portions of the helistop and heliport area shall be within 150 feet
4 (45 720 mm) of a standpipe system outlet connection.
5

6 [1107.6] **2007.6 Foam protection.** Foam fire-protection capabilities shall be provided for rooftop
7 heliports as required by the construction codes, including the Building Code. Such systems shall
8 be designed, installed, operated and maintained in accordance with FC Chapter 9.
9

10 [1107.6.1] **2007.6.1 Initial foam fire extinguishing system test.** Upon installation, a foam
11 fire extinguishing system shall be tested in accordance with FC Chapter 9. The test shall be
12 conducted at the owner's risk by his or her representative before a representative of the
13 department.
14

15 [1107.6.2] **2007.6.2 Periodic foam fire extinguishing system test.** The foam fire
16 extinguishing system shall be inspected, tested and maintained in accordance with FC Chapter
17 9. Additionally, the foam fire extinguishing system shall be tested at least once every 2 years,
18 as required in [FC3406.4.10.7] FC5706.4.10.7.
19

20 [1107.7] **2007.7 Portable fire extinguishers.** A minimum of one portable fire extinguisher having
21 a minimum 80-B:C rating shall be provided for each permanent takeoff and landing area and for
22 the aircraft parking areas. Installation, inspection and maintenance of these portable fire
23 extinguishers shall be in accordance with FC906.
24

25 [1107.8] **2007.8 Federal approval.** Before operating helicopters from helistops and heliports,
26 approval shall be obtained from the Federal Aviation Administration and any other federal, state
27 or city authority having jurisdiction.
28

29
30 **SECTION FC [1108] 2008**
31 **SEAPLANE BASE OPERATIONS**

32 [1108.1] **2008.1 General.** Seaplane bases shall be operated in accordance with the requirements
33 of FC [1101] 2001 through [1106] 2006, as applicable. Notwithstanding any provision of this code
34 to the contrary, a waterfront liquid motor fuel dispensing facility used for the fueling of seaplanes
35 shall be deemed to constitute a marine liquid motor fuel dispensing facility.
36

37
38 **SECTION FC [1109] 2009**
39 **HELICOPTER LANDING OPERATIONS**

40 [1109.1] **2009.1 General.** Helicopter landing operations, at other than an approved heliport or
41 helistop, shall be conducted in accordance with this section.
42

43 [1109.2] **2009.2 Permit application.** The owner or operator of the helicopter conducting the
44 helicopter landing operation shall make a permit application to the department at least 20 calendar
45 days prior to the proposed landing. The permit applications shall be on such form and include such
46 information and documentation as the commissioner may require, including the following:
47

- 1 1. A site map of the area in which the helicopter landing operation is proposed to be conducted.
- 2
- 3 2. Proof of a liability and casualty insurance policy in an amount to be determined by the
- 4 commissioner but not less than two million dollars. Such insurance policy shall cover the
- 5 permit holder and the permit holder's employees, agents and contractors for any loss, damage
- 6 or injury to persons or property by reason of the conduct of the helicopter landing operation,
- 7 or the failure to comply with any requirement of this chapter or the rules, or the terms and
- 8 conditions of the permit.
- 9
- 10 3. A copy of the pilot's license issued by the Federal Aviation Administration.
- 11
- 12 4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation
- 13 Administration.
- 14
- 15 5. An affidavit of the property owner authorizing the helicopter landing operation on their
- 16 property.
- 17

18 **[1109.3] 2009.3 Required clearances.** The location at which the helicopter landing operations are
19 to be conducted is subject to the approval of the department. The commissioner may specify the
20 open space clearances to be provided.

21
22 **SECTION FC [1110] 2010**
23 **HELICOPTER LIFT OPERATIONS**

24
25 **[1110.1] 2010.1 General.** Helicopter lift operations shall be conducted in accordance with this
26 section.

27
28 **[1110.1.1] 2010.1.1 Department of Buildings approval.** Helicopter lift operations shall not
29 be conducted except when the Commissioner of Buildings has authorized such operation.

30
31 **[1110.2] 2010.2 Permit application.** The owner or operator of the helicopter used to conduct the
32 lift operation shall make application to the department for a permit at least 20 calendar days prior
33 to the proposed lift operation. The permit application shall be on such form and include such
34 information and documentation as the commissioner may require, including the following:

- 35
- 36 1. A site map of the area in which the lifting operation is proposed to be conducted.
- 37
- 38 2. Proof of a liability and casualty insurance policy in an amount to be determined by the
- 39 commissioner but not less than five million dollars. Such insurance policy shall cover the
- 40 permit holder and the permit holder's employees, agents and contractors from any loss,
- 41 damage or injury to persons or property by reason of the conduct of the lift operation, or the
- 42 failure to comply with any requirement of this chapter or the rules, or the terms and
- 43 conditions of the permit.
- 44
- 45 3. A copy of the pilot's license issued by the Federal Aviation Administration.
- 46

1 4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation
2 Administration.

3
4 5.An affidavit of the property owner authorizing the helicopter lift operation on their property.

5
6 **[1110.3] 2010.3 Helicopter fueling.** It shall be unlawful to fuel helicopters in the staging or
7 discharge area.

8
9 **[1110.3.1] 2010.3.1 Portable fuel tanks.** Portable fuel tanks or drums within or on the exterior
10 of the helicopter are prohibited. Auxiliary fuel storage tanks may be used provided they are an
11 integral part of the aircraft's fuel system and of a type meeting the requirements of the Federal
12 Aviation Administration.

13
14 **[1110.4] 2010.4 Smoking.** It shall be unlawful to smoke within 100 feet (30 480 mm) of a fuel
15 storage area or fueling operation. It shall be unlawful to smoke within 100 feet (30 480 mm) of the
16 helicopter staging area or discharge area while lift operations are being conducted.

17
18 **[1110.5] 2010.5 Staging and discharge areas.** The location of the staging and discharge areas,
19 and their distance from any buildings or other impediments to flight, shall be subject to the
20 approval of the commissioner, and shall be arranged and operated as set forth in FC [1110.5.1]
21 2010.5.1 and [1110.5.2] 2010.5.2.

22
23 **[1110.5.1] 2010.5.1 Emergency access.** Entrances to and exits from any premises or other
24 location wherein lifting operations are being conducted shall be safeguarded in accordance
25 with applicable laws, rules and regulations, but shall not be obstructed in a manner that
26 prevents access or egress in the event of an emergency.

27
28 **[1110.5.2] 2010.5.2 Restricted locations.** Bulk plants or terminals or other premises where
29 hazardous operations or occupancies are maintained shall not be used as a staging area or
30 discharge area unless approved by the commissioner.

31
32 **[1110.6] 2010.6 Fire protection.** An adequate supply of water shall be provided at the location
33 where lifting operations are conducted. When the discharge area or other area of the lifting
34 operation requires the use of a fire pump or other auxiliary equipment to augment the water supply,
35 such equipment shall be under the personal supervision of a certificate of fitness holder.

36
37 **[1110.6.1] 2010.6.1 Foam protection.** An air foam nozzle, pick-up tube and a minimum of
38 5 gallons (19 L) of foam, suitable for the fuel hazard presented, shall be available on site.

39
40 **[1110.6.2] 2010.6.2 Portable fire extinguishers.** Both the staging area and discharge area
41 shall be provided with a minimum of two portable fire extinguishers each having a minimum
42 80-B:C rating.

43
44 **[1110.6.3] 2010.6.3 Department monitoring.** Lift operations allowed pursuant to this section
45 may be monitored by representatives of the department to ensure compliance with the
46 requirements of this chapter and the rules. Such representatives shall be allowed within the
47 perimeter of the lift operation for such purpose.

1
2 **[1110.7] 2010.7 Communication.** Radio and/or other two-way wireless communication shall be
3 maintained between the helicopter pilot and the ground at all times during the lift operation. The
4 department representatives monitoring the lifting operation shall be provided with the ability to
5 monitor such communications.
6

7 **[1110.8] 2010.8 Discontinuance.** Department representatives may temporarily suspend or cancel
8 any lifting operation if, in their judgment, conditions exist that endanger public safety.
9

10 **SECTION FC [1111] 2011**
11 **HOT AIR BALLOON OPERATIONS**
12

13 **[1111.1] 2011.1 General.** Hot air balloon operations shall be conducted in accordance with this
14 section.
15

16 **[1111.1.1] 2011.1.1 Storage, handling and use of flammable gas.** The storage, handling and
17 use of LPG or other flammable gas for hot air balloon operations shall additionally be
18 conducted in accordance with FC Chapters [35] 58 and [38] 61, as applicable, and the rules.
19

20 **[1111.2] 2011.2 Permit application.** The owner or operator of the hot air balloon, or in the case
21 of an event involving multiple owners or operators of hot air balloons, the sponsor of such event,
22 shall make application to the department for a permit at least 20 calendar days prior to any
23 anticipated or scheduled operation. Permit applications shall be on such form and include such
24 information and documentation as the commissioner may require, including the following:
25

- 26 1. A site map of the area in which the hot air balloon operation is proposed to be conducted.
27
- 28 2. Proof of a liability and casualty insurance policy in an amount to be determined by the
29 commissioner but not less than two million dollars. Such insurance policy shall cover the
30 permit holder and the permit holder's employees, agents and contractors from any loss,
31 damage or injury to persons or property by reason of the conduct of the lifting operation, or
32 the failure to comply with any requirement of this chapter or the rules, or the terms and
33 conditions of the permit.
34
- 35 3. A copy of the pilot's license issued by the Federal Aviation Administration.
36
- 37 4. A copy of the aircraft's airworthiness certificate issued by the Federal Aviation
38 Administration.
39
- 40 5. An affidavit of the property owner authorizing the hot air balloon operation on their property.
41
- 42 6. All information and documentation required for issuance of a permit for LPG storage,
43 handling and use in connection with the hot air balloon operation pursuant to FC Chapter
44 [38] 61 and the rules.
45

46 **[1111.3] 2011.3 Required clearances.** The location at which hot air balloon operations are to be
47 conducted are subject to the approval of the department, provided, however, that a balloon shall

1 not be secured or filled unless there is at least 150 feet (45 720 mm) of open space in all directions
2 when measured from the center of the balloon.

3
4 **[1111.4] 2011.4 Securing of balloons.** Balloons shall have at least a three-point tie down to
5 substantially immovable objects.

6
7 **[1111.5] 2011.5 Weather conditions.** Hot air balloon operations shall be conducted only under
8 weather conditions conducive to such operation and in no circumstance when prevailing winds
9 exceed 15 miles (24.135 km) per hour.

10
11 **[1111.6] 2011.6 Discontinuance.** Department representatives may temporarily suspend or cancel
12 any hot air balloon operation if, in their judgment, conditions exist that endanger public safety.

13
14
15 **CHAPTER 21**
16 **DRY CLEANING**

17
18 **SECTION FC [1201] 2101**
19 **GENERAL**

20
21 **[1201.1] 2101.1 Scope.** This chapter shall govern the design, installation, operation and
22 maintenance of dry cleaning facilities.

23
24 **[1201.2] 2101.2 Permits.** Permits shall be required as set forth in FC105.6.

25
26 **[1201.3] 2101.3 General.** Dry cleaning facilities shall be designed, installed, operated and
27 maintained in accordance with this chapter.

28
29 **[1201.4] 2101.4 Supervision.** Dry cleaning facilities using Class II or III solvents in dry cleaning
30 systems shall be under the general supervision of a certificate of fitness holder. Such certificate of
31 fitness holder shall be an employee of the dry cleaning facility. The certificate of fitness holder
32 shall monitor the equipment and facilities, ensure that the equipment and facilities are operated
33 and maintained in accordance with this section, and instruct all employees who use or supervise
34 the use of equipment in the proper operation and maintenance of such equipment.

35
36 **Exception:** Dry cleaning facilities may be operated under the general supervision of a person
37 who is not an employee of the dry cleaning facility, provided that such person:

- 38
39 1. Holds a certificate of fitness.
40
41 2. Is an authorized representative of the manufacturer of the dry cleaning equipment, and
42 provides the owner of the dry cleaning facility with appropriate proof of such authority.
43
44 3. Instructs all employees of the dry cleaning facility who use or supervise the use of the
45 equipment in the proper operation and maintenance of the equipment.
46

1 4. Personally conducts a monthly inspection of the equipment and facility to ensure that
2 they are being operated and maintained in accordance with this section.
3

4 5. Records each monthly inspection in a logbook maintained on the premises by the owner
5 of the dry cleaning facility, by making the following entries: the date of the inspection,
6 the name, address, and certificate of fitness number and expiration date of the person
7 conducting the inspection and the certification that the equipment and facility are being
8 [operating] operated and maintained in accordance with this section.
9

10 **[1201.4.1] 2101.4.1 Proof of qualification.** Photocopies of the certificates of fitness of all
11 persons responsible for the supervision of a dry cleaning facility, and of the proof that such
12 person is an authorized representative of the manufacturer, where applicable, shall be
13 maintained on the premises and made available for inspection by any representative of the
14 department.
15

16 **SECTION FC [1202] 2102** 17 **DEFINITIONS**

18
19 **[1202.1] 2102.1 Definitions.** The following terms shall, for the purposes of this chapter and as
20 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
21

22 **DRY CLEANING.** [The process of removing dirt and stains or otherwise cleaning apparel,
23 textiles, rugs and other items with nonaqueous liquid solvents.]
24

25 **DRY CLEANING FACILITY.** [A facility in which dry cleaning and associated operations are
26 conducted, including the office, receiving area and storage rooms.]
27

28 **DRY CLEANING ROOM.** [An occupiable space within a building used for dry cleaning, the
29 installation, storage and/or use of dry cleaning equipment and/or the storage of dry cleaning
30 solvents.]
31

32 **DRY CLEANING SYSTEM.** [Equipment used to perform dry cleaning, including immersion or
33 agitation in solvent of the items to be cleaned, and the extraction of solvent from such items.]
34

35 **SECTION FC [1203] 2103** 36 **CLASSIFICATIONS**

37
38 **[1203.1] 2103.1 Dry cleaning solvent classifications.** Dry cleaning solvents shall be classified
39 according to their flash points as follows:
40

- 41 1. Class I solvents are flammable liquids having a flash point below 100°F (38°C).
- 42
- 43 2. Class II solvents are combustible liquids having a flash point at or above 100°F (38°C) and
44 below 140°F (60°C).
- 45
- 46 3. Class IIIA solvents are combustible liquids having a flash point at or above 140°F (60°C)
47 and below 200°F (93°C).

1
2 4. Class IIIB solvents are combustible liquids having a flash point at or above 200°F (93°C).

3
4 5. Class IV solvents are liquids that are neither flammable nor combustible.

5
6 **[1203.2] 2103.2 Classification of dry cleaning systems and facilities.** Dry cleaning systems shall
7 be classified based on the use of solvents as follows:

8
9 1. Type I—systems using Class I solvents.

10
11 2. Type II—systems using Class II solvents.

12
13 3. Type III-A—systems using Class IIIA solvents.

14
15 4. Type III-B—systems using Class IIIB solvents.

16
17 5. Type IV—systems using Class IV solvents in which dry cleaning is not conducted by the
18 public.

19
20 6. Type V—systems using Class IV solvents in which dry cleaning is conducted by the public.

21
22 **[1203.2.1] 2103.2.1 Multiple solvents.** Dry cleaning facilities using more than one class of
23 dry cleaning system shall be classified based on the numerically lowest type of system.

24
25 **[1203.2.2] 2103.2.2 Spotting and pretreating operations.** Spotting and pretreating operations
26 conducted in accordance with [FC1206] FC2106 shall not affect the classification of the dry
27 cleaning system or facility.

28
29 **[1203.3] 2103.3 Design.** Dry cleaning facilities shall be designed and constructed in accordance
30 with the construction codes, including the Building Code, and located in accordance with the
31 Zoning Resolution, including Sections 32-15(A) and 32-25(D).

32
33 **SECTION FC [1204] 2104**
34 **GENERAL REQUIREMENTS**

35
36 **[1204.1] 2104.1 Prohibited dry cleaning systems.** It shall be unlawful to install, operate or
37 maintain a Type I dry cleaning system.

38
39 **[1204.1.1] 2104.1.1 Allowed use of Class I solvents.** Class I solvents stored, handled and used
40 in the amounts authorized by [FC1206] FC2106 are allowed in dry cleaning facilities.

41
42 **[1204.2] 2104.2 Building services and systems.** Building services and systems shall be designed,
43 installed, operated and maintained in accordance with this section, FC Chapter 6 and the
44 construction codes, including the Building Code.

1 [1204.2.1] **2104.2.1 Ventilation.** Ventilation shall be provided in accordance with the
2 construction codes, including Chapter 5 of the Mechanical Code, and United States
3 Department of Labor regulations, as set forth in 29 CFR Section 1910.1000, as applicable.
4

5 [1204.2.2] **2104.2.2 Heating.** In Type II dry cleaning facilities, heating shall be by indirect
6 means using steam or hot water.
7

8 [1204.2.3] **2104.2.3 Electrical wiring and equipment.** Electrical wiring and equipment in dry
9 cleaning rooms or other portions of the facility exposed to flammable vapors shall be installed
10 in accordance with the Electrical Code.
11

12 [1204.2.4] **2104.2.4 Bonding and grounding.** Storage tanks, treatment tanks, filters, pumps,
13 piping, ducts, dry cleaning units, stills, tumblers, drying cabinets and other dry cleaning
14 equipment, where not inherently electrically conductive, shall be bonded together and
15 grounded. Isolated equipment shall be grounded.
16

17 [1204.2.5] **2104.2.5 Smoking prohibited.** It shall be unlawful to smoke in a dry cleaning
18 facility. "NO SMOKING" signs in compliance with the requirements of FC310 shall be
19 conspicuously posted.
20

21 **SECTION FC [1205] 2105**
22 **OPERATING AND MAINTENANCE REQUIREMENTS**
23

24 [1205.1] **2105.1 General.** Dry cleaning systems shall be operated and maintained in compliance
25 with the requirements of this section, the manufacturer's specifications and the construction codes,
26 including the Building Code.
27

28 [1205.1.1] **2105.1.1 Written instructions.** The manufacturer's manuals for the installation,
29 operation and maintenance of the equipment shall be maintained on the premises and made
30 available for inspection by any representative of the department.
31

32 [1205.1.1.1] **2105.1.1.1 Type II, III-A, III-B and IV systems.** Type II, III-A, III-B and
33 IV dry cleaning systems shall be operated in accordance with the instructions provided by
34 the manufacturer. The owner shall ensure that all persons operating dry cleaning equipment
35 comply with such instructions.
36

37 [1205.1.1.2] **2105.1.1.2 Type V systems.** Operating instructions for customer use of Type
38 V dry cleaning systems shall be conspicuously posted in a location near the dry cleaning
39 equipment. A telephone number shall be provided for emergency assistance.
40

41 [1205.1.2] **2105.1.2 Equipment identification.** The manufacturer shall permanently affix to
42 dry cleaning equipment nameplates indicating the class of solvent for which each piece of
43 equipment is designed. The name of the dry cleaning solvent approved for use in dry cleaning
44 equipment shall be clearly and conspicuously marked or posted at the fill connection of the
45 equipment.
46

1 [1205.1.3] **2105.1.3 Prohibited operations.** It shall be unlawful to dry clean by immersion
2 and agitation in open systems.

3
4 [1205.1.4] **2105.1.4 Prohibited use of solvent.** Only solvents of a type listed for a particular
5 piece of equipment shall be used in such equipment.

6
7 [1205.1.5] **2105.1.5 Equipment maintenance and housekeeping.** Proper operating practices
8 and maintenance shall be observed in order to prevent the leakage of solvent or the
9 accumulation of lint. The handling of waste generated by dry cleaning operations and the
10 maintenance of facilities shall comply with the requirements of this section.

11
12 [1205.1.5.1] **2105.1.5.1 Floors.** Class I and II liquids as defined in [FC3402] FC202 shall
13 not be used for cleaning floors.

14
15 [1205.1.5.2] **2105.1.5.2 Filters.** Filter residue and other waste containing solvent shall be
16 stored in covered metal containers and disposed of lawfully.

17
18 [1205.1.5.3] **2105.1.5.3 Lint.** Lint and other waste shall be removed from traps daily,
19 deposited in approved waste cans and disposed of lawfully. Lint traps shall remain in place
20 while the dry cleaning equipment is in operation.

21
22 [1205.1.5.4] **2105.1.5.4 Customer areas.** In Type V dry cleaning systems, customer areas
23 shall be kept free of rubbish and other combustible waste.

24
25 [1205.2] **2105.2 Type II systems.** Type II dry cleaning systems shall be operated in accordance
26 with the following additional requirements.

27
28 [1205.2.1] **2105.2.1 Inspection of items.** Items to be dry cleaned shall be searched thoroughly,
29 and foreign materials, including matches and metallic substances, shall be removed.

30
31 [1205.2.2] **2105.2.2 Transfer.** In removing dry cleaned items from the washer, provision shall
32 be made to minimize the dripping of solvent onto the floor. Where items are transferred from
33 a washer to a drain tub, a nonferrous metal drip apron shall be placed so that the apron rests on
34 the drain tub and the cylinder of the washer.

35
36 [1205.2.3] **2105.2.3 Ventilation.** A mechanical ventilation system shall be installed in dry
37 cleaning rooms and in drying rooms in accordance with the construction codes, including the
38 Mechanical Code. The ventilation system shall operate automatically when the dry cleaning
39 equipment is in operation and shall have manual controls at an approved location.

40
41 [1205.3] **2105.3 Type III, IV and V systems.** Type III, IV and V dry cleaning systems shall be
42 provided with an automatically activated exhaust ventilation system as required and in accordance
43 with the construction codes, including the Mechanical Code.

44
45 [1205.4] **2105.4 Periodic inspection and testing.** All dry cleaning equipment using Class II or III
46 solvents shall be inspected and tested on at least an annual basis. The owner of the dry cleaning
47 facility shall remove from service any equipment that is found to be defective, and shall promptly

1 repair such equipment or remove it from the premises. Such equipment shall not be returned to
2 service until it has been inspected and tested. All such inspection and testing shall be performed
3 by a person holding a certificate of fitness.
4

5 **[1205.4.1] 2105.4.1 Inspection reports.** The individual performing the inspection and testing
6 of equipment shall prepare a written report identifying any defects in the condition and
7 operation of the equipment and/or certifying that the equipment can be safely operated in
8 accordance with this chapter. A certification that all equipment in service is in proper working
9 order in accordance with this chapter shall be maintained on the premises for 3 years and made
10 available for inspection by any representative of the department.
11

12 **[1205.5] 2105.5 Filling and emptying.** The filling and emptying of dry cleaning equipment with
13 Class II or III solvents shall be performed by a certificate of fitness holder. Each filling and
14 emptying of dry cleaning equipment with a Class II or III solvent shall be recorded in a logbook.
15 Such records shall include the date of the filling or emptying, the type and amount of dry cleaning
16 solvent, the equipment filled or emptied, and the name and certificate number of the certificate of
17 fitness holder who performed the filling or emptying.
18

19 **SECTION FC [1206] 2106**
20 **SPOTTING AND PRETREATING**
21

22 **[1206.1] 2106.1 General.** The storage, handling and use of dry cleaning solvents for spotting and
23 pretreating operations in any dry cleaning facility shall comply with the requirements of this
24 section, based on the classification of the solvent.
25

26 **[1206.2] 2106.2 Class I solvents.** The maximum quantity of Class I solvents allowed at any dry
27 cleaning facility shall be 1 gallon (4 L). Class I solvents shall be stored in approved metal
28 containers or safety cans of not more than 2 quarts (2 L) capacity.
29

30 **[1206.3] 2106.3 Class II and III solvents.** Spotting and pretreating, including scouring and
31 brushing, shall be conducted with Class II or III solvents. The maximum quantity of Class II or III
32 solvents allowed at any work station shall be 1 gallon (4 L). In an occupancy other than a Group
33 H-2 occupancy, the aggregate quantities of solvents shall not exceed the maximum allowable
34 quantity per control area for use-open systems.
35

36 **[1206.3.1] 2106.3.1 Spotting tables.** Scouring, brushing or spotting tables on which items are
37 soaked in solvent shall have a liquid-tight top with a curb on all sides not less than 1 inch (25
38 mm) high. The top of the table shall be pitched to ensure thorough draining to a 1½-inch (38-
39 mm) drain connected to an approved container.
40

41 **[1206.3.2] 2106.3.2 Special handling.** Items that may be damaged from being washed in the
42 washing equipment may be manually cleaned in scrubbing tubs. Scrubbing tubs shall comply
43 with the following requirements:
44

- 45 1. Only Class II or III liquids shall be used.
- 46
- 47 2. The total amount of solvent used in such tubs shall not exceed 3 gallons (11 L).

1
2 3. Scrubbing tubs shall be secured to the floor.

3
4 4. Scrubbing tubs shall be provided with permanent 1½-inch (38-mm) drains. Such drains
5 shall be provided with a trap and shall be connected to an approved container.

6
7 **[1206.3.3] 2106.3.3 Ventilation.** Scrubbing tubs, scouring, brushing or spotting operations
8 shall be located such that solvent vapors are captured and exhausted by the ventilating system.

9
10 **[1206.3.4] 2106.3.4 Bonding and grounding.** Metal scouring, brushing and spotting tables
11 and scrubbing tubs shall be permanently and effectively bonded and grounded.

12
13 **[1206.4] 2106.4** Reserved.

14
15 **[1206.5] 2106.5 Prohibited spotting and pretreating operation.** It shall be unlawful to store,
16 handle or use any Class I, Class II or Class III solvent for spotting or pretreating operations in any
17 Type V dry cleaning facility or in connection with the use of any Type V dry cleaning system.

18
19 **SECTION FC [1207] 2107**
20 **DRY CLEANING SYSTEMS**

21
22 **[1207.1] 2107.1 General equipment requirements.** Dry cleaning systems, including dry cleaning
23 units, washing equipment, stills, drying cabinets, tumblers, and their appurtenances, including
24 pumps, piping, valves, filters and solvent coolers, shall be designed, installed, operated and
25 maintained in accordance with NFPA 32, the manufacturer's specifications, and the construction
26 codes, including the Building Code.

27
28 **[1207.2] 2107.2 Type II systems.** Type II dry cleaning and solvent tank storage rooms shall not
29 be located below grade or above the lowest floor level of the building and shall comply with the
30 requirements of FC [1207.2.1] 2107.2.1 through [1207.2.3] 2107.2.3.

31
32 **Exception:** Solvent storage tanks installed underground, in vaults or in special enclosures in
33 accordance with FC Chapter [34] 57.

34
35 **[1207.2.1] 2107.2.1 Firefighting access.** Type II dry cleaning facilities shall be located so that
36 access is provided and maintained from at least one side for firefighting and fire control
37 purposes in accordance with FC503 and the construction codes, including the Building Code.

38
39 **[1207.2.2] 2107.2.2 Means of egress.** Type II dry cleaning rooms shall have not less than two
40 means of egress through doors located at opposite ends of the room, at least one of which shall
41 lead directly to the outdoors.

42
43 **[1207.2.3] 2107.2.3 Spill control and secondary containment.** Curbs, drains, or other
44 provisions for spill control and secondary containment shall be provided in accordance with
45 [FC2704.2] FC5004.2 to collect solvent leakage and fire protection water and direct it to a safe
46 location.

1 **[1207.3] 2107.3 Solvent storage tanks.** Solvent storage tanks for Class II, IIIA and IIIB liquids
2 shall conform to the requirements of FC Chapter [34] 57 and be located underground, or outdoors,
3 aboveground.

4
5 **Exception:** Indoor storage tanks in compliance with the requirements of NFPA 32 and FC
6 Chapter [34] 57.

7
8 **SECTION FC [1208] 2108**
9 **FIRE PROTECTION**

10
11 **[1208.1] 2108.1 General.** Where required by this section, fire protection devices, equipment and
12 systems shall be designed, installed, operated and maintained in accordance with FC Chapter 9
13 and the construction codes, including the Building Code.

14
15 **[1208.2 Sprinkler system.** Dry cleaning facilities containing Type II, Type III-A or Type III-B
16 dry cleaning systems shall be protected throughout by a sprinkler system.

17
18 **1208.3 Fire extinguishing systems.** Type II dry cleaning systems in Type II dry cleaning facilities
19 shall be protected by a fire extinguishing system.]

20
21 **2108.2 Fire extinguishing systems in newly-established dry cleaning facilities.** Dry cleaning
22 facilities established after the effective date of FC2108.2 shall be protected throughout by a
23 sprinkler system, provided, however, that a heretofore lawfully-existing dry cleaning
24 establishment in a newly-established facility may comply with the requirements of FC2108.3 if
25 the newly-established facility does not constitute a change in the use or occupancy of the premises,
26 as determined by the Department of Buildings. The sprinkler system shall be designed and installed
27 in accordance with the Building Code.

28
29 **2108.2.1 Type II dry cleaning facilities.** Type II dry cleaning facilities shall be protected
30 throughout by a sprinkler system. Type II dry cleaning units, washer-extractors and drying
31 tumblers in such facilities shall additionally be protected by an approved automatic
32 non-sprinkler fire extinguishing system installed and maintained in accordance with FC904.

33
34 **2108.3 Fire extinguishing systems in lawfully existing dry cleaning facilities.** Type III dry
35 cleaning facilities lawfully existing as of the effective date of this provision (FC2108.3) shall be
36 subject to the design and installation requirements set forth in FC 2108.3.1 through 2108.3.3, as
37 applicable.

38
39 **2108.3.1 Fully-sprinklered facilities.** A Type III dry cleaning facility protected throughout
40 by a sprinkler system designed and installed in accordance with the Building Code shall
41 maintain such existing fire protection system and is not subject to the dry cleaning system
42 design requirements of FC2108.3.3.

43
44 **2108.3.2 Partially-sprinklered facilities.** A Type III dry cleaning facility in which the dry
45 cleaning system is protected by one or more sprinkler heads shall maintain such existing fire
46 protection system and is not subject to the dry cleaning system design requirements of
47 FC2108.3.3. Any Type III dry cleaning equipment newly-introduced after the effective date of

1 this provision shall comply with the requirements of FC2108.3.3(2). The aggregate quantity of
2 Type III dry cleaning solvent stored, handled and used in the dry cleaning facility, including
3 the solvent used in the dry cleaning system, shall not exceed 330 gallons (1249 L).
4

5 **2108.3.3 Unprotected facilities.** A lawfully existing Type III dry cleaning facility that is not
6 in compliance with FC 2108.3.1 or 2108.3.2 shall, upon alteration on or after the effective date
7 of this provision (FC2108.3), be subject to the following requirements:
8

9 1. Two or more sprinkler heads designed and installed in accordance with the Building
10 Code shall protect the dry cleaning system; and
11

12 2. The dry cleaning system shall be designed and listed to accomplish one or more of the
13 following criteria:
14

15 2.1. Prevent oxygen concentrations from reaching 8 percent or more by volume; and/or
16

17 2.2. Keep the temperature of the solvent at least 30°F (16.7°C) below the flash point;
18 and/or
19

20 2.3. Maintain the solvent vapor concentration at a level lower than 25 percent of the
21 lower explosive limit (LEL); and/or
22

23 2.4. Utilize equipment approved for use in Class I, Division 2 hazardous locations in
24 accordance with the Electrical Code; and/or
25

26 2.5. Utilize an integrated dry chemical, clean agent or water mist automatic fire-
27 extinguishing system designed in accordance with Chapter 9; and
28

29 3. The occupancy housing the dry cleaning establishment shall be in compliance with the
30 Building Code and Mechanical Code. If not required and/or constructed with a 2-hour
31 fire separation, the dry cleaning equipment shall be protected by a 1-hour fire rated
32 enclosure provided with mechanical ventilation in accordance with the Mechanical Code.
33

34 4. The aggregate quantity of Type III-A dry cleaning solvent stored, handled and used in
35 the dry cleaning facility, including the solvent used in the dry cleaning system, shall not
36 exceed 330 gallons (1249 L).
37

38 5. The aggregate quantity of Type III-B dry cleaning solvent stored, handled and used in
39 the dry cleaning facility, including the solvent used in the dry cleaning system, shall not
40 exceed 660 gallons (2498 L).
41

42 **[1208.4] 2108.4 Portable fire extinguishers.** Portable fire extinguishers shall be provided and
43 maintained in accordance with this section and FC906. A minimum of two 2-A:10-B:C rated
44 portable fire extinguishers shall be provided near the doors inside dry cleaning rooms containing
45 Type II, Type III-A and Type III-B dry cleaning systems.
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CHAPTER 22
COMBUSTIBLE DUST-PRODUCING OPERATIONS

SECTION FC [1301] 2201
GENERAL

[1301.1] **2201.1 Scope.** This chapter shall govern combustible dust-producing operations, and the equipment and processes utilized in connection with such operations in order to minimize and mitigate dust explosion hazards.

[1301.2] **2201.2 Permits.** Permits shall be required as set forth in FC105.6.

[1301.3] **2201.3 General.** Combustible dust-producing operations, including manufacturing, processing and handling operations, shall be conducted in accordance with this chapter. All devices, equipment, systems and processes utilized in connection with such operations shall be designed, installed, operated and maintained in accordance with this chapter.

2201.3.1 Powder coating operations. Powder coating shall additionally comply with the requirements of FC Chapter 24.

2201.3.2 Woodworking facilities. Operations that produce deflagrable wood dust shall additionally comply with the requirements of FC Chapter 28.

2201.3.3 Special effect. Special effects utilizing combustible dust shall additionally comply with the requirements of FC Chapter 56.

SECTION FC [1302] 2202
DEFINITIONS

[1302.1 Definition] **2202.1 Definitions.** The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

COMBUSTIBLE DUST. [Finely divided solid material that is 420 microns or less in diameter, will pass through a U.S. standard No. 40 sieve and, when dispersed in air in sufficient concentrations, can be ignited by a flame, spark or other source of ignition.]

DEFLAGRABLE WOOD DUST.

SECTION FC [1303] 2203
PRECAUTIONS

[1303.1] **2203.1 Sources of ignition.** It shall be unlawful to smoke, or use heating or other devices employing an open flame or spark-producing equipment, in areas where combustible dust is generated, processed or otherwise stored, handled or used.

[1303.2] **2203.2 Housekeeping.** Accumulation of combustible dust shall be kept to a minimum indoors. Accumulated combustible dust shall be collected by vacuum cleaning or other means that

1 will not place combustible dust into suspension in air. Forced air or similar methods shall not be
2 used to remove dust from surfaces. When a normally inaccessible area such as a duct or cockloft
3 is made accessible for purposes of an alteration, repair or other reason, any accumulation of
4 combustible dust shall be removed from such area.

5
6 **SECTION FC [1304] 2204**
7 **[EXPLOSION PROTECTION] ADDITIONAL REQUIREMENTS**
8

9 **[1304.1 Standards.** Measures shall be] **2204.1 Explosion protection standards.** An approved
10 dust collection system shall be installed and/or other measures taken to [prevent and control dust
11 explosions wherever] collect and otherwise manage combustible dust generated by combustible
12 dust-producing operations [are conducted. Such measures shall comply with the applicable
13 operation and maintenance requirements of the codes and standards listed in FC Table 1304.1] in
14 order to prevent or mitigate combustible dust explosions. Facilities in which combustible dust-
15 producing operations are to be conducted shall be designed, installed, operated and maintained in
16 accordance with the industry or product-specific standards set forth in FC Table 2204.1.

17
18 **FC TABLE [1304.1] 2204.1**
19 **EXPLOSION PROTECTION STANDARDS**

STANDARD	SUBJECT
NFPA 61	Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
NFPA 69	Explosion Prevention Systems
NFPA 85	Boiler and Combustion Systems Hazards Code
NFPA 120	Fire Prevention and Control in Coal Mines
NFPA 484	Combustible Metals
<u>NFPA 652</u>	<u>Fundamentals of Combustible Dust</u>
NFPA 654	Prevention of Fires and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
NFPA 655	Prevention of Sulfur Fires and Explosions
<u>NFPA 664</u>	<u>Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities</u>
Electrical Code	Electrical Installations

20
21 **2204.2 Dust hazard analysis.** A dust hazard analysis shall be conducted in accordance with NFPA
22 652 upon commencement of combustible dust-producing operations for any operation generating
23 visible atmospheric dust and/or dust accumulations at locations other than the point of dust
24 generation, to determine whether:

- 25
26 1. the equipment designed and installed to collect combustible dust and other mitigation
27 measures is effective in achieving its design objectives and is preventing fugitive dust; or
28
29 2. the operation is generating an amount of combustible dust as to require the installation of
30 combustible dust collection equipment and other mitigation measures.
31

32
33 **CHAPTER 23**
34 **MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES**
35

36 **SECTION FC [2201] 2301**
37 **GENERAL**
38

1 [2201.1] **2301.1 Scope.** This chapter shall govern the design, installation, operation and
2 maintenance of fleet motor fuel-dispensing facilities, full-service motor fuel-dispensing facilities,
3 self-service motor fuel-dispensing facilities, and repair garages.

4
5 [2201.2] **2301.2 Permits.** Permits shall be required as set forth in FC105.6.

6
7 [2201.3] **2301.3 Design and installation documents.** Design and installation documents shall be
8 submitted to the department for review and approval in accordance with FC105.4 prior to the
9 installation, alteration, repair or construction of fleet motor fuel-dispensing facilities, full-service
10 motor fuel-dispensing facilities, [and] self-service motor fuel-dispensing facilities [in accordance
11 with FC105.4], and repair garages for vehicles fueled by lighter-than-air motor fuels. Design and
12 installation documents shall include the location of all storage tanks, dispensers, compressors,
13 pipng, fire protection systems and emergency shutdown devices.

14
15 [2201.3.1] **2301.3.1 Compliance with other codes.** The installation or alteration of a liquid
16 motor fuel storage and dispensing system regulated by this chapter shall not be approved by the
17 department unless the design and installation documents demonstrate that the proposed work
18 complies with the regulations of the United States Environmental Protection Agency, as set forth
19 in 40 CFR Part 280, and the regulations of the New York State Department of Environmental
20 Conservation, as set forth in 6 NYCRR [Parts 612,] Part 613 [and 614,] as applicable.

21
22 [2201.4] **2301.4 General.** All fleet motor fuel-dispensing facilities, full-service motor fuel-
23 dispensing facilities, self-service motor fuel-dispensing facilities and repair garages shall be
24 designed, installed, operated and maintained in accordance with this chapter, FC Chapter [34] 57
25 and the construction codes, including the Building Code, the Fuel Gas Code and the Mechanical
26 Code, and, as applicable, NFPA 30A.

27
28 [2201.5] **2301.5 Electrical.** Electrical wiring and equipment shall be suitable for the locations in
29 which they are installed and shall comply with the requirements of FC605, NFPA 30A and the
30 Electrical Code, as applicable. Upon request, proof of compliance with the Electrical Code shall
31 be filed with the department.

32
33 [2201.6] **2301.6 Heat-producing appliances.** Heat-producing appliances shall be suitable for the
34 locations in which they are installed and shall comply with the requirements of the construction
35 codes, including the Building Code, the Mechanical Code and the Fuel Gas Code, and NFPA 2
36 and 30A, as applicable.

37
38 [2201.7] **2301.7 Supervision of dispensing operations.** The dispensing of motor fuel at fleet
39 motor fuel-dispensing facilities, full-service motor fuel-dispensing facilities and self-service motor
40 fuel-dispensing facilities shall be conducted by or under the personal supervision of a certified
41 attendant, who shall be responsible for ensuring that dispensing operations are conducted and the
42 facility is maintained in accordance with this chapter and the rules.

43
44 [2201.8] **2301.8 Supervision of defueling operations.** The defueling of liquid motor fuel from
45 the fuel tank of a motor vehicle shall be conducted by or under the personal supervision of a person
46 holding a certificate of fitness.

1 **[2201.9] 2301.9 Certificate of license.** Persons who install, alter, test or repair any automotive or
2 marine liquid motor fuel storage and dispensing systems, including liquid motor fuel storage and
3 dispensing systems at a bulk plant or terminal, shall hold a certificate of license or shall be
4 employed by and perform such duties under the general supervision of a person holding such
5 certificate.

6
7 **[2201.10] 2301.10 Records of inspections and testing.** Records of all inspections and testing
8 required by this chapter shall be kept in a bound log book or other approved recordkeeping,
9 maintained on the premises for a minimum of 4 years, except that records of the required 5 year tests
10 as set forth in FC [2206.9.4] 2306.9.4, [2206.9.6] 2306.9.6 and [2208.7.4.1] 2308.7.4.1 shall be
11 maintained on the premises for a minimum of 6 years.

12
13 **[2201.11] 2301.11 Prohibition.** It shall be unlawful to operate as a self-service motor fuel-
14 dispensing facility any motor fuel-dispensing facility or a motor fuel dispenser installed and
15 approved as a fleet or full-service motor fuel-dispensing facility or dispenser.

16
17 **SECTION FC [2202] 2302**
18 **DEFINITIONS**

19
20 **[2202.1] 2302.1 Definitions.** The following terms shall, for the purposes of this chapter and as
21 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

22
23 **ALCOHOL-BLENDED MOTOR FUEL.** [Gasoline blended with ethanol or other alcohol
24 with an alcohol concentration greater than 15 percent by volume.]

25
26 **BIODIESEL.**

27
28 **CERTIFIED ATTENDANT.** [A person holding a certificate of fitness for the supervision of a
29 full-service motor fuel-dispensing facility or self-service motor fuel-dispensing facility.]

30
31 **CNG.** [Compressed natural gas.]

32
33 **DISPENSING DEVICE, OVERHEAD TYPE.** [A dispensing device mounted above a
34 dispensing area, typically within a canopy structure, and characterized by the use of an overhead
35 hose reel.]

36
37 **FLAMMABLE LIQUID MOTOR FUEL.** [Gasoline or other flammable liquids used as fuel in
38 the operation of motor vehicles, motorcycles, watercraft and aircraft.]

39
40 **FLEET MOTOR FUEL-DISPENSING FACILITY.** [A motor fuel-dispensing facility wherein
41 motor fuel is stored and/or dispensed into the fuel tank of a motor vehicle, motorcycle, marine
42 vessel or watercraft owned or operated by or on behalf of the owner of the facility, and where such
43 dispensing operations are conducted by persons employed by or on behalf of the owner of the
44 facility. There are four approved types of fleet motor fuel-dispensing facilities:

45 Fleet automotive hydrogen motor fuel-dispensing facility (motor vehicles)

46 Fleet automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)

1 Fleet CNG motor fuel-dispensing facility (motor vehicles, marine vessels and watercraft)
2 Fleet marine liquid motor fuel-dispensing facility (marine vessel and watercraft)]
3

4 **FULL-SERVICE MOTOR FUEL-DISPENSING FACILITY.** [A motor fuel-dispensing
5 facility wherein motor fuel is dispensed into the fuel tank of motor vehicles, motorcycles, marine
6 vessels or watercraft by a certified attendant or, when under the personal supervision of a certified
7 attendant, by persons employed by or on behalf of the owner of the facility. There are four
8 approved types of full-service motor fuel-dispensing facilities:
9

- 10 Full-service automotive hydrogen motor fuel-dispensing facility (motor vehicles)
- 11 Full-service automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)
- 12 Full-service CNG motor fuel-dispensing facility (motor vehicles, marine vessels and
13 watercraft)
- 14 Full-service marine liquid motor fuel-dispensing facility (marine vessel and watercraft)]
15

16 **LIQUEFIED NATURAL GAS (LNG).** [A fluid in the liquid state composed predominantly of
17 methane and which may contain minor quantities of ethane, propane, nitrogen or other components
18 normally found in natural gas.]
19

20 **LIQUID MOTOR FUEL.** [Gasoline, diesel fuel or other flammable or combustible liquids used
21 as fuel in the operation of motor vehicles, motorcycles, marine vessels and watercraft.]
22

23 **LIQUID MOTOR FUEL STORAGE AND DISPENSING SYSTEM.** [A liquid motor fuel
24 storage tank and all motor fuel storage and dispensing equipment associated with such tank,
25 including the tank, piping, valves, fill connection catchment basins, vent lines, pumps, dispensing
26 devices and any other ancillary equipment.]
27

28 **MOTOR VEHICLE.** [A vehicle or other conveyance having more than two running wheels and
29 using liquid motor fuel or flammable gas as fuel for generating motive power, except such vehicles
30 as have a storage tank with a maximum capacity for less than 2 gallons (7.6 L) of liquid motor fuel
31 or flammable gas that generates energy that is equivalent to the energy generated by 2 gallons
32 (7.6 L) of gasoline.]
33

34 **REPAIR GARAGE.** [A building, structure or portion thereof used for servicing or repairing
35 motor vehicles or motorcycles.]
36

37 **SELF-SERVICE MOTOR FUEL-DISPENSING FACILITY.** [A motor fuel-dispensing
38 facility wherein motor fuel is dispensed by customers of the facility from a motor fuel storage and
39 dispensing system into the fuel tank of motor vehicles or motorcycles. There are two approved
40 types of self-service motor fuel-dispensing facilities:
41

- 42 Self-service automotive liquid motor fuel-dispensing facility (motor vehicles and motorcycles)
- 43 Self-service CNG motor fuel-dispensing facility (motor vehicles)]
44

45 **SECTION FC [2203] 2303**
46 **LOCATION OF LIQUID MOTOR FUEL DISPENSING DEVICES**
47

1 **[2203.1] 2303.1 Location of dispensing devices.** Dispensing devices for liquid motor fuel storage
2 and dispensing systems shall be located as set forth in FC [2203.1.1] 2303.1.1 and [2203.1.2]
3 2303.1.2.

4
5 **[2203.1.1] 2303.1.1 Outdoor dispensing devices.** When installed outdoors, dispensing
6 devices shall be located as follows:

- 7
8 1. Ten feet (3048 mm) or more from lot lines and building or structure openings.
9
10 2. Ten feet (3048 mm) or more from buildings or structures having combustible exterior
11 wall surfaces or buildings or structures having noncombustible exterior wall surfaces that
12 are not part of a 1-hour fire-resistance-rated assembly or buildings or structures having
13 combustible overhangs.

14
15 **Exception:** Canopies constructed in accordance with the construction codes, including
16 the Building Code, providing weather protection for the motor fuel dispensers.

- 17
18 3. Such that all portions of the vehicle being fueled will be on the premises of the motor
19 fuel-dispensing facility.
20
21 4. Such that the nozzle, when the hose is fully extended, will not reach within 5 feet (1524
22 mm) of building or structure openings.
23
24 5. Twenty feet (6096 mm) or more from fixed sources of ignition.
25
26 6. Twenty-five feet (7620 mm) or more from the nearest subway grating, entrance or exit.

27
28 **[2203.1.2] 2303.1.2 Indoor dispensing devices.** When installed indoors, the dispensing area
29 shall be located at street level, with no dispenser located more than 50 feet (15 240 mm) from
30 an exit or entrance to the building or structure used by motor vehicles.

31
32 **SECTION FC [2204] 2304**
33 **DISPENSING OF LIQUID MOTOR FUEL**
34

35 **[2204.1] 2304.1 General.** The dispensing of liquid motor fuels at motor fuel-dispensing facilities,
36 and the design, installation, operation and maintenance of liquid motor fuel storage and dispensing
37 systems and facilities shall be in accordance with this section.

38
39 **[2204.1.1] 2304.1.1 Prohibition.** It shall be unlawful to dispense motor fuel into a vehicle
40 while:

- 41
42 1. smoking;
43
44 2. using or maintaining an open flame;
45
46 3. the engine of the vehicle being fueled is not shut down;
47

1 4. using any object to override, bypass or otherwise render the fuel dispensing nozzle's
2 manual hold-open design feature inoperable.
3

4 **[2204.1.2] 2304.1.2 Emergency fuel shutoff.** An approved, clearly identified and readily
5 accessible emergency fuel shutoff switch shall be provided at an approved location to
6 immediately shut down the transfer of fuel to the fuel dispensers in the event of a fuel spill or
7 other emergency and activate an alarm audible in the dispensing area and any control booth.
8 Such audible device may be the same device used to indicate activation of the fire
9 extinguishing system installed to protect the fuel dispensers. An emergency fuel shutoff switch
10 for outdoor fuel dispensers shall be located within 100 feet (30 480 mm) of, but not less than
11 20 feet (6096 mm) from, the fuel dispensers. For indoor fuel dispensers, the emergency fuel
12 shutoff switch shall be installed at an approved location. An approved sign shall be posted on
13 or immediately adjacent to the emergency fuel shutoff switch, which reads: EMERGENCY
14 FUEL SHUTOFF. Such emergency fuel shutoff switches shall be of a type that must be reset
15 manually.
16

17 **[2204.1.3] 2304.1.3 Lighting.** Dispensing areas shall be well lighted whenever dispensing is
18 being conducted.
19

20 **[2204.1.4] 2304.1.4 Dispensing area signage.** Durable signs shall be conspicuously posted in
21 dispensing areas in motor fuel-dispensing facilities in compliance with the requirements of FC
22 [2204.1.4.1] 2304.1.4.1 through [2204.1.4.4] 2304.1.4.4.
23

24 **[2204.1.4.1] 2304.1.4.1 Operating instructions.** A sign setting forth dispenser operating
25 instructions shall be posted on every dispenser. Such sign shall also indicate the location
26 of the emergency fuel shutoff switches required by [FC2204.1.2] FC2304.1.2.
27

28 **[2204.1.4.2] 2304.1.4.2 Fuel dispensing warning sign.** A warning sign that reads as
29 follows shall be posted on or immediately adjacent to each dispenser:
30

- 31 1. No smoking.
- 32
- 33 2. Shut off engine.
- 34
- 35 3. Before fueling, discharge any static electricity by touching a metal surface. Repeat
36 before removing nozzle.
- 37
- 38 4. If a fire starts, do not remove nozzle—leave the area immediately.
- 39
- 40 5. It is unlawful and dangerous to dispense fuel into unapproved containers or to fill
41 portable containers in or on a motor vehicle.
- 42
- 43 6. It is unlawful for anyone other than the certified attendant to fill portable containers.
44

45 **[2204.1.4.3] 2304.1.4.3 Alcohol-blended motor fuel notice.** A sign or marking indicating
46 the type and concentration of alcohol in the motor fuel being dispensed shall be posted on
47 or affixed to each dispenser dispensing alcohol-blended motor fuel.

1
2 [2204.1.4.4] **2304.1.4.4 Emergency procedures.** A sign setting forth emergency
3 procedures that reads as follows shall be posted in the dispensing area, or other location
4 designated in this section:

5
6 IN CASE OF FIRE OR SPILL:

7
8 USE THE EMERGENCY FUEL SHUTOFF SWITCH
9 TO STOP THE FLOW OF FUEL

10
11 *(for flammable fuel dispensers)*

12 ACTIVATE THE FIRE EXTINGUISHING SYSTEM
13 PROTECTING THE DISPENSING AREA.

14 (SWITCH LOCATION):

15 *(indicate location)*

16
17 DIRECT VEHICLE OCCUPANTS TO EXIT VEHICLES
18 AND LEAVE AREA IMMEDIATELY

19
20 NOTIFY THE FIRE DEPARTMENT (CALL 911)
21 (FACILITY ADDRESS)

22 *(indicate address, with cross-street reference).*

23
24 KEEP ALL PERSONS AWAY FROM THE AREA.

25
26 [2204.1.5] **2304.1.5 Emergency telephone.** A telephone not requiring a coin to operate or
27 another approved, clearly identified means to notify the department, shall be provided at the
28 facility in an approved location.

29
30 [2204.1.6] **2304.1.6 Dispensing on piers, docks or wharves.** Flammable liquid motor fuel
31 shall not be dispensed into the fuel tanks of motor vehicles imported by ship to this country
32 while on any pier, dock or wharf.

33
34 [2204.1.7] **2304.1.7 Dispensing into portable containers.** The dispensing of liquid motor fuel
35 into portable containers shall comply with the requirements of FC [2204.1.7.1] **2304.1.7.1**
36 through [2204.1.7.5] **2304.1.7.5**.

37
38 [2204.1.7.1] **2304.1.7.1 Approved containers required.** Liquid motor fuel shall not be
39 dispensed into a portable container unless such container is of approved material and
40 construction, and has a tight closure with screwed or spring-loaded cover so designed that
41 the contents can be dispensed without spilling. Liquids shall not be dispensed into portable
42 tanks or cargo tanks.

43
44 [2204.1.7.2] **2304.1.7.2 Container capacity.** Liquid motor fuel shall be dispensed into
45 approved containers with an individual capacity not greater than 2½ gallons (9.5 L).
46

1 [2204.1.7.3] **2304.1.7.3 Nozzle operation.** When liquid motor fuel is being dispensed into
2 a portable container the fuel dispensing nozzle shall be manually held open during the
3 dispensing operation, whether or not the nozzle is provided with a latch-open device.
4

5 [2204.1.7.4] **2304.1.7.4 Location of containers being filled.** Portable containers shall not
6 be filled while located inside the trunk, passenger compartment or truck bed of a motor
7 vehicle or upon a marine vessel or watercraft.
8

9 [2204.1.7.5] **2304.1.7.5 Certified attendant.** Only a certified attendant shall dispense
10 liquid motor fuel into portable containers.
11

12 [2204.1.8] **2304.1.8 Dispensing from portable containers.** No motor vehicle, motorcycle,
13 marine vessel or watercraft shall be fueled from a portable container while indoors.
14

15 [2204.1.9] **2304.1.9 Vegetation.** Weeds, grass, vines, brush or other vegetation shall not be
16 maintained within 10 feet (3048 mm) of any aboveground tank, tank fill connection or
17 dispensing area.
18

19 [2204.1.10] **2304.1.10 Combustible waste.** Rubbish and other combustible waste shall not be
20 stored within 10 feet (3048 mm) of any aboveground tank, tank fill connection or dispensing
21 area, except in the dispensing area when in an approved waste container with a capacity not
22 exceeding 40 gallons (0.15 m³).
23

24 [2204.2] **2304.2 Self-service motor fuel-dispensing facilities.** Self-service motor fuel-dispensing
25 facilities shall be designed, installed, operated and maintained in compliance with the requirements
26 of FC [2204.2.1] **2304.2.1** through [2204.2.5] **2304.2.5**.
27

28 [2204.2.1] **2304.2.1 Duties of certified attendant.** The certified attendant's primary function
29 shall be to supervise, observe and monitor the dispensing of fuel. The certified attendant shall
30 prevent the dispensing of fuel into portable containers unless the dispensing is in compliance
31 with the requirements of [FC2204.1.7] **FC2304.1.7**. The certified attendant shall control
32 sources of ignition, take immediate action upon an accidental spill or release, be ready to use
33 a portable fire extinguisher, and activate the fixed fire extinguishing system. Nothing in this
34 section shall be construed to prohibit a certified attendant from engaging in other activities so
35 long as such activities do not interfere with the certified attendant's ability to supervise,
36 observe and monitor the dispensing of fuel and other requirements of this chapter.
37

38 [2204.2.2] **2304.2.2 Self-service dispensers.** Approved self-service devices, equipment and
39 systems such as, but not limited to, card-operated and remote-preset types, are allowed at liquid
40 motor fuel-dispensing facilities. The certified attendant shall set the dispensing devices in the
41 "off" position when not in use if such dispensing device can be activated without the certified
42 attendant's knowledge.
43

44 [2204.2.3] **2304.2.3 Monitoring of dispensing.** A control booth shall be located on the
45 premises of every self-service automotive liquid motor fuel-dispensing facility. The control
46 booth shall be an interior or exterior enclosure to which the public has no access. The certified
47 attendant shall be present within the control booth while dispensing operations are conducted.

1 The control booth shall be designed and located so that the certified attendant stationed therein
2 shall have a full, unobstructed clear view of dispensing operations, except that mirrors and/or
3 an approved closed-circuit television installation may be provided to afford the certified
4 attendant a clear view of dispensing operations when the view from the control booth is
5 partially or temporarily obstructed. For purposes of this section, the “clear” view provided by
6 a closed-circuit television installation shall mean that the image on the monitor shall be of such
7 brightness and resolution as to allow ready identification of individuals and easy observation
8 of activities at all times of day. Two properly labeled manual switches, one that activates the
9 fire extinguishing system, and one that electrically disconnects the liquid motor fuel-
10 dispensing pumps, shall be located adjacent to each other within the control booth. A console
11 that controls the self-service liquid motor fuel dispensers shall be provided within the control
12 booth and within 5 feet (1524 mm) of the manual switches.

13
14 **[2204.2.4] 2304.2.4 Communications.** A two-way voice communication system shall be
15 installed to provide contact between the control booth and each dispensing island.

16
17 **[2204.2.5] 2304.2.5 Signage.** The signage required by [FC2204.1.4] FC2304.1.4 shall be
18 posted in the dispensing area of a self-service motor fuel-dispensing facility, except that the
19 emergency procedures sign required by [FC2204.1.4.4] FC2304.1.4.4 shall be posted in the
20 control booth.

21
22 **[2204.3] 2304.3 Fleet motor fuel-dispensing facilities.** Fleet motor fuel-dispensing facilities shall
23 be designed, installed, operated and maintained in compliance with the requirements of FC
24 [2204.3.1] 2304.3.1 through [2204.3.3] 2304.3.3.

25
26 **[2204.3.1] 2304.3.1 Inspection of dispensing area.** The certified attendant responsible for
27 supervision of the dispensing of liquid motor fuel at fleet motor fuel-dispensing facility shall
28 inspect the dispensing area on a periodic basis in accordance with the rules to ensure that the
29 facility is being maintained in accordance with this chapter and the rules. The certified
30 attendant shall notify the owner and make any other notifications required by this code if there
31 is any evidence that the facility is not in good working order. A record of such inspections and
32 notifications shall be maintained at the premises in accordance with FC107.7.

33
34 **[2204.3.2] 2304.3.2 Duties of fleet personnel.** Employees or other persons working for the
35 owner of a fleet motor fuel-dispensing facility whose duties involve the dispensing of motor
36 fuel shall be trained and knowledgeable in such dispensing in compliance with the
37 requirements of this code and the rules.

38
39 **[2204.3.3] 2304.3.3 Quantity limits.** Dispensing equipment used at fleet automotive liquid
40 motor fuel-dispensing facilities shall comply with one of the following:

- 41
42 1. Dispensing devices shall be programmed or set to limit uninterrupted liquid motor fuel
43 delivery to not more than 25 gallons (95 L) and require a manual action to resume
44 delivery.
45
46 2. For other than flammable liquid motor fuel, the amount of liquid motor fuel being
47 dispensed shall be limited in quantity by a preprogrammed card as approved.

1
2 **[2204.4] 2304.4 Full-service motor fuel-dispensing facilities.** Full-service motor fuel-dispensing
3 facilities shall be operated in compliance with the requirements of [FC2204.4.1] FC2304.4.1.

4
5 **[2204.4.1] 2304.4.1 Duties of certified attendant.** The certified attendant at a full-service
6 motor fuel-dispensing facility shall personally supervise the dispensing of motor fuel into
7 vehicles by facility personnel. The certified attendant shall conduct a visual inspection of the
8 dispensing area on a daily basis to monitor the condition of such installation. The certificate of
9 fitness holder shall notify the owner and make any other notifications required by this code if
10 there is any evidence that the installation is not in good working order. A record of such
11 inspections and notifications shall be maintained at the premises in accordance with FC107.7.

12
13 **SECTION FC [2205] 2305**
14 **OPERATION AND MAINTENANCE OF**
15 **LIQUID MOTOR FUEL-DISPENSING FACILITIES**
16

17 **[2205.1] 2305.1 Tank filling operations for liquid motor fuel.** Delivery operations to tanks for
18 liquid motor fuel shall comply with the requirements of FC [2205.1.1] 2305.1.1 through [2205.1.3]
19 2305.1.3 and the applicable requirements of FC Chapter [34] 57.

20
21 **[2205.1.1] 2305.1.1 Delivery vehicle location.** Where liquid delivery to a motor fuel storage
22 tank is accomplished by positive-pressure operation, cargo tanks making delivery shall be
23 positioned a minimum of 25 feet (7620 mm) from tanks receiving flammable liquids and 15
24 feet (4572 mm) from tanks receiving combustible liquids. During delivery, a cargo tank shall
25 not obstruct a public street, private road, block motorists' view of roadways or impede the
26 movement of vehicles or pedestrians.

27
28 **[2205.1.2] 2305.1.2 Tank capacity calculation.** The driver, operator or attendant of a cargo
29 tank shall, before making delivery to a tank, determine the unfilled, available capacity of such
30 tank by an approved tank level-indicating device or method. A measuring stick shall not be
31 used to measure the contents of the tank through the fill connection line, except where there is
32 a direct fill connection.

33
34 **[2205.1.3] 2305.1.3 Tank connections.** Delivery of liquid motor fuel shall be made by means
35 of approved liquid- and vapor-tight connections between the delivery hose and tank fill pipe.
36 Where tanks are equipped with any type of vapor recovery system, all connections required
37 for the safe and proper functioning of the particular vapor recovery process shall be made.
38 Such connections shall be made liquid- and vapor-tight and remain connected throughout the
39 delivery process. Vapors shall not be discharged at grade level during delivery.

40
41 **[2205.2] 2305.2 Equipment maintenance.** Liquid motor storage and dispensing systems shall be
42 maintained in good working order at all times in accordance with FC [2205.2.1] 2305.2.1 through
43 [2205.2.3] 2305.2.3.

44
45 **[2205.2.1] 2305.2.1 Dispensing devices.** Where maintenance to dispensing devices becomes
46 necessary and such maintenance could allow the accidental release or ignition of liquid, the
47 following precautions shall be taken:

- 1
- 2 1. Only persons with a certificate of license and knowledgeable in performing the required
- 3 maintenance shall perform the work.
- 4
- 5 2. Electrical power to the dispensing device and pump serving the dispenser shall be shut
- 6 off at the main electrical disconnect panel before maintenance begins.
- 7
- 8 3. The emergency dispenser shutoff valve shall be closed before maintenance begins.
- 9
- 10 4. Vehicular traffic and unauthorized persons shall be prevented from coming within 12
- 11 feet (3658 mm) of the dispensing device before and during maintenance.
- 12

13 **[2205.2.2] 2305.2.2 Dispenser emergency shutoff valves.** Dispenser emergency shutoff
14 valves required by [FC2206.7.4] FC2306.7.4 shall be checked not less than once per year by
15 manually tripping the hold-open linkage.

16
17 **[2205.2.3] 2305.2.3 Leak detection system.** The leak detection system required by
18 [FC2206.7.7] FC2306.7.7 shall be inspected monthly for proper operation and tested at least
19 annually in accordance with the manufacturer's specifications to ensure that it is in good
20 working order.

21
22 **[2205.3] 2305.3 Use of alcohol-blended motor fuel in existing liquid motor fuel storage and**
23 **dispensing systems.** Department approval shall be obtained prior to using a liquid motor fuel
24 storage and dispensing system for alcohol-blended motor fuel when such system has previously
25 been used to store and dispense another type of motor fuel. If approved, such system may be used
26 alternatively for the various approved fuel types.

27
28 **[2205.4] 2305.4 Signage.** Durable signs shall be conspicuously posted at motor fuel-dispensing
29 facilities in accordance with this section.

30
31 **[2205.4.1] 2305.4.1 Tank overfill warning sign.** A warning sign shall be posted on or
32 immediately adjacent to tank overfill alarm panel that reads: "CAUTION: WHEN ALARM
33 ACTIVATES, TANK IS FILLED TO CAPACITY. DO NOT OVERFILL."
34

35 **[2205.5] 2305.5 Portable fire extinguishers.** Approved portable fire extinguishers complying
36 with the requirements of FC906 with a minimum rating of 40-B:C shall be provided and located
37 such that an extinguisher is not less than 20 feet (6096 mm) but not more than 75 feet (22 860 mm)
38 from pumps, dispensers or storage tank fill connections.

39
40 **SECTION FC [2206] 2306**
41 **DESIGN AND INSTALLATION REQUIREMENTS**
42 **FOR LIQUID MOTOR FUEL-DISPENSING FACILITIES**
43

44 **[2206.1] 2306.1 General.** Liquid motor fuel storage and dispensing systems shall be designed and
45 installed in accordance with FC Chapter [34] 57 except as otherwise specified in this chapter,
46 including the requirements of this section.
47

1 **[2206.2] 2306.2 Method of storage.** Approved methods of storage for liquid motor fuel at motor
2 fuel-dispensing facilities shall be in accordance with FC [2206.2.1] 2306.2.1 through [2206.2.4]
3 2306.2.4.

4
5 **[2206.2.1] 2306.2.1 Underground tanks.** The installation of underground tanks for the storage
6 of liquid motor fuel shall comply with the requirements of FC Chapter [34] 57 except as
7 otherwise specified in this chapter.
8

9 **[2206.2.1.1] 2306.2.1.1 Inventory control for underground tanks.** Accurate daily
10 inventory records shall be maintained and reconciled for underground liquid motor fuel
11 storage tanks for indication of possible leakage from tanks and piping. Inventory
12 reconciliation shall be in accordance with the regulations of the New York State
13 Department of Environmental Conservation as set forth in 6 NYCRR Part 613. The records
14 shall be maintained in accordance with FC107.7. Records shall include daily reconciliation
15 between sales, use, receipts and inventory on hand. Where there is more than one system
16 consisting of tanks serving separate pumps or dispensers for a product, the reconciliation
17 shall be maintained separately for each tank system. A consistent or accidental loss of
18 product shall be immediately reported to the commissioner.
19

20 **[2206.2.1.2] 2306.2.1.2 Listing and approval.** Underground liquid motor fuel storage
21 tanks shall be listed and approved.
22

23 **[2206.2.1.3] 2306.2.1.3 Tank design and construction.** Underground liquid motor fuel
24 storage tanks shall be designed and constructed in accordance with the following:
25

- 26 1. Tanks shall be completely double-walled and constructed of steel, fiberglass-reinforced
27 plastic or a combination of both materials. The secondary tank shall be capable of
28 containing any leakage from the primary tank.
29
- 30 2. Tanks shall be designed and constructed to withstand one and one-half times the
31 maximum operating loads and stresses, regardless of the amount of liquid motor fuel
32 contained in the tank. Such capabilities shall be established by buoyancy calculations
33 and load and stress analyses.
34
- 35 3. Tanks shall be designed and constructed to withstand a pressure of 15 pounds per square
36 inch gauge (psig)(103.4 kPa) or one and one-half times the maximum anticipated static
37 head pressure, whichever is greater, for the primary tank and 5 pounds per square inch
38 gauge (psig)(34.5 kPa) for the secondary tank.
39
- 40 4. The capacity of each individual tank shall not exceed 12,000 gallons (45 420 L) of
41 liquid motor fuel.
42

43 **[2206.2.1.4] 2306.2.1.4 Tank connections.** Tank connections shall be designed and
44 located so as to:
45

- 46 1. Minimize the maneuvering necessary to position a cargo tank to make the delivery.
47

- 1 2. Minimize any obstructions of a public right of way or motorists' view of roadways,
2 or any impediment to the movement of motor vehicles or pedestrians, during
3 delivery.
- 4
- 5 3. Provide connections by means of approved liquid- and vapor-tight connections.
- 6
- 7 4. Comply with the requirements of [FC2205.1.3] FC2305.1.3.
- 8

9 **[2206.2.1.5] 2306.2.1.5 Liquid level-indicating devices.** Tanks shall be provided with an
10 approved liquid level-indicating device. The quantity of fuel in the tank as indicated on the
11 liquid level-indicating device shall be accessible to the delivery operator. Liquid level-
12 indicating devices shall be designed, constructed and installed to be vapor- and liquid-tight.

13

14 **[2206.2.1.6] 2306.2.1.6 Tank overfill alarm.** Tanks shall be provided with an approved
15 overfill alarm designed to activate a local audible and visual alarm in an area supervised
16 by the cargo tank delivery operator. Such alarms shall activate when the quantity of fuel in
17 the tank exceeds a designated level, which shall not be more than 95 percent of capacity.

18

19 **[2206.2.2] 2306.2.2 Prohibited aboveground storage.** The storage of motor fuel in
20 aboveground tanks shall be prohibited as set forth in FC [2206.2.2.1] 2306.2.2.1, [2206.2.2.2]
21 2306.2.2.2 and [2206.2.2.3] 2306.2.2.3.

22

23 **[2206.2.2.1] 2306.2.2.1 Storage of flammable liquid motor fuel.** It shall be unlawful to
24 store flammable liquid motor fuel in aboveground tanks.

25

26 **[2206.2.2.2] 2306.2.2.2 Storage of combustible liquid motor fuel.** It shall be unlawful to
27 store combustible liquid motor fuel in aboveground tanks, except outdoors at a fleet motor
28 fuel-dispensing facility complying with the requirements of this chapter.

29

30 **[2206.2.2.3] 2306.2.2.3 Indoor storage.** It shall be unlawful to store liquid motor fuel in
31 aboveground tanks indoors.

32

33 **[2206.2.3] 2306.2.3 Aboveground tanks located outdoors, at grade.** Outdoor storage of
34 combustible liquid motor fuel in aboveground tanks at a fleet motor fuel-dispensing facility
35 shall comply with the requirements set forth in FC [2206.2.3.1] 2306.2.3.1 through
36 [2206.2.3.6] 2306.2.3.6.

37

38 **[2206.2.3.1] 2306.2.3.1 Tank design and construction.** Only protected aboveground
39 tanks shall be used.

40

41 **[2206.2.3.2] 2306.2.3.2 Tank capacity.** The capacity of each tank shall not exceed [4,000
42 gallons (15 140 L)] 10,000 gallons (37 850 L). Not more than a total of [4,000 gallons (15
43 140 L)] 10,000 gallons (37 850 L) of liquid motor fuel shall be stored aboveground at any
44 facility. The total storage capacity at a facility in both aboveground and underground tanks
45 shall not exceed 40,000 gallons (15 140 L) of liquid motor fuel. Each tank shall have a
46 separate fill line and a separate vent line that are separate from the fill and vent lines of
47 other tanks.

Exception: When approved, individual tanks may exceed [4,000 gallons (151 400 L)] 10,000 gallons (37 850 L) but shall not exceed 12,000 gallons (45 420 L).

[2206.2.3.3] 2306.2.3.3 Tank base support. Tanks shall be placed on an approved base slab. The surface of such base slab shall be a minimum of 6 inches (152 mm) above the level of the surrounding area to permit visual inspection. Tanks shall be adequately supported and anchored to the base slab to withstand uplifting by surface water and flooding.

[2206.2.3.4] 2306.2.3.4 Tank connections. Tank connections shall be designed and located in accordance with [FC2206.2.1.4] FC2306.2.1.4.

[2206.2.3.5] 2306.2.3.5 Liquid level-indicating devices. Tanks shall be provided with an approved liquid level-indicating device in accordance with [FC2206.2.1.5] FC2306.2.1.5.

[2206.2.3.6] 2306.2.3.6 Tank overflow alarm. Tanks shall be provided with an approved overflow alarm in accordance with [FC2206.2.1.6] FC2306.2.1.6.

[2206.2.4] 2306.2.4 Location requirements for aboveground tanks at fleet motor fuel-dispensing facilities. Tanks shall be located in accordance with FC Table [2206.2.4] 2306.2.4 and as follows:

1. A minimum of 25 feet (7620 mm) from a subway grating, entrance or exit.
2. At a location that will not obstruct or interfere with any means of egress or department access.
3. Tanks shall not be installed under electrical transmission lines, bridges, or public highways.

**FC TABLE [2206.2.4] 2306.2.4
MINIMUM SEPARATION REQUIREMENTS FOR ABOVEGROUND TANKS AT FLEET MOTOR FUEL-DISPENSING FACILITIES**

CLASS OF LIQUID AND TANK TYPE	INDIVIDUAL TANK CAPACITY (gallons)	MINIMUM DISTANCE FROM NEAREST BUILDING (feet)	MINIMUM DISTANCE FROM LOT LINE (feet)	MINIMUM DISTANCE FROM PUBLIC STREET OR PRIVATE ROAD (feet)	MINIMUM DISTANCE BETWEEN TANKS (feet)
Liquid motor fuel tanks	4000	15	15	15	3
	Greater than 4000	25	25	15	3

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

[2206.3] 2306.3 Security. Aboveground tanks for the storage of liquid motor fuel shall be safeguarded in an approved manner from public access or unauthorized entry.

[2206.4] 2306.4 Physical protection. Posts complying with the requirements of FC312 or other approved means shall be provided to protect aboveground tanks against impact by a motor vehicle unless the tank is listed as a protected aboveground tank with vehicle impact protection.

1 **[2206.5] 2306.5 Secondary containment.** Aboveground tanks shall be provided with diking in
2 accordance with FC Chapter [34] 57. Diking is not required for listed secondary containment tanks.
3 The secondary containment systems shall be monitored either visually or automatically. Enclosed
4 secondary containment systems shall be provided with emergency venting in accordance with
5 [FC2206.6.2.5] FC2306.6.2.5.

6
7 **[2206.6] 2306.6 Piping, valves, fittings and ancillary equipment for use with liquid motor
8 fuel.** The design, fabrication, assembly, testing and inspection of piping, valves, fittings and
9 ancillary equipment for use with liquid motor fuel shall be in accordance with FC Chapter [34] 57
10 except as otherwise specified in FC [2206.6.1] 2306.6.1 through [2206.6.3] 2306.6.3, and FC
11 [2206.9] 2306.9 and [2206.10] 2306.10.

12
13 **[2206.6.1] 2306.6.1 Protection from damage.** Piping shall be located such that it is protected
14 from physical damage and designed to accommodate settlement, vibration, expansion or
15 contraction.

16
17 **[2206.6.2] 2306.6.2 Piping, valves, fittings and ancillary equipment for aboveground
18 tanks.** Piping, valves, fittings and ancillary equipment for aboveground tanks shall comply
19 with the requirements of FC [2206.6.2.1] 2306.6.2.1 through [2206.6.2.11] 2306.6.2.11.

20
21 **[2206.6.2.1] 2306.6.2.1 Tank openings.** Tank openings for aboveground tanks shall be
22 through the top only. There shall be no openings except those necessary to inspect, fill,
23 empty and vent the tank.

24
25 **[2206.6.2.2] 2306.6.2.2 Fill-pipe connections.** The fill-pipe for aboveground tanks shall
26 be provided with a means for making a direct connection to the cargo tank's fuel-delivery
27 hose so that liquid motor fuel is not exposed to the open air during the filling operation.
28 Operator safety equipment for the filling operation shall be provided in accordance with
29 OSHA regulations. Where any portion of the fill-pipe exterior to the tank extends below
30 the level of the top of the tank, a check valve, a dry break coupling and a quick closing
31 valve shall be installed at the fill connection. Tank fill connections from a remote location
32 are prohibited.

33
34 **[2206.6.2.3] 2306.6.2.3 Overfill protection.** Overfill protection shall be provided for
35 aboveground storage tanks. Overfill prevention devices shall be designed to withstand the
36 pressure generated by the cargo tank discharge pump and shall automatically shut off the
37 flow into the tank when the tank is not more than 95 percent full.

38
39 **[2206.6.2.4] 2306.6.2.4 Siphon prevention.** An approved antisiphon method shall be
40 provided in the piping system to prevent flow of liquid motor fuel by siphon action.

41
42 **[2206.6.2.5] 2306.6.2.5 Emergency relief venting.** Aboveground storage tanks, tank
43 compartments and enclosed secondary containment spaces shall be provided with
44 emergency relief venting in accordance with FC Chapter [34] 57.

45
46 **[2206.6.2.6] 2306.6.2.6 Spill containers.** Aboveground tank spill containers having a
47 capacity of not less than 5 gallons (19 L) shall be provided for each fill connection. Spill

1 containers shall be noncombustible and shall be fixed to the tank and equipped with a
2 manual drain valve that drains into the primary tank.

3
4 **[2206.6.2.7] 2306.6.2.7 Piping material construction.** Piping shall be of a minimum
5 Schedule 40 steel construction.

6
7 **[2206.6.2.8] 2306.6.2.8 Compatibility.** Piping, fittings, components and joint compounds
8 shall be mutually compatible, and compatible with diesel fuel and other commonly-used
9 combustible liquid motor fuels, including the additives commonly used in such combustible
10 motor fuels. Joint compounds shall be listed and approved.

11
12 **[2206.6.2.9] 2306.6.2.9 Pressure relief devices.** Where liquid motor fuel may become
13 trapped between shutoff valves and/or check valves, affected piping sections shall be
14 provided with pressure-relief devices that will discharge the pressure generated by thermal
15 expansion back into the tank.

16
17 **[2206.6.2.10] 2306.6.2.10 Vent piping.** Each tank shall be provided with a separate
18 unobstructed vent line, without any trap or device that causes excessive back pressure, and
19 shall be maintained unobstructed at all times.

20
21 **[2206.6.2.11] 2306.6.2.11 Vent termination.** Vent outlets shall discharge outdoors and
22 upward. The discharge point shall be no less than 15 feet (4572 mm) above the adjacent
23 ground level and no less than 10 feet (3048 mm) from the nearest building opening.

24
25 **[2206.6.3] 2306.6.3 Piping, valves, fittings and ancillary equipment for underground**
26 **tanks.** Piping, valves, fittings and ancillary equipment for underground tanks shall comply
27 with the requirements of FC Chapter [34] 57 and NFPA 30A, except as otherwise provided in
28 FC [2206.6.3.1] 2306.6.3.1, [2206.6.3.2] 2306.6.3.2 and [2206.10] 2306.10.

29
30 **[2206.6.3.1] 2306.6.3.1 Piping design and construction.** Piping, including vent piping,
31 shall be of a minimum Schedule 40 steel construction. Approved nonmetallic piping, such as
32 fiberglass-reinforced plastic or other equivalent corrosion-resistant material, may be installed
33 underground.

34
35 **[2206.6.3.2] 2306.6.3.2 Underground tank piping.** Piping shall be installed underground,
36 except for the vertical riser of the vent.

37
38 **[2206.6.3.3] 2306.6.3.3 Compatibility.** Piping, fittings, components and joint compounds
39 shall be mutually compatible, and compatible with gasoline, diesel fuel, methanol and other
40 commonly-used liquid motor fuels, including the additives commonly used in such liquid
41 motor fuels. Joint compounds shall be listed and approved.

42
43 **[2206.7] 2306.7 Fuel-dispensing systems for liquid motor fuel.** The design and installation of
44 liquid motor fuel-dispensing systems shall be in accordance with FC [2206.7.1] 2306.7.1 through
45 [2206.7.9.2.4] 2306.7.9.2.4. Alcohol-blended motor fuel-dispensing systems shall additionally
46 comply with [FC2206.7.10] FC2306.7.10.

1 **[2206.7.1] 2306.7.1 Listed equipment.** Electrical equipment, dispensers, hose, nozzles and
2 submersible or subsurface pumps used in liquid motor fuel storage and dispensing systems
3 shall be listed and approved.
4

5 **[2206.7.2] 2306.7.2 Fixed pumps required.** Liquid motor fuel shall be transferred only from
6 the top of the tank by means of fixed pumps designed and equipped to allow control of the
7 flow and prevent leakage or accidental discharge.
8

9 **[2206.7.2.1] 2306.7.2.1 Aboveground tank dispenser.** Only one vehicle may be fueled at
10 a time. Fuel dispensing from a location remote from the tank may be allowed when
11 approved by the commissioner.
12

13 **[2206.7.2.2] 2306.7.2.2 Pump sumps.** Pump sumps shall be compatible with the liquid
14 motor fuel, liquid-tight, and accessible for inspection. Prefabricated pump sumps shall be
15 approved.
16

17 **[2206.7.3] 2306.7.3 Mounting of dispensers.** Dispensing devices, except those installed on
18 top of a protected aboveground tank that qualifies as vehicle-impact resistant, shall be
19 protected against physical damage by mounting on a concrete island 6 inches (152 mm) or
20 more in height, or shall otherwise be suitably protected in accordance with FC312. Dispensing
21 devices shall be installed and securely fastened to their mounting surface in accordance with
22 the dispenser manufacturer's instructions. Dispensing devices installed indoors shall be located
23 in an approved position not in a direct line with vehicular traffic.
24

25 **[2206.7.3.1] 2306.7.3.1 Protection of floor openings in indoor facilities.** Openings in
26 floors beneath liquid motor fuel-dispensing facilities located indoors shall be sealed.
27

28 **[2206.7.3.2] 2306.7.3.2 Dispenser pans.** An approved dispenser pan that is compatible with
29 the liquid motor fuel shall be installed beneath a dispenser. The dispenser pan shall be liquid-
30 tight, accessible for inspection, no larger than necessary, and installed solely for the purpose
31 of collecting any liquid motor fuel leaking from the dispenser. The dispenser pan shall not be
32 used to collect liquid motor fuel discharged from defective piping. The dispenser pan shall be
33 backfilled up to not less than 6 inches (152 mm) above any nonmetallic piping and shall not
34 interfere with the operation of any safety device.
35

36 **[2206.7.4] 2306.7.4 Dispenser emergency valve.** An approved automatic emergency shutoff
37 valve designed to close in the event of a fire or impact shall be properly installed in the liquid
38 supply line at the base of each dispenser supplied by a remote pump. The valve shall be
39 installed so that the shear groove is flush with or within ½ inch (12.7 mm) of the top of the
40 concrete dispenser island and there is clearance provided for maintenance purposes around the
41 valve body and operating parts. The valve shall be installed at the liquid supply line inlet of
42 each overhead-type dispenser. Where installed, a vapor return line located inside the dispenser
43 housing shall have a shear section or approved flexible connector for the liquid supply line
44 emergency shutoff valve to function. Emergency shutoff valves shall be installed and
45 maintained in accordance with the manufacturer's instructions, tested at the time of initial
46 installation and tested at least yearly thereafter in accordance with [FC2205.2.2] FC2305.2.2.
47

1 **[2206.7.5] 2306.7.5 Dispenser hose.** Dispenser hoses shall be a maximum of 18 feet (5486
2 mm) in length unless otherwise approved. Dispenser hoses shall be listed and approved. When
3 not in use, hoses shall be reeled, racked or otherwise protected from damage. The length of the
4 dispensing hose shall be such that at least 1 inch (25 mm) clearance between the hose and the
5 ground is maintained when the nozzle is rested on its bracket. Dispensing hoses installed at
6 aviation facilities, marine liquid motor fuel-dispensing facilities, and fleet liquid motor fuel-
7 dispensing facilities shall be of an approved length.
8

9 **[2206.7.5.1] 2306.7.5.1 Breakaway devices.** Dispenser hoses shall be equipped with a
10 listed emergency breakaway device designed to retain liquid on both sides of a breakaway
11 point. Such devices shall be installed and maintained in accordance with the manufacturer's
12 instructions. Where hoses are attached to hose-retrieving mechanisms, the emergency
13 breakaway device shall be located between the hose nozzle and the point of attachment of
14 the hose-retrieval mechanism to the hose.
15

16 **[2206.7.6] 2306.7.6 Fuel delivery nozzles.** A listed automatic-closing-type hose nozzle valve
17 without a latch-open device shall be provided for dispensers used for dispensing liquid motor
18 fuel, except that a nozzle valve with a latch-open device may be installed and used at the
19 following automotive liquid motor fuel-dispensing facilities:
20

- 21 1. Full-service automotive liquid motor fuel-dispensing facilities.
- 22
- 23 2. Fleet automotive liquid motor fuel-dispensing facilities.
- 24
- 25 3. Dispensing of diesel fuel at self-service automotive liquid motor fuel-dispensing
26 facilities.
27

28 **[2206.7.6.1] 2306.7.6.1 Special requirements for nozzles.** Where dispensing of liquid
29 motor fuel is performed, a listed automatic-closing-type hose nozzle valve shall be used
30 that incorporates all of the following features:
31

- 32 1. When the flow of product is normally controlled by devices or equipment other than
33 the hose nozzle valve, the hose nozzle valve shall not be capable of being opened
34 unless the delivery hose is pressurized. If pressure to the hose is lost, the nozzle shall
35 close automatically.
36

37 **Exception:** Vapor recovery nozzles incorporating insertion interlock devices
38 designed to achieve shutoff on disconnect from the vehicle fill pipe.
39

- 40 2. The hose nozzle shall be designed such that the nozzle is retained in the fill pipe
41 during the filling operation.
42
- 43 3. The system shall include listed equipment with a feature that causes or requires the
44 closing of the hose nozzle valve before the product flow can be resumed or before
45 the hose nozzle valve can be replaced in its normal position in the dispenser.
46

1 [2206.7.6.2] **2306.7.6.2 Control device.** A control device shall be provided that will allow
2 a liquid motor fuel pump to operate only when the dispensing nozzle is removed from its
3 bracket on the dispenser and the switch on the dispenser is manually activated. The flow
4 of liquid motor fuel shall automatically stop when the switch is deactivated or the nozzle
5 returned to its bracket.
6

7 [2206.7.7] **2306.7.7 Leak detection.** Underground liquid motor fuel storage and dispensing
8 systems shall be provided with a leak detection system in accordance with the following:
9

- 10 1. The leak detection system shall provide continuous monitoring of the tank's interstitial
11 space.
12
- 13 2. The leak detection system shall provide continuous monitoring of liquid motor fuel pump
14 sumps. Activation of the leak detection system shall cause shutdown of the liquid motor
15 fuel pumps.
16
- 17 3. The leak detection system shall provide continuous monitoring of dispenser pans.
18 Activation of the leak detection system shall cause shutdown of the affected dispenser or
19 liquid motor fuel pump supplying such dispenser.
20
- 21 4. Primary discharge piping shall be provided with an automatic line leak detector. Activation
22 of such leak detector shall cause shutdown of the liquid motor fuel pump or significantly
23 restrict the product flow.
24
- 25 5. The leak detection system shall have an alarm panel in a supervised location on the
26 premises; trigger both an audible and visible local alarm; be capable of producing hardcopy
27 printouts of all tests and/or leak notification reports; operate on low voltage; and be
28 intrinsically safe for a liquid motor fuel environment.
29
- 30 6. Leak detection systems shall be listed and approved.
31

32 [2206.7.8] **2306.7.8 Gravity and pressure dispensing.** Liquid motor fuel shall not be
33 dispensed by gravity from tanks, drums, barrels or similar containers. Liquid motor fuel shall
34 not be dispensed by a device operating through pressure within a storage tank, drum or
35 container.
36

37 [2206.7.9] **2306.7.9 Vapor-recovery and vapor-processing systems.** [Vapor-recovery] Stage
38 I vapor-recovery and vapor-processing systems, when required by the New York State
39 Department of Environmental Conservation, shall be installed in accordance with
40 [FC2206.7.9] FC2306.7.9 and the regulations of the New York State Department of
41 Environmental Conservation, and shall be approved.
42

43 [2206.7.9.1] **2306.7.9.1 Vapor-balance systems.** Vapor-balance systems shall comply
44 with the requirements of FC [2206.7.9.1.1] 2306.7.9.1.1 through [2206.7.9.1.5]
45 2306.7.9.1.5.
46

1 **[2206.7.9.1.1] 2306.7.9.1.1 Dispensing devices.** Dispensing devices incorporating
2 provisions for vapor recovery shall be listed and labeled. When existing listed or
3 labeled dispensing devices are modified for vapor recovery, such modifications shall
4 be listed by report by a nationally recognized testing laboratory. The listing by report
5 shall contain a description of the component parts used in the modification and the
6 recommended method of installation on specific dispensers. Such report shall be made
7 available for inspection by any department representative. Means shall be provided to
8 shut down fuel dispensing in the event the vapor return line becomes blocked.

9
10 **[2206.7.9.1.2] 2306.7.9.1.2 Vapor-return line closeoff.** An approved method shall be
11 provided to close off the vapor return line from dispensers when the product is not
12 being dispensed.

13
14 **[2206.7.9.1.3] 2306.7.9.1.3 Piping.** Piping in vapor-balance systems shall be in
15 accordance with FC [3403.6] 5703.6 and [3404.2] 5704.2. Nonmetallic piping shall be
16 installed in accordance with the manufacturer's installation instructions. Vapor return
17 piping shall be installed in a manner that drains back to the tank, without sags or traps
18 in which liquid can become trapped. If necessary, because of grade, condensate tanks
19 are allowed in vapor return piping. Condensate tanks shall be designed and installed so
20 that they can be drained without opening.

21
22 **2306.7.9.1.3.1 Removal of piping.** The owner shall be responsible for notifying
23 the department, in writing, upon decommissioning of the piping in vapor-balance
24 system. Such notification shall include the location of the facility and the name,
25 address and telephone number of the contractor who performed the removal.

26
27 **[2206.7.9.1.4] 2306.7.9.1.4 Flexible joints and shear joints.** Flexible joints shall be
28 installed in accordance with [FC3403.6.9] FC5703.6.9. An approved shear joint shall
29 be rigidly mounted and connected by a union in the vapor return piping at the base of
30 each dispensing device. The shear joint shall be mounted flush with the top of the
31 surface on which the dispenser is mounted.

32
33 **[2206.7.9.1.5] 2306.7.9.1.5 Testing.** Vapor return lines and vent piping shall be tested
34 in accordance with [FC2206.9] FC2306.9.

35
36 **[2206.7.9.2] 2306.7.9.2 Vapor-processing systems.** Vapor-processing systems shall
37 comply with the requirements of FC [2206.7.9.2.1] 2306.7.9.2.1 through [2206.7.9.2.4]
38 2306.7.9.2.4.

39
40 **[2206.7.9.2.1] 2306.7.9.2.1 Equipment.** Equipment in vapor-processing systems,
41 including hose nozzle valves, vapor pumps, flame arresters, fire checks or systems for
42 prevention of flame propagation, controls and vapor-processing equipment, shall be
43 individually listed for the intended use in a specified manner. Vapor-processing
44 systems that introduce air into the underground piping or storage tanks shall be
45 provided with equipment for prevention of flame propagation that has been tested and
46 listed as suitable for the intended use.

1 **[2206.7.9.2.2] 2306.7.9.2.2 Location.** Vapor-processing equipment shall be located at
2 or above grade. Sources of ignition shall be located not less than 50 feet (15 240 mm)
3 from fuel-transfer areas and not less than 18 inches (457 mm) above tank fill openings
4 and tops of dispenser islands. Vapor-processing units shall be located not less than 10
5 feet (3048 mm) from the nearest building or structure or lot line.
6

7 **Exception:** Where the required distances to buildings or structures, lot lines or fuel-
8 transfer areas cannot be obtained, means shall be provided to protect equipment
9 against fire exposure. Acceptable means shall include:

- 10
- 11 1. Approved protective enclosures, which extend at least 18 inches (457 mm)
12 above the equipment, constructed of fire-resistant or noncombustible
13 materials; and
 - 14 2. Fire protection using an approved water-spray system.
15

16

17 **[2206.7.9.2.2.1] 2306.7.9.2.2.1 Location and safeguards.** Vapor-processing
18 equipment shall be located a minimum of 20 feet (6096 mm) from dispensing
19 devices. Processing equipment shall be protected against physical damage by
20 guardrails, curbs, protective enclosures or fencing. Where approved protective
21 enclosures are used, approved means shall be provided to ventilate the volume
22 within the enclosure to prevent pocketing of flammable vapors. Where a downslope
23 exists toward the location of the vapor-processing unit from a fuel-transfer area, the
24 commissioner may require additional separation by distance and height.
25

26 **[2206.7.9.2.3] 2306.7.9.2.3 Installation.** Vapor-processing units shall be securely
27 mounted on concrete, masonry or structural steel supports on concrete or other
28 noncombustible foundations. Vapor-recovery and vapor-processing equipment is
29 allowed to be installed on roofs when approved.
30

31 **[2206.7.9.2.4] 2306.7.9.2.4 Piping.** Piping in a mechanical-assist system shall be in
32 accordance with [FC3403.6] FC5703.6.
33

34 **[2206.7.10] 2306.7.10 Alcohol-blended motor fuel-dispensing equipment.** Dispensers,
35 hoses, nozzles, breakaway fittings, swivels, flexible connectors, dispenser emergency shutoff
36 valves, vapor recovery systems and pumps used in alcohol-blended motor fuel storage and
37 dispensing systems shall be compatible with such fuels and shall be listed or approved for
38 such purpose.
39

40 **[2206.8] 2306.8 Fire extinguishing system for dispensing area.** Where flammable liquid motor
41 fuel is dispensed at an automotive liquid motor fuel-dispensing facility, the dispensing area shall
42 be provided with a dry chemical fire extinguishing system designed and installed in accordance
43 with FC904.6, and the following requirements:
44

- 45 1. The fire extinguishing system shall be designed to provide overhead protection of the
46 dispenser area encompassed by a circle formed by the fully extended hose and nozzle on
47 each fuel dispenser and both ends of the dispenser island.

- 1
- 2 2. The extinguishing agent containers shall be equipped with indicators to show whether the
- 3 system is fully charged. Indicators shall be positioned to be easily read from grade.
- 4
- 5 3. The installation, alteration, testing and repair of the fire extinguishing system, including any
- 6 maintenance or modification of the system, shall be performed by a person possessing a
- 7 master fire suppression piping contractor license issued by the Department of Buildings and
- 8 trained and knowledgeable in the installation, operation and maintenance of the specific fire
- 9 extinguishing system.
- 10
- 11 4. Dispensers shall not be operated when the fire extinguishing system has discharged or is
- 12 inoperative, except as authorized in writing by the department. The motor fuel-dispensing
- 13 facility certified attendant shall immediately notify the department of system discharge or
- 14 inoperability.
- 15
- 16 5. Fire extinguishing systems shall be inspected and tested in accordance with [FC2206.9]
- 17 FC2306.9.
- 18
- 19 6. Fire extinguishing systems at fleet automotive liquid motor fuel-dispensing facilities shall
- 20 be monitored by an approved central station company.
- 21

22 **[2206.9] 2306.9 Inspection and testing.** Inspection and testing required by FC [2206.9.1]

23 2306.9.1 through [2206.9.7] 2306.9.7 shall be conducted at the owner's risk by his or her

24 representative before a representative of the department.

25

26 **[2206.9.1] 2306.9.1 Initial tank test.** Underground and aboveground tanks shall be tested

27 hydrostatically at 15 pounds per square inch (psig)(103.4 kPa), or one and one-half times the

28 maximum anticipated static head pressure, whichever is greater, for the inner tank, and

29 pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the annular

30 space (secondary containment tank). When a pneumatic test is allowed, an inert gas shall be

31 used; however, air may be used if the tank or piping system does not contain any liquid motor

32 fuel or combustible vapor. Test pressure shall be maintained for a sufficient time to complete

33 visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test if it

34 shows no evidence of leakage or permanent deformation.

35

36 **[2206.9.2] 2306.9.2 Initial piping test.** Prior to backfill, primary piping shall be tested

37 hydrostatically to one and one-half times the maximum anticipated operating pressure, but not

38 less than 15 pounds per square inch (psig)(103.4 kPa). After backfill and installation of the top

39 slab, discharge piping shall be tested hydrostatically at one and one-half times the maximum

40 anticipated pressure, but not less than 50 pounds per square inch (psig)(345 kPa). Secondary

41 containment piping (annular space) shall be tested pneumatically at 5 pounds per square inch

42 (psig)(34.5 kPa) utilizing an inert gas; however, air may be used if the tank system or piping

43 system does not contain any liquid motor fuel or combustible vapor. Hydrostatic test pressure

44 shall be maintained for sufficient time to complete visual inspection but not less than 1 hour.

45 The test shall show that there is no evidence of leakage. Test pressure for aboveground tank

46 piping shall be at one and one-half times the maximum anticipated operating pressure but not less

47 than 100 pounds per square inch (psig)(690 kPa).

1
2 **[2206.9.3] 2306.9.3 Leak detection functionality test.** Leak detection systems shall be
3 inspected and tested at the time of installation in accordance with the rules. Leak detection
4 systems monitoring liquid motor fuel storage systems shall be tested at least once every 2 years
5 by a person holding a certificate of license. Such test shall confirm that all leak detection
6 equipment and associated alarms are in good working order.
7

8 **[2206.9.4] 2306.9.4 Fire extinguishing system test.** A performance test of the fire
9 extinguishing system shall be performed at the time of installation in accordance with the
10 approved design and installation documents, and such procedures as may be prescribed by the
11 commissioner. Fire extinguishing systems shall be tested at least once every 5 years. The test
12 shall be in accordance with procedures prescribed by the commissioner.
13

14 **[2206.9.5] 2306.9.5 Emergency tank and piping system test.** The commissioner may require
15 that a tank and piping system be precision tested or pressure tested in accordance with this
16 section to determine the condition of the tank or piping. Storage systems that may contain
17 liquid motor fuel or combustible vapor shall not be tested pneumatically.
18

19 **[2206.9.6] 2306.9.6 Periodic tank and piping test.** Any existing underground single-walled
20 liquid motor fuel storage [tanks] tank previously approved by the department or any existing
21 underground [tanks] tank that is not provided with a leak detection system meeting the
22 requirements of [FC2206.7.7] FC2306.7.7 shall be precision tested at least once every 5 years.
23

24 **[2206.9.7] 2306.9.7 Pouring concrete and backfilling.** The pouring of concrete for the base
25 and top slab, the backfilling of tank and piping, and the construction of the top slab support
26 shall be witnessed by a representative of the department at time of installation.
27

28 **[2206.10] 2306.10 Installation of underground tank and piping systems.** The installation of
29 tank and piping systems shall be in accordance with FC Chapter [34] 57, except as otherwise
30 specified in this section.
31

- 32 1. Tanks shall be located so that the forces from building foundations and support loads are not
33 transmitted to the tanks. The distance from any part of a tank to the nearest wall of any
34 basement, pit, cellar or any property line shall not be less than 3 feet (914 mm). Tanks shall
35 not be placed less than 20 feet (6096 mm) from a subway wall.
36
- 37 2. Tanks shall be installed so that the highest point of the tank is not less than 2 feet (609.6
38 mm) below the level of the lowest cellar floor of any building within a radius of 10 feet (3048
39 mm) from the tank. No tank shall be located under a sidewalk or beyond the property line of
40 the liquid motor fuel-dispensing facility.
41
- 42 3. Tanks shall be placed on a 12-inch (305-mm) thick base slab approved by the Department
43 of Buildings, or installed in such other manner as may be approved by the Commissioner of
44 Buildings, and secured against flotation. The system used for anchoring the tank shall not
45 damage the tank or its coating.
46

- 1 4. Tanks shall be placed on a bed of approved backfill material in accordance with
2 manufacturer's specifications. The backfill material shall evenly and completely support the
3 bottom quadrant of the tank. The backfill material shall be carefully placed along the bottom,
4 under the sides and under the end caps or heads of the tank, by shoveling and tamping.
5 Backfilling shall then be completed in 12-inch (305-mm) lifts placed uniformly around the
6 tank. Provision shall be made, consistent with site conditions, to prevent the migration of
7 backfill.
8
- 9 5. Tanks shall be covered with a reinforced concrete slab not less than 8 inches (203 mm) thick,
10 which shall extend not less than 12 inches (305 mm) beyond the horizontal outlines of the
11 tank. The support of the top slab shall be of a design approved by the Department of
12 Buildings.
13
- 14 6. Fill, suction and discharge piping shall be encased in 4 inches (102 mm) of concrete or
15 covered by a minimum of 18 inches (457 mm) of manufacturer-approved backfill, or covered
16 by 4 inches (102 mm) of manufacturer-approved backfill and an 8-inch (203-mm) reinforced
17 concrete slab.
18
- 19 7. Not more than 40,000 gallons (151 400 L) of liquid motor fuel shall be stored at any facility,
20 including liquid motor fuel stored in aboveground tanks.
21
- 22 8. Tanks containing identical products may be wet-manifolded provided that the total aggregate
23 capacity of such tanks does not exceed 12,000 gallons (45 420 L) of liquid motor fuel, and each
24 tank is provided with its own submersible pump.
25
- 26 9. Tank connections shall be designed and located so as to:
27
 - 28 9.1. Minimize the maneuvering necessary to position a cargo tank to make the delivery.
 - 29
 - 30 9.2. Minimize obstructing a public right of way or motorists' view of roadways, or
31 impeding the movement of motor vehicles or pedestrians, during deliveries.
32
 - 33 9.3. Provide connections by means of approved liquid- and vapor-tight connections.
34
- 35 10. Tanks installed underground indoors shall be provided with an approved liquid level-
36 indicating device. Liquid level-indicating devices shall be designed and constructed to prevent
37 the escape of liquid or vapor and shall be approved.
38
- 39 11. Test wells shall be prohibited in tanks located underground indoors. Unused tank openings
40 shall be permanently sealed at the tank to prevent removal of plugs or covers.
41
- 42 12. Secondary containment piping shall be required on all nonmetallic product-carrying pipes
43 except direct fill lines, suction lines or siphon lines containing only one check valve located at
44 the highest point of the line.
45
- 46 13. Underground piping shall have a slope of not less than $\frac{1}{8}$ inch per foot (10.4 mm per meter)
47 pitched toward the tank and shall be installed so as to facilitate initial and periodic testing.

- 1
2 14. Flexible joints shall be installed in accordance with [FC3403.6.9] FC5703.6.9.
3
4 15. Each underground motor fuel storage tank shall be provided with a separate unobstructed vent
5 line without any trap or device that causes excessive back pressure.
6
7 16. Vent piping shall be installed not less than 12 inches (305 mm) below the finished surface
8 measured from the point where the piping rises vertically and shall slope toward the tank.
9
10 17. Vent outlets shall discharge outdoors and upward. The discharge point shall be no less than
11 15 feet (4572 mm) above the adjacent ground level and no less than 10 feet (3048 mm) from
12 the nearest building opening.
13
14 18. An approved overflow prevention device shall be provided to prevent overflowing. When
15 installed in diesel fuel tanks, such overflow prevention device shall be designed to withstand
16 the pressure generated by the cargo tank discharge pump and shall automatically shut off the
17 flow into the tank when the tank is not more than 95 percent full.
18
19 19. Each tank shall be provided with one fill connection only, unless approved. Each tank fill
20 connection shall be provided with a catchment basin with a capacity of at least 15 gallons
21 (56.8 L). The contents of the catchment basin shall be automatically drained into the tank
22 without overflowing the tank after the transfer from the cargo tank is completed provided,
23 however, that if the Stage II vapor recovery system approved for the tank does not allow for
24 the installation of an automatic drain, a manual drain may be installed.
25
26 20. Where the discharging piping leak detector required by [FC2206.7.7(4)] FC2306.7.7(4) does
27 not cause shutdown of the liquid motor fuel pump, secondary containment piping shall be
28 provided.
29

30 **[2206.11] 2306.11 Spill control.** Provision shall be made to prevent liquids spilled during
31 dispensing operations from flowing into buildings, by grading driveways, raising doorsills or other
32 approved means.
33

34 **SECTION FC [2207 RESERVED] 2307**
35 **DESIGN AND INSTALLATION REQUIREMENTS FOR**
36 **BIODIESEL MOTOR FUEL**
37

38 **2307.1 General.** Biodiesel motor fuel shall be stored and dispensed in motor fuel storage and
39 dispensing systems designed and installed in accordance with this section.
40

41 **2307.2 Biofuel content.** The amount of biofuel content in biodiesel motor fuel shall not exceed 20
42 percent, except as authorized by the department.
43

44 **2307.3 Aboveground storage.** Biodiesel motor fuel may be stored and dispensed in protected
45 aboveground tanks in accordance with FC2306.2.3.1.
46

1 **2307.4 Design and installation.** The design of motor fuel storage and dispensing systems used
2 for biodiesel motor fuel shall be in accordance with FC Chapter 23.

3
4 **2307.5 Change of tank contents.** Any motor fuel storage and dispensing system that is to be used
5 for biodiesel, which was previously used for other types of motor fuel, shall comply with the
6 requirements of FC5704.2.1.

7
8 **SECTION FC [2208] 2308**
9 **COMPRESSED NATURAL GAS MOTOR FUEL-DISPENSING FACILITIES**

10
11 **[2208.1] 2308.1 General.** CNG motor fuel-dispensing facilities shall be designed, installed,
12 operated and maintained in accordance with NFPA 52 except as otherwise specified in this section
13 and [FC2201] FC2301.

14
15 **[2208.1.1] 2308.1.1 Prohibitions.** It shall be unlawful to:

- 16
17 1. Operate a self-service marine CNG motor fuel-dispensing facility.
18
19 2. Fill a portable container, other than permanently mounted fuel containers on CNG-
20 powered vehicles, except outdoors at a utility-operated facility.

21
22 **[2208.1.2] 2308.1.2 Supervision of dispensing operations.** The dispensing of CNG at CNG
23 motor fuel-dispensing facilities shall be supervised by a certified attendant as set forth in
24 [FC2201.7] FC2301.7.

25
26 **[2208.1.3] 2308.1.3 Maintenance.** Maintenance of CNG motor fuel-dispensing systems shall
27 be conducted under the personal supervision of a person holding a CNG fueling facility
28 maintenance certificate of fitness.

29
30 **[2208.1.4] 2308.1.4 Lighting.** Dispensing areas shall be well lighted whenever dispensing is
31 being conducted.

32
33 **[2208.1.5] 2308.1.5 Dispensing area signage.** Durable signs shall be conspicuously posted in
34 dispensing areas in CNG motor fuel-dispensing facilities in compliance with the requirements
35 of FC [2208.1.5.1] 2308.1.5.1 through [2208.1.5.3] 2308.1.5.3.

36
37 **[2208.1.5.1] 2308.1.5.1 Operating instructions.** A sign setting forth dispenser operating
38 instructions shall be posted on every dispenser. Such sign shall also indicate the location
39 of the emergency shutdown switches required by [FC2208.7] FC2308.7.

40
41 **[2208.1.5.2] 2308.1.5.2 CNG dispensing warning sign.** A warning sign that reads as
42 follows shall be posted on or immediately adjacent to each dispenser:

- 43
44 1. No smoking.
45
46 2. Shut off engine.
47

1 [2208.1.5.3] **2308.1.5.3 Emergency procedures.** A sign setting forth emergency
2 procedures that reads as follows shall be posted in the dispensing area, or other location
3 designated in this section:
4

5 IN CASE OF FIRE, LEAK OR EMERGENCY:

6
7 ACTIVATE EMERGENCY CNG SHUTDOWN

8
9 DIRECT VEHICLE OCCUPANTS TO EXIT VEHICLES
10 AND LEAVE AREA IMMEDIATELY

11
12 KEEP ALL PERSONS AWAY FROM THE AREA.

13
14 NOTIFY THE FIRE DEPARTMENT (CALL 911)

15
16 (FACILITY ADDRESS)

17 *(indicate address, with cross-street reference).*
18

19 [2208.1.6] **2308.1.6 Emergency telephone.** A telephone not requiring a coin to operate or
20 another approved, clearly identified means to notify the department, shall be provided at the
21 facility in an approved location.
22

23 [2208.1.7] **2308.1.7 Electrical equipment.** Electrical wiring and equipment shall be suitable
24 for the location in which they are installed and shall be in accordance with FC605, NFPA 52
25 and the Electrical Code.
26

27 [2208.1.8] **2308.1.8 Audible and visible alarms.** All audible and visible alarms required by
28 this section shall actuate at a supervised location on the premises that assures immediate
29 response.
30

31 [2208.1.9] **2308.1.9 Smoking and open flames.** It shall be unlawful to smoke or use or
32 maintain an open flame in any area where CNG motor fuel is compressed, stored or dispensed.
33

34 **Exception:** Welding, cutting or similar hot work may be conducted for emergency repair,
35 alteration or installation work, providing that all necessary safety precautions are taken,
36 and all required department permits and authorization from the holder of a certificate of
37 fitness for CNG station maintenance have been obtained.
38

39 [2208.1.10] **2308.1.10 Records of incidents.** Records shall be kept of all incidents including
40 fire, leak, device, equipment or system failure, out-of-service fire protection, alarm, or safety
41 system, and of all equipment maintenance. Such records shall be kept in a bound log book or
42 other recordkeeping approved by the department, maintained on the premises for a minimum
43 of 4 years.
44

45 [2208.1.11] **2308.1.11 Self-service CNG motor fuel-dispensing facilities.** Self-service CNG
46 motor fuel-dispensing facilities shall be designed, installed, operated and maintained in

1 compliance with the requirements of FC [2208.1.11.1] 2308.1.11.1 through [2208.1.11.5]
2 2308.1.11.5.

3
4 **[2208.1.11.1] 2308.1.11.1 Duties of certified attendant.** The certified attendant’s primary
5 function shall be to supervise, observe and monitor the dispensing of CNG. The certified
6 attendant shall prevent the dispensing of CNG into portable containers, control sources of
7 ignition, take immediate action upon a fire, leak or other emergency and be ready to use a
8 portable fire extinguisher. Nothing in this section shall be construed to prohibit a certified
9 attendant from engaging in activities directly related to the sale of CNG motor fuel, such
10 as the collection of money or processing of credit cards.

11
12 **[2208.1.11.2] 2308.1.11.2 Self-service dispensers.** Approved self-service devices,
13 equipment and systems such as, but not limited to, card-operated and remote-preset types,
14 are allowed at CNG motor fuel-dispensing facilities. The certified attendant shall set the
15 dispensing devices in the “off” position when not in use if such dispensing device can be
16 activated without the certified attendant’s knowledge.

17
18 **[2208.1.11.3] 2308.1.11.3 Monitoring of dispensing.** A control booth shall be located on
19 the premises of every self-service CNG motor fuel-dispensing facility. The control booth
20 shall be an interior or exterior enclosure to which the public has no access. The certified
21 attendant shall be present within the control booth while dispensing operations are
22 conducted. The control booth shall be designed and located so that the certified attendant
23 stationed therein shall have a full, unobstructed clear view of dispensing operations, except
24 that mirrors and/or an approved closed-circuit television installation may be provided to
25 afford the certified attendant a clear view of dispensing operations when the view from the
26 control booth is partially or temporarily obstructed. For purposes of this section, the “clear”
27 view provided by a closed-circuit television installation shall mean that the image on the
28 monitor shall be of such brightness and resolution as to allow ready identification of
29 individuals and easy observation of activities at all times of day. Audible and visible alarms
30 required by this section shall actuate within the control booth. A properly labeled manual
31 switch that activates the emergency shut down device shall be located within the control
32 booth. A console that controls the self-service CNG motor fuel dispensers shall be provided
33 within the control booth and within 5 feet (1524 mm) of the emergency shutdown device
34 manual switch.

35
36 **[2208.1.11.4] 2308.1.11.4 Two-way voice communication.** A two-way voice
37 communication system shall be installed to provide contact between the control booth and
38 each dispensing island.

39
40 **[2208.1.11.5] 2308.1.11.5 Signage.** The signage required by [FC2208.1.5] FC2308.1.5
41 shall be posted in the dispensing area of a self-service motor fuel-dispensing facility, except
42 that the emergency procedures sign required by [FC2208.1.5.3] FC2308.1.5.3 shall be
43 posted in the control booth.

44
45 **[2208.1.12] 2308.1.12 Fleet CNG motor fuel-dispensing facilities.** Fleet CNG motor fuel-
46 dispensing facilities shall be designed, installed, operated and maintained in compliance with
47 the requirements of FC [2208.1.12.1] 2308.1.12.1 through [2208.1.12.3] 2308.1.12.3.

1
2 [2208.1.12.1] **2308.1.12.1 Inspection of dispensing areas.** The certified attendant
3 responsible for supervision of the dispensing of CNG at a fleet motor fuel-dispensing
4 facility shall inspect the dispensing area on a periodic basis in accordance with the rules to
5 ensure that the facility is being maintained in accordance with this chapter and the rules.
6 The certified attendant shall notify the owner and make any other notifications required by
7 this code if there is any evidence that the facility is not in good working order. A record of
8 such inspections and notifications shall be maintained at the premises in accordance with
9 FC107.7.

10
11 [2208.1.12.2] **2308.1.12.2 Duties of fleet personnel.** Employees or other persons working
12 for the owner of a fleet CNG fuel-dispensing facility whose duties involve the dispensing
13 of CNG shall be trained and knowledgeable in such dispensing in compliance with the
14 requirements of this code and the rules.

15
16 [2208.1.12.3] **2308.1.12.3 Quantity limits.** Dispensing equipment used at fleet CNG
17 motor fuel-dispensing facilities shall be programmed or set to limit uninterrupted CNG
18 delivery to an approved amount and require a manual action to resume delivery.

19
20 [2208.1.13] **2308.1.13 Full-service CNG motor fuel-dispensing facilities.** Full-service CNG
21 motor fuel-dispensing facilities shall be operated and maintained in compliance with the
22 requirements of [FC2208.1.13.1] FC2308.1.13.1.

23
24 [2208.1.13.1] **2308.1.13.1 Duties of certified attendant.** The certified attendant at a full-
25 service CNG motor fuel-dispensing facility shall personally supervise the dispensing of
26 motor fuel into vehicles by facility personnel. The certified attendant shall conduct a visual
27 inspection of the dispensing area on a daily basis to monitor the condition of such
28 installation. The certificate of fitness holder shall notify the owner and make any other
29 notifications required by this code if there is any evidence that the installation is not in
30 good working order. A record of such inspections and notifications shall be maintained at
31 the premises in accordance with FC107.7.

32
33 [2208.2] **2308.2 Design, installation and testing requirements.** Devices, equipment and systems
34 used for the compression, storage and dispensing of CNG shall be designed, approved, listed
35 and/or tested in accordance with FC [2208.2.1] 2308.2.1 through [2208.2.7] 2308.2.7.

36
37 [2208.2.1] **2308.2.1 Approved equipment.** Containers, vessels, compressors, pressure
38 regulators, pressure relief valves and other pressure relief devices and piping used for CNG
39 shall be approved.

40
41 [2208.2.2] **2308.2.2 Listed equipment.** Hoses, hose connections, dispensers, gas detection
42 systems and electrical equipment used for CNG shall be listed. Vehicle-fueling connections
43 shall be listed and labeled.

44
45 [2208.2.3] **2308.2.3 Vehicle fueling hose.** Vehicle fueling hose shall be compatible with CNG
46 and shall withstand a pressure of at least four times the service pressure. Hoses shall be of
47 retractable design and shall be protected against physical damage. Hoses shall be tested for

1 leaks with a noncorrosive solution or equivalent leak detection method at least annually by a
2 certified attendant and shall be replaced if damaged. Records of required inspections and
3 testing shall be kept in a bound log book or other approved recordkeeping, maintained on the
4 premises for a minimum of 4 years.

5
6 **[2208.2.4] 2308.2.4 Initial container testing.** Prior to placing containers and pressure vessels
7 in CNG service, evidence of container and pressure vessel pressure tests shall be submitted to
8 the department demonstrating compliance with the requirements of NFPA 52.

9
10 **[2208.2.5] 2308.2.5 Gas piping.** All CNG system gas piping shall be tested by a qualified
11 person in accordance with NFPA 52 at the owner's risk and before a representative of the
12 department prior to placing the system in service. Required tests shall begin at the downstream
13 side of the remote manual shutdown valve.

14
15 **[2208.2.6] 2308.2.6 Filters and dryers.** Filters and dryers used at CNG motor fuel-dispensing
16 facilities shall be rated for the service and pressure intended and shall be tested in accordance
17 with the gas piping test requirements set forth in [FC2208.2.5] FC2308.2.5.

18
19 **[2208.2.7] 2308.2.7 Safety devices.** Upon installation, all automatic safety devices intended to
20 cause equipment shutdown shall be tested at the owner's risk by his or her representative before
21 a representative of the department.

22
23 **[2208.3] 2308.3 Location of dispensing operations and equipment.** CNG motor fuel-dispensing
24 facilities shall be located at a site operated by a natural gas utility, or other approved location.

25
26 **[2208.3.1] 2308.3.1 Location on property.** In addition to the requirements of [FC2203.1]
27 FC2303.1 and NFPA 52, compression, storage and dispensing devices, equipment and systems
28 shall be installed as follows:

- 29
30 1. Aboveground, and not beneath power lines.
31
32 2. At least 10 feet (3048 mm) from the nearest building, lot line, public street, private road,
33 sidewalk, or source of ignition.

34
35 **Exception:** Dispensing equipment need not be separated from canopies that are
36 constructed in accordance with the construction codes, including the Building Code,
37 and which provide weather protection for the dispensing equipment.

- 38
39 3. At least 25 feet (7620 mm) from the nearest rail of any railroad track and 50 feet (15 240
40 mm) or more from the nearest rail of any railroad main track or any railroad or transit
41 line where power for train propulsion is provided by an outside electrical source such as
42 third rail or overhead catenary.
43
44 4. At least 50 feet (15 240 mm) from the vertical plane below the nearest overhead wire of
45 a trolley bus line.
46

1 [2208.3.2] **2308.3.2 Rooftop operations.** Rooftop dispensing shall be in accordance with FC
2 [2208.3.2.1] 2308.3.2.1 through [2208.3.2.3] 2308.3.2.3.

3
4 [2208.3.2.1] **2308.3.2.1 Roof construction.** The roof of the building or structure shall be
5 of noncombustible construction.

6
7 [2208.3.2.2] **2308.3.2.2 Compressor and discharge piping.** The compressor shall be
8 located on the roof and the discharge piping shall not enter the building or structure.

9
10 [2208.3.2.3] **2308.3.2.3 Height.** The building or structure shall be 75 feet (22 860 mm) or
11 less in height.

12
13 [2208.4] **2308.4** Reserved.

14
15 [2208.5] **2308.5 Pressure regulators.** Pressure regulators shall be designed and installed or
16 protected so that their operation will not be affected by the elements (freezing rain, sleet, snow or
17 ice), mud or debris. The protection is allowed to be an integral part of the regulator.

18
19 [2208.6] **2308.6 Manual valves.** Gas supply piping to equipment shall be provided with a remote,
20 readily accessible manual shutoff valve of the fast-closing, quarter-turn type. Manual valves shall
21 be located so as to minimize the risk of physical damage and minimize being rendered inoperable
22 as a result of freezing.

23
24 [2208.6.1] **2308.6.1 Location.** Manual valves shall be located within the boundary of the
25 facility and as follows:

- 26
27 1. Not less than 25 feet (7620 mm) from the compressor for compressors rated for 300
28 standard cubic feet per minute (8.5 m³/min) or less.
29
30 2. Not less than 75 feet (22 860 mm) from the compressor for compressors rated for greater
31 than 300 standard cubic feet per minute (8.5 m³/min).
32

33 [2208.7] **2308.7 Emergency shutdown switches.** An approved, clearly identified and readily
34 accessible emergency shutdown switch shall be provided at an approved location. The switch,
35 upon activation, shall automatically and immediately shut off the power supply to the compressor
36 and close valves between the gas supply and the compressor and between the storage tanks and
37 the dispensers. Such emergency shutdown switches for outdoor CNG dispensers shall be located
38 within 75 feet (22 860 mm) of, but not less than 25 feet (7620 mm) from, the fuel dispensers. For
39 interior fuel-dispensing operations, such emergency shutdown switches shall be installed at an
40 approved location. An additional automatic emergency shutdown switch shall be provided in the
41 compressor area for both indoor and outdoor compressors. An approved sign shall be posted on or
42 immediately adjacent to such switches and shall read: EMERGENCY CNG SHUTOFF. Such
43 emergency shutdown switch shall be of a type that is manually resettable.

44
45 [2208.7.1] **2308.7.1 Compressor shutdown devices.** Each compressor shall be equipped with
46 an automatic shutdown device that will shut down the compressor in the event of low suction

1 pressure, high suction pressure, high motor temperature, high discharge pressure or high
2 discharge temperature.

3
4 **[2208.7.2] 2308.7.2 Gas detection system.** Indoor compressing, storage and dispensing areas
5 shall be provided with a combustible gas detection alarm system meeting the standards of the
6 construction codes, including the Building Code. Such system shall activate a local audible
7 and visible alarm at 20 percent of the LEL and automatically shut off gas supply at 50 percent
8 of the LEL, with simultaneous transmission of an alarm to the department by an approved
9 central station company. The automatic shutoff valve shall be located upstream from the
10 confined high-pressure piping and shall be installed underground or otherwise protected from
11 exposure to fire in an approved manner.

12
13 **[2208.7.3] 2308.7.3 Heat detection system.** Indoor compressing, storage and dispensing areas
14 shall be provided with a closed-circuit heat detection system utilizing approved heat detection
15 devices and equipment designed to automatically activate a local audible and visible alarm
16 with simultaneous transmission to an approved central station, activate a fire extinguishing
17 system over the area or enclosure, and shut off the gas supply to the compressor and dispenser.
18 The automatic shutoff valve shall be installed underground or be otherwise protected from
19 exposure to fire in an approved manner.

20
21 **[2208.7.3.1] 2308.7.3.1 Outdoor heat detection system.** Outdoor compressing, storage
22 and dispensing shall be provided with a closed-circuit heat detection system designed
23 utilizing approved heat detection devices and equipment designed to automatically activate
24 a local audible and visible alarm and shut off the gas supply to the compressor and
25 dispenser. The automatic shutoff valve shall be installed underground or otherwise
26 protected from exposure to fire in an approved manner.

27
28 **[2208.7.3.2] 2308.7.3.2. Outdoor storage exceeding 35,000 SCF [(991.2 m³)] (991.1 m³).**
29 For outdoor CNG storage exceeding 35,000 SCF [(991.2 m³)] (991.1 m³) located within
30 25 feet (7620 mm) of a building or structure, activation of the heat detection system shall
31 simultaneously transmit an alarm to an approved central station.

32
33 **[2208.7.4] 2308.7.4 Fire extinguishing systems and appliances.** Indoor compressing, storage
34 and dispensing areas shall be protected throughout by a fire extinguishing system.

35
36 **[2208.7.4.1] 2308.7.4.1 Fire extinguishing system periodic testing.** A performance test
37 of the non-water fire extinguishing system and the dispensing facility emergency shutdown
38 system shall be conducted at least once every 5 years. The test shall be conducted at the
39 owner's risk by his or her representative before a representative of the department.

40
41 **[2208.7.4.2] 2308.7.4.2 Portable fire extinguishers.** Portable fire extinguishers shall be
42 provided adjacent to the CNG motor fuel-dispensing facility in the number and size
43 specified by NFPA 52 and FC906.

44
45 **[2208.8] 2308.8 Discharge of CNG from motor vehicle fuel storage containers.** The discharge
46 of CNG from motor vehicle fuel containers for the purposes of maintenance, container

1 certification, calibration of dispensers or other activities shall be in accordance with FC [2208.8.1]
2 2308.8.1 through [2208.8.1.2] 2308.8.1.2.

3
4 **[2208.8.1] 2308.8.1 Methods of discharge.** The discharge of CNG from motor vehicle fuel
5 containers shall be accomplished through a closed transfer system in accordance with
6 [FC2208.8.1.1] FC2308.8.1.1 or an approved method of atmospheric venting in accordance
7 with [FC2208.8.1.2] FC2308.8.1.2.

8
9 **[2208.8.1.1] 2308.8.1.1 Closed transfer system.** Documentation of the procedure for
10 discharging the container shall be provided to the commissioner for approval. The
11 procedure shall include the actions the operator will take in the event of a low-pressure or
12 high-pressure natural gas release during the discharging activity. A schematic design
13 document illustrating the arrangement of piping, regulators and equipment settings, and
14 their relation to the location of the compressor, storage vessels and emergency shutdown
15 devices, shall be provided to the commissioner for approval.

16
17 **[2208.8.1.2] 2308.8.1.2 Atmospheric venting.** Atmospheric venting of CNG shall comply
18 with the requirements of FC [2208.8.1.2.1] 2308.8.1.2.1 through [2208.8.1.2.6]
19 2308.8.1.2.6.

20
21 **[2208.8.1.2.1] 2308.8.1.2.1 Plans and specifications.** A schematic design document
22 illustrating the location of the vessel support, piping, the method of grounding and
23 bonding, and other requirements specified herein or requested by the department shall
24 be provided to the commissioner for approval.

25
26 **[2208.8.1.2.2] 2308.8.1.2.2 Container stability.** A method of rigidly supporting the
27 container during the venting of CNG shall be provided. The selected method shall
28 provide not less than two points of support and shall prevent the horizontal and lateral
29 movement of the container. The system shall be designed to prevent the movement of
30 the container based on the highest gas-release velocity through valve orifices at the
31 container's rated pressure and volume. The structure or appurtenance shall be
32 constructed of noncombustible materials.

33
34 **[2208.8.1.2.3] 2308.8.1.2.3 Separation.** The structure or appurtenance used for
35 stabilizing the container shall be separated from other equipment or features as set forth
36 in FC Table [2208.8.1.2.3] 2308.8.1.2.3.

37
38
39
FC TABLE [2208.8.1.2.3] 2308.8.1.2.3
SEPARATION DISTANCE FOR ATMOSPHERIC VENTING OF CNG

EQUIPMENT OR FEATURE	MINIMUM SEPARATION (feet)
Buildings	25
Building openings	25
Lot lines	15
Public street or private roads	15
Vehicles	25
CNG compressor and storage containers	25
CNG dispensers	25

40 For SI: 1 foot = 304.8 mm.

41

1 **[2208.8.1.2.4] 2308.8.1.2.4 Grounding and bonding.** The structure or appurtenance
2 used for supporting the container shall be grounded in accordance with the Electrical
3 Code. The container valve shall be bonded prior to the commencement of venting
4 operations.

5
6 **[2208.8.1.2.5] 2308.8.1.2.5 Vent tube.** A vent tube that will divert the gas flow to the
7 atmosphere shall be installed on the container prior to commencement of the venting
8 and purging operation. The vent tube shall be constructed of pipe or tubing materials
9 approved for use with CNG in accordance with FC Chapter [30] 53. The vent tube shall
10 be capable of dispersing the gas a minimum of 10 feet (3048 mm) above grade level.
11 The vent tube shall not be provided with a rain cap or other feature that would limit or
12 obstruct the gas flow. At the connection fitting of the vent tube and the CNG container,
13 a listed bi-directional detonation flame arrester shall be provided.

14
15 **[2208.8.1.2.6] 2308.8.1.2.6 Signage.** Approved “No Smoking” signs complying with
16 the requirements of FC310 shall be conspicuously posted within 10 feet (3048 mm) of
17 the container support structure or appurtenance. Approved CONTAINER SHALL BE
18 BONDED signs shall be posted on the container support structure or appurtenance.

19
20 **[2208.9] 2308.9 Residential and other vehicle fueling appliance facilities.** The compressing and
21 dispensing of CNG by a vehicle fueling appliance shall be in accordance with FC [2208.9.1]
22 2308.9.1 through [2208.9.4] 2308.9.4.

23
24 **[2208.9.1] 2308.9.1 Residential fueling appliance facilities.** The compressing and dispensing
25 of CNG at a residential fueling appliance facility shall be in accordance with NFPA 52 and
26 this chapter, except that such facilities shall be exempt from the requirements of
27 [FC2208.3.1(2)] FC2308.3.1(2) with regard to the distance to the nearest building, and FC
28 [2208.7] 2308.7 through [2208.7.4] 2308.7.4.

29
30 **[2208.9.2] 2308.9.2 Nonresidential fueling appliance facilities.** The compressing and
31 dispensing of CNG at a nonresidential fueling appliance facility shall be in accordance with
32 NFPA 52 and this chapter, except that such facilities shall be exempt from [FC2208.3.1(2)]
33 FC2308.3.1(2) with regard to the distance to the nearest building, and FC [2208.7] 2308.7
34 through [2208.7.4] 2308.7.4.

35
36 **[2208.9.3] 2308.9.3 Prohibitions.** It shall be unlawful to:

- 37
38 1. Fill or store any containers, other than permanently mounted fuel containers on CNG-
39 powered vehicles.
40
41 2. Compress and dispense CNG indoors.
42

43 **[2208.9.4] 2308.9.4 Supervision.** The operation of a vehicle fueling appliance facility shall be
44 under the personal supervision of a certified attendant.

45
46 **[2208.10] 2308.10 Mobile CNG motor fuel compression, storage and dispensing.** A mobile
47 CNG motor fuel compression, storage and/or dispensing system may be used to fuel vehicle-

1 mounted containers as approved by the commissioner and subject to such conditions as the
2 commissioner may prescribe consistent with public safety.

3
4 **SECTION FC [2209] 2309**
5 **HYDROGEN MOTOR FUEL-DISPENSING**
6 **AND GENERATING FACILITIES**
7

8 **[2209.1] 2309.1 General.** Hydrogen motor fuel-dispensing and generating facilities shall be
9 designed, installed, operated and maintained in accordance with this section and FC Chapters [30]
10 53, [32] 55 and [35] 58, as applicable.

11 **[2209.1.1] 2309.1.1 Prohibition.** It shall be unlawful to:

- 12 1. Maintain or operate a self-service hydrogen motor fuel-dispensing facility.
- 13 2. Maintain or operate a marine hydrogen motor fuel-dispensing facility.
- 14 3. Fill a container with hydrogen, other than containers permanently mounted on a powered
15 industrial truck or a hydrogen-powered motor vehicle and used for motive power as set
16 forth in [FC3501.5(1)] FC5801.5(1).
- 17 4. Generate, compress, store or dispense hydrogen indoors, except for gaseous hydrogen
18 in hydrogen fuel gas rooms in accordance with FC5808.

19 **[2209.1.2] 2309.1.2 Supervision.** The dispensing of hydrogen at hydrogen motor fuel-
20 dispensing facilities shall be conducted by or under the personal supervision of a certified
21 attendant in accordance with [FC2201.7] FC2301.7.

22 **[2209.1.2.1] 2309.1.2.1 Inspection of dispensing area.** The certified attendant at a
23 hydrogen motor fuel-dispensing facility responsible for supervision of the dispensing of
24 hydrogen shall inspect the dispensing area on a daily basis to ensure that the facility is
25 being maintained in accordance with this chapter and the rules. The certified attendant shall
26 notify the owner and make any other notifications required by this code if there is any
27 evidence that the facility is not in good working order. A record of such inspections and
28 notifications shall be maintained at the premises in accordance with FC107.7.

29 **[2209.1.2.2] 2309.1.2.2 Duties of fleet personnel.** Employees or other persons working
30 for the owner of a fleet hydrogen motor fuel-dispensing facility whose duties involve the
31 dispensing of hydrogen shall be trained and knowledgeable in such dispensing in
32 compliance with the requirements of this code and the rules.

33 **[2209.1.3] 2309.1.3 Maintenance.** Maintenance of hydrogen motor fuel-dispensing facilities
34 shall be conducted under the personal supervision of a person holding a hydrogen fueling-
35 facility maintenance certificate of fitness.

36 **[2209.1.4] 2309.1.4 Lighting.** Dispensing areas shall be well lighted whenever dispensing is
37 conducted.

1
2 **[2209.1.5] 2309.1.5 Dispensing area signage.** Durable signs shall be conspicuously posted in
3 dispensing areas in hydrogen motor fuel-dispensing facilities in compliance with the
4 requirements of FC [2209.1.5.1] 2309.1.5.1 through [2209.1.5.4] 2309.1.5.4.

5
6 **[2209.1.5.1] 2309.1.5.1 Operating instructions.** A sign setting forth dispenser operating
7 instructions shall be posted on every dispenser. Such sign shall also indicate the location
8 of the emergency shutdown valves and emergency shutdown controls required by FC
9 [2209.7.3] 2309.7.3 and [2209.7.4] 2309.7.4.

10
11 **[2209.1.5.2] 2309.1.5.2 Hydrogen dispensing warning sign.** A warning sign that reads as
12 follows shall be posted on or immediately adjacent to each dispenser:

13
14 1. No smoking.

15
16 2. Shut off engine.

17
18 **[2209.1.5.3] 2309.1.5.3 Emergency procedures.** A sign setting forth emergency
19 procedures that reads as follows shall be posted in the dispensing area, or other location
20 designated in this section:

21
22 IN CASE OF FIRE, LEAK OR EMERGENCY:

23
24 ACTIVATE EMERGENCY SHUTDOWN

25
26 DIRECT VEHICLE OCCUPANTS TO EXIT VEHICLES
27 AND LEAVE AREA IMMEDIATELY

28
29 KEEP ALL PERSONS AWAY FROM THE AREA

30
31 NOTIFY THE FIRE DEPARTMENT (CALL 911)

32
33 (FACILITY ADDRESS)

34
35 (*indicate address, with cross-street reference*).

36 **[2209.1.5.4] 2309.1.5.4 Canopy top hydrogen storage.** An approved sign having 2-inch
37 (51-mm) block letters shall be conspicuously posted at approved locations on the exterior
38 of any canopy structure when gaseous hydrogen compression and storage equipment is
39 located on top of such canopy reading "CANOPY TOP HYDROGEN STORAGE."

40
41 **[2209.1.6] 2309.1.6 Emergency telephone.** A telephone not requiring a coin to operate or
42 another approved, clearly identified means to notify the department, shall be provided on the
43 site in an approved location.

44
45 **[2209.2] 2309.2 Equipment.** Equipment used for the generation, compression, storage or
46 dispensing of hydrogen shall be designed for hydrogen motor fuel in accordance with this section.
47

1 **[2209.2.1] 2309.2.1 Approved equipment.** Containers and tanks; pressure relief devices,
2 including pressure valves, hydrogen vaporizers, pressure regulators, and piping used for
3 gaseous hydrogen systems shall be designed and constructed in accordance with FC Chapters
4 [30] 53, [32] 55 and [35] 58.

5
6 **[2209.2.2] 2309.2.2 Listed or approved equipment.** Hoses, hose connections, compressors,
7 hydrogen generators, dispensers, detection systems and electrical equipment used for hydrogen
8 shall be listed or approved for use with hydrogen. Hydrogen motor fueling connections shall
9 be listed and labeled or approved for use with hydrogen.

10
11 **[2209.2.3] 2309.2.3 Electrical equipment.** Electrical wiring and equipment shall be suitable
12 for the location in which they are installed and shall be in accordance with the Electrical Code.

13
14 **[2209.3] 2309.3 Location.** In addition to the requirements of [FC2203.1] FC2303.1, generation,
15 compression, storage and dispensing equipment shall be located in accordance with this section.

16
17 **[2209.3.1] 2309.3.1 Outdoors.** Generation, compression, storage or dispensing equipment
18 shall be allowed outdoors only in accordance with FC Chapter [35] 58 and NFPA 2.

19
20 **[2209.3.2] 2309.3.2 Gaseous hydrogen storage.** Storage of gaseous hydrogen shall be
21 in accordance with FC Chapters [30] 53 and [35] 58 and NFPA 2.

22
23 **[2209.3.3] 2309.3.3 Liquefied hydrogen storage.** Storage of liquefied hydrogen shall
24 be in accordance with FC Chapters [32] 55 and [35] 58 and NFPA 2.

25
26 **[2209.3.4] 2309.3.4 Canopy tops.** Gaseous hydrogen compression and storage
27 equipment located on top of motor fuel-dispensing facility canopies shall be in accordance
28 with FC Chapters [30] 53 and [35] 58, the Fuel Gas Code and this section.

29
30 **[2209.3.4.1] 2309.3.4.1 Construction.** Canopies shall be constructed in accordance with
31 the motor fuel-dispensing facility canopy requirements of Chapter 4 of the Building Code
32 and the following:

- 33
34 1. The canopy shall meet or exceed Type I construction requirements.
35
36 2. Operations located under canopies shall be limited to fueling only.
37
38 3. The canopy shall be constructed in a manner that prevents the accumulation of
39 hydrogen gas.

40
41 **[2209.3.4.2] 2309.3.4.2 Fire extinguishing systems.** Fuel-dispensing areas under canopies
42 shall be protected throughout by a sprinkler system. The design of the sprinkler system
43 shall not be less than that required for Extra Hazard Group 2 occupancies. Operation of the
44 sprinkler system shall activate the emergency functions of this section.
45

1 **[2209.3.4.3] 2309.3.4.3 Emergency discharge.** Operation of the sprinkler system shall
2 activate an automatic emergency discharge system, which will discharge the hydrogen
3 gas from the equipment on the canopy top through the vent pipe system.
4

5 **[2209.3.4.4] 2309.3.4.4 Emergency shutdown control.** Operation of the sprinkler
6 system shall activate the emergency shutdown control required by [FC2209.7.4]
7 FC2309.7.4.
8

9 **[2209.4] 2309.4 Canopies.** Dispensing equipment need not be separated from canopies of Type I
10 or II construction that are constructed in a manner that prevents the accumulation of hydrogen gas
11 and in accordance with Chapter 4 of the Building Code.
12

13 **[2209.5] 2309.5 Weather protection.** Generation, compression, storage or dispensing
14 equipment shall be allowed under weather protection in accordance with the requirements of
15 Chapter 4 of the Building Code and [FC2704.13] FC5004.13. The weather protection shall be
16 constructed in a manner that prevents the accumulation of hydrogen gas.
17

18 **[2209.6] 2309.6 Overpressure protection.** Dispensing systems shall be equipped with an
19 overpressure protection device set at 140 percent of the service pressure of the fueling nozzle it
20 supplies.
21

22 **[2209.7] 2309.7 Safety precautions.** Safety precautions at hydrogen motor fuel-dispensing and
23 generating facilities shall be in accordance with this section.
24

25 **[2209.7.1] 2309.7.1 Protection from vehicles.** Guard posts or other approved means shall be
26 provided to protect hydrogen storage systems and use areas subject to vehicular damage in
27 accordance with FC312.
28

29 **[2209.7.2] 2309.7.2 Vehicle fueling pad.** The motor vehicle shall be fueled on noncoated
30 concrete or other approved paving material having a resistance not exceeding 1 megohm as
31 determined by the methodology specified in EN 1081.
32

33 **[2209.7.3] 2309.7.3 Emergency shutoff valves.** A manual emergency shutoff valve shall be
34 provided at a clearly visible, accessible and approved location, to shut down the flow of gas
35 from the hydrogen supply to the piping system.
36

37 **[2209.7.4] 2309.7.4 Emergency shutdown controls.** In addition to the manual emergency
38 shutoff valve required by [FC2209.7.3] FC2309.7.3, a remotely located, manually activated
39 emergency shutdown control shall be provided. An emergency shutdown control shall be
40 located within 75 feet (22 860 mm) of, but not less than 25 feet (7620 mm) from, dispensers
41 and hydrogen generators.
42

43 **[2209.7.5] 2309.7.5 System requirements.** Activation of the emergency shutdown control
44 shall automatically shut down the power supply to all hydrogen storage, compression and
45 dispensing equipment; shut off natural gas or other fuel supply to the hydrogen generator; and
46 close valves between the main supply and the compressor and between the storage containers
47 and dispensing equipment.

1
2 **2309.8 Defueling procedure.** The defueling, purging or other discharge of gaseous hydrogen from
3 hydrogen motor fuel supply systems, including tanks and piping, shall be conducted in accordance
4 with FC Chapters 53 and 58 and NFPA 2. Documentation setting forth the procedure for
5 discharging the storage container shall be submitted to the department for review in connection
6 with the approval of the hydrogen motor fuel storage and dispensing system installation. The
7 written procedure shall address the actions the operator shall take in the event of a low-pressure or
8 high-pressure hydrogen release during gaseous hydrogen discharge.

9
10 **Exception:** Discharges limited to the fuel supply piping from the fuel storage tank to the engine
11 compartment on a motor vehicle or powered industrial truck.

12
13 **SECTION FC [2210] 2310**
14 **MARINE LIQUID MOTOR FUEL-DISPENSING FACILITIES**
15

16 **[2210.1] 2310.1 General.** The construction of marine liquid motor fuel-dispensing facilities shall
17 be in accordance with the construction codes, including the Building Code, and NFPA 30A. The
18 installation, inspection, testing, maintenance and operation of a liquid motor fuel storage and
19 dispensing system at marine liquid motor fuel-dispensing facilities shall be in accordance with this
20 chapter governing automotive liquid motor fuel-dispensing facilities, except that full-service
21 marine liquid motor fuel-dispensing facilities do not require a fire extinguishing system for the
22 dispensing area.

23
24 **[2210.1.1] 2310.1.1 Prohibited facility.** It shall be unlawful to operate a self-service marine
25 liquid motor fuel-dispensing facility.

26
27 **[2210.2] 2310.2 Storage and handling.** The storage and handling of liquid motor fuel at marine
28 liquid motor fuel-dispensing facilities shall be in accordance with FC [2210.2.1] 2310.2.1 through
29 [2210.2.3] 2310.2.3.

30
31 **[2210.2.1] 2310.2.1 Class I, II or IIIA liquid storage.** Class I, II or IIIA liquids stored indoors
32 used for marine liquid motor fuel-dispensing facilities shall be stored in approved containers.
33 Storage of Class I liquids shall not exceed 10 gallons (38 L).

34
35 **[2210.2.2] 2310.2.2 Dispensing from portable containers.** No marine vessel or watercraft
36 shall be fueled from a portable container while indoors.

37
38 **[2210.2.3] 2310.2.3 Heating equipment.** Heating equipment installed in liquid motor fuel
39 storage or dispensing areas shall comply with the requirements of [FC2201.6] FC2301.6.

40
41 **[2210.3] 2310.3 Dispensing.** The dispensing of liquid motor fuel at marine liquid motor fuel-
42 dispensing facilities shall comply with the requirements of FC [2210.3.1] 2310.3.1 through
43 [2210.3.4] 2310.3.4.

44
45 **[2210.3.1] 2310.3.1 General.** Unless another use has been approved, piers, docks or wharves
46 at marine liquid motor fuel-dispensing facilities shall be used exclusively for the dispensing or

1 transfer of liquid motor fuel to or from marine vessel, watercraft, except that transfer of
2 essential ship stores is allowed.

3
4 **[2210.3.1.1] 2310.3.1.1 Flexible metallic piping.** Where there is a need to provide
5 flexibility in piping to allow for motion of a pier or dock, flexible metallic piping of an
6 approved length and design may be installed and used in compliance with NFPA 30A. All
7 flexible metallic piping or other flexible hose connections authorized by this section shall
8 be inspected for proper operation at least once a year by a certificate of license holder. A
9 record of such inspection shall be kept in a bound log book or other approved form of
10 recordkeeping, and maintained on the premises for a minimum of 4 years.

11
12 **[2210.3.2] 2310.3.2 Supervision.** The dispensing of liquid motor fuel at marine liquid motor
13 fuel-dispensing facilities shall be conducted by or under the personal supervision of a certified
14 attendant as set forth in [FC2201.7] FC2301.7.

15
16 **[2210.3.3] 2310.3.3 Hoses and nozzles.** Dispensing of liquid motor fuel into the fuel tanks of
17 marine vessels and watercraft shall be by means of an approved-type hose equipped with a
18 listed automatic-closing nozzle without a latch-open device. Hoses used for dispensing or
19 transferring liquid motor fuel, when not in use, shall be reeled, racked or otherwise protected
20 from mechanical damage.

21
22 **[2210.3.4] 2310.3.4 Portable containers.** Liquid motor fuel dispensing into portable
23 containers shall be performed in accordance with [FC2204.1.7] FC2304.1.7, except that
24 portable containers that are approved and used as the fuel tank for marine vessels or watercraft
25 may be of a capacity not greater than 5½ gallons (20.8 L).

26
27 **[2210.4] 2310.4 Fueling of marine vehicles at other than approved marine liquid motor fuel-**
28 **dispensing facilities.** It shall be unlawful to fuel floating marine vessels and watercraft with liquid
29 motor fuel at other than a marine liquid motor fuel-dispensing facility, except fueling of marine
30 vessels and watercraft performed by off-shore fueling vessels approved by the United States Coast
31 Guard.

32
33 **[2210.5] 2310.5 Fire prevention.** Marine liquid motor fuel-dispensing facilities shall comply with
34 the requirements of FC [2210.5.1] 2310.5.1 through [2210.5.7] 2310.5.7.

35
36 **[2210.5.1] 2310.5.1 Housekeeping.** Marine motor fuel-dispensing facilities shall be
37 maintained in a neat and orderly manner. Accumulations of rubbish or waste oils in excessive
38 amounts are prohibited. Rubbish and other combustible waste shall be regularly removed from
39 the premises and disposed of lawfully.

40
41 **[2210.5.2] 2310.5.2 Spills.** Spills of liquid motor fuel near or in the water shall be reported
42 immediately to the department and other governmental agencies requiring such reporting.

43
44 **[2210.5.3] 2310.5.3 Rubbish containers.** Metal containers with tight-fitting or self-closing
45 metal lids shall be provided for the temporary storage of rubbish or other combustible waste.
46

1 [2210.5.4] **2310.5.4 Marine vessel and watercraft mooring.** When marine vessels and
2 watercraft are being fueled at a fuel dock, no other marine vessel or watercraft shall be made
3 fast to the marine vessel or watercraft being fueled or to the fuel dock. The dispensing hose
4 shall not cross one marine vessel or watercraft to reach another.
5

6 [2210.5.5] **2310.5.5 Sources of ignition.** Any activity or operation involving the use of open
7 flames, arc- or spark-producing devices shall not be performed at marine motor fuel-dispensing
8 facilities or within 50 feet (15 240 mm) of the dispensing facilities, including piers, docks or
9 wharves, except where approved by the commissioner. Dispensing shall not be conducted at
10 such pier, dock or wharf during the course of such emergency repairs.
11

12 [2210.5.5.1] **2310.5.5.1 Smoking.** It shall be unlawful to smoke, use or maintain an open
13 flame within 50 feet (15 240 mm) of fueling operations. “No Smoking” signs complying
14 with the requirements of FC310 shall be conspicuously posted throughout the premises.
15 Such signs shall have letters of not less than 4 inches (102 mm) in height with a background
16 of contrasting color.
17

18 [2210.5.6] **2310.5.6 Preparation of tanks for fueling.** Marine vessel and watercraft owners
19 and operators shall not offer their marine vessel or watercraft for fueling unless the tanks being
20 filled are properly vented to dissipate fumes to the outdoors.
21

22 [2210.5.7] **2310.5.7 Warning signs.** Warning signs shall be prominently displayed at the face
23 of each pier, dock or wharf at such elevation as to be clearly visible from the decks of marine
24 vessels and watercraft being fueled. Such signs shall have letters not less than 3 inches (76
25 mm) in height on a background of contrasting color bearing the following or approved
26 equivalent wording:
27

28 WARNING
29 NO SMOKING—STOP ENGINE WHILE
30 FUELING, SHUT OFF ELECTRICITY.
31 DO NOT START ENGINE UNTIL AFTER
32 BELOW DECK SPACES ARE VENTILATED.
33

34 [2210.6] **2310.6 Fire protection.** Marine liquid motor fuel-dispensing facilities shall comply with
35 the requirements of FC [2210.6.1] **2310.6.1** through [2210.6.4] **2310.6.4**, and the construction
36 codes, including the Building Code.
37

38 [2210.6.1] **2310.6.1 Standpipe hose stations.** Fire hose, when required, shall be provided and
39 enclosed within a cabinet, and hose stations shall be labeled: FIRE HOSE—EMERGENCY
40 USE ONLY.
41

42 [2210.6.2] **2310.6.2 Obstruction of fire protection equipment.** Materials shall not be placed
43 or stored on a pier, dock or wharf in such a manner as to obstruct access to firefighting
44 equipment or piping system control valves.
45

1 [2210.6.3] **2310.6.3 Access.** Where the pier, dock or wharf is accessible to vehicular traffic, an
2 unobstructed roadway to the shore end of the pier, dock or wharf shall be maintained for access
3 by fire apparatus.
4

5 [2210.6.4] **2310.6.4 Portable fire extinguishers.** One portable fire extinguisher in accordance
6 with FC906 having a minimum rating of 40-B:C shall be provided on the pier, dock or wharf
7 within 25 feet (7620 mm) of the head of the gangway to the pier, dock or wharf. If the certified
8 attendant's office is within 25 feet (7620 mm) of the gangway or is on the pier, dock or wharf,
9 the fire extinguisher may be provided therein.
10

11 SECTION FC [2211] **2311** 12 REPAIR GARAGES 13

14 [2211.1] **2311.1 General.** Repair garages shall comply with the requirements of this section and
15 the construction codes, including the Building Code. Repair garages for vehicles that use more
16 than one type of fuel shall comply with the applicable requirements of this section for each type
17 of fuel used. Where a repair garage also includes a motor fuel-dispensing facility, the fuel-
18 dispensing operation shall comply with the requirements of this chapter for motor fuel-dispensing
19 facilities.
20

21 [2211.1.1] **2311.1.1 Supervision of defueling operations.** The defueling of liquid motor fuel
22 from the fuel tank of a motor vehicle shall be [conducted by or under the personal supervision
23 of a person holding a certificate of fitness] supervised in accordance with FC2301.8.
24

25 **2311.1.2 Supervision of repair garages for vehicles fueled by lighter-than-air motor fuels.**
26 The defueling of motor fuel from the fuel tank of a motor vehicle fueled by lighter-than-air
27 motor fuel, and the refueling of such vehicles, shall be conducted by or under the personal
28 supervision of a person holding a certificate of fitness.
29

30 [2211.2] **2311.2 Storage and use of flammable and combustible liquids.** The storage and use of
31 flammable and combustible liquids in repair garages shall comply with the requirements of FC
32 Chapter [34] 57 and FC [2211.2.1] 2311.2.1 through [2211.2.4] 2311.2.4.
33

34 [2211.2.1] **2311.2.1 Cleaning of parts.** Cleaning of parts shall be conducted in listed and
35 approved parts-cleaning machines in accordance with FC Chapter [34] 57.
36

37 [2211.2.2] **2311.2.2 Waste oil, motor oil and other Class IIIB liquids.** Waste oil, motor oil
38 and other Class IIIB liquids, including crankcase drainings shall be stored in approved tanks
39 or containers, which are allowed to be stored and dispensed from inside repair garages.
40

41 [2211.2.2.1] **2311.2.2.1 Tanks storing waste oil.** For tanks of a capacity of 500 gallons
42 (1893 L) or less, the fill connection may be located indoors provided that discharge of
43 vapor from the fill port is prevented from entering the building or structure during and after
44 filling. An automatic spring-loaded vertical check valve in the fill line or other device
45 designed to prevent vapors from escaping shall be provided. The fill line shall be capped
46 immediately after filling.
47

1 **[2211.2.3] 2311.2.3 [Drainage] Draining and disposal of liquids and oil-soaked waste.**
2 Garage floor drains, where provided, shall drain to approved oil separators or traps discharging
3 to a sewer in accordance with the construction codes, including the Plumbing Code. Contents
4 of oil separators, traps and floor drainage systems shall be collected at sufficiently frequent
5 intervals and removed from the premises to prevent oil from being carried into the sewers.
6 Crankcase drainings and liquids shall not be dumped into sewers, streams or on the ground,
7 but shall be stored in approved tanks or containers in accordance with FC Chapter [34] 57 until
8 removed from the premises. Self-closing metal cans shall be used for oily waste.

9
10 **2311.2.3.1 Draining of liquid motor fuel tanks.** Portable equipment used for defueling
11 and refueling shall be listed and labeled and shall have fuel storage tanks not exceeding 65
12 gallons (246 L). Stationary systems for defueling and refueling, shall be approved by the
13 department.

14
15 **[2211.2.4] 2311.2.4 Spray finishing.** Spray finishing with flammable or combustible liquids
16 shall comply with the requirements of FC Chapter [15] 24.

17
18 **[2211.3] 2311.3 Sources of ignition.** Sources of ignition shall not be located within 18 inches (457
19 mm) of the floor and shall comply with the requirements of FC Chapters 3 and [26] 35.

20
21 **[2211.3.1] 2311.3.1 Equipment.** Appliances and equipment installed in a repair garage shall
22 comply with the requirements of the construction codes, including the Building Code, the
23 Mechanical Code and the Electrical Code.

24
25 **[2211.3.2] 2311.3.2 Smoking.** Smoking is prohibited in repair garages.

26
27 **[2211.4] 2311.4 Below grade areas.** Pits and other work areas below grade in repair garages shall
28 comply with the requirements of FC [2211.4.1] 2311.4.1 through [2211.4.3] 2311.4.3.

29
30 **[2211.4.1] 2311.4.1 Construction.** Pits and other work areas below grade shall be constructed
31 in accordance with the construction codes, including the Building Code.

32
33 **[2211.4.2] 2311.4.2 Means of egress.** Pits and other work areas below grade shall be provided
34 with means of egress in accordance with the Building Code.

35
36 **[2211.4.3] 2311.4.3 Ventilation.** Where Class I liquids are stored or used within a building
37 having a basement or pit wherein flammable vapors could accumulate, the basement or pit
38 shall be provided with mechanical ventilation in accordance with the construction codes,
39 including the Mechanical Code, at a minimum rate of 1.5 cubic feet per minute per square foot
40 ($0.008 \text{ m}^3/\text{s}/\text{m}^2$) to prevent the accumulation of flammable vapors.

41
42 **[2211.5 Preparation of vehicles for repair.** For vehicles powered by gaseous fuels, the fuel
43 shutoff valves shall be closed prior to repairing any portion of the vehicle fuel system. Vehicles
44 powered by gaseous fuels in which the fuel system has been damaged shall be inspected and
45 evaluated for fuel system integrity prior to being brought into the repair garage. The inspection
46 shall include testing of the entire fuel delivery system for leakage.

1 **2211.5.1 Drainage of liquid motor fuel tanks.** Portable equipment used for defueling and
2 refueling shall be listed and labeled and shall have fuel storage tanks not exceeding 65 gallons
3 (246 L). Systems for defueling and refueling, other than by use of portable equipment, shall be
4 approved.]

5
6 **2311.5** Reserved.

7
8 **2311.6** Reserved.

9
10 **[2211.6] 2311.7 Portable fire extinguishers.** Portable fire extinguishers shall be provided in
11 accordance with FC906.

12
13 **[2211.7] 2311.8 Repair garages for vehicles fueled by lighter-than-air motor fuels.** [Repair
14 garages] The repair garage, or the room, booth or area thereof, for the conversion and/or repair of
15 vehicles which use CNG, liquefied natural gas (LNG), hydrogen or other lighter-than-air motor
16 fuels shall be designed, installed, operated and maintained in accordance with FC [2211.7.1 and
17 2211.7.2, and, as applicable, FC2211] 2311.8.1 through 2311.8.8.

18
19 **[Exception:] Exceptions:**

20
21 1. Repair garages where work is conducted only on vehicles that have been defueled and
22 their systems purged with nitrogen gas, and which will not be re-fueled in the repair
23 garage. Documentation of such purging shall be maintained on the premises and signage
24 conspicuously posted that no lighter-than-air gas fueling shall be conducted in the repair
25 garage.

26
27 2. Repair garages where work is not performed on the fuel system and is limited to
28 exchange of parts and maintenance requiring no open flame or welding on the CNG-,
29 LNG-, hydrogen- or other lighter-than-air-fueled motor vehicle.

30
31 3. Repair garages for hydrogen-fueled vehicles where work is not performed on the
32 hydrogen storage tank and is limited to the exchange of parts and maintenance requiring
33 no open flame or welding on the hydrogen-fueled vehicle. During the work, the entire
34 hydrogen fuel system shall contain less than 200 cubic feet (5.6 m³) of hydrogen.

35
36 4. Repair garages for natural-gas-fueled vehicles where work is not being performed on the
37 fuel storage tank, and is limited to the exchange of parts and maintenance requiring no
38 open flame or welding on the natural-gas-fueled vehicle. During the work, the natural
39 gas in the vehicle fuel tank shall contain a pressure of not more than 250 psi at 70°F (1724
40 kPa at 21°C).

41
42 **2311.8.1 Construction requirements.** Any room or booth in a repair garage that is used for
43 motor vehicle repair shall be constructed in accordance with the Building Code and FC
44 2311.8.1.1 and 2311.8.1.2.

1 **2311.8.1.1 Motor vehicle repair spaces.** When motor vehicle repairs are performed in an
2 unenclosed interior space, noncombustible spray curtains shall be provided to restrict the
3 spread of flammable gases.

4
5 **2311.8.1.2 Below grade areas.** Motor vehicle repair rooms, booths and spaces shall not be
6 constructed in below grade areas.

7
8 **2311.8.2 Fire protection.** Motor vehicle repair booths or spaces installed in a room or area
9 shall be protected by a sprinkler system as set forth in the Building Code.

10
11 [2211.7.1 Ventilation] **2311.8.3 Exhaust ventilation system.** Repair garages used for the
12 repair of vehicles fueled by CNG, LNG or [hydrogen-fueled vehicles] other lighter-than-air
13 motor fuels other than hydrogen shall be provided with an approved mechanical ventilation
14 system[. The mechanical ventilation system shall be] designed in accordance with this section
15 and the construction codes, including the Mechanical Code. Repair garages used for the repair
16 of hydrogen-fueled vehicles shall be provided with an approved exhaust ventilation system in
17 accordance with the construction codes, including the Mechanical Code, and Chapter 6 of
18 NFPA 2.

19
20 **2311.8.3.1 Design.** For indoor locations, air supply inlets and exhaust outlets for
21 mechanical ventilation shall be arranged to provide uniformly distributed air movement
22 with inlets uniformly arranged on walls near floor level and outlets at the high point of the
23 room in walls or the roof. Failure of the ventilation system shall cause the fueling system
24 to shut down. The exhaust ventilation rate shall be not less than 1 cubic foot per minute
25 (0.03 m³/minute) per 12 cubic feet (34 m³) of room volume.

26
27 **2311.8.3.2 Operation.** The mechanical exhaust ventilation system shall operate
28 continuously.

29
30 **Exceptions:**

- 31
32 1. Mechanical exhaust ventilation systems that are interlocked with a gas detection
33 system designed in accordance with FC2311.8.4.
34
35 2. Mechanical exhaust ventilation systems in repair garages that are used only for
36 repair of vehicles fueled by liquid fuels or odorized gases, such as CNG, where
37 the ventilation system is electrically interlocked with the lighting circuit.
38

39 [2211.7.2] **2311.8.4 Gas detection system.** Repair garages used for repair of vehicles fueled
40 by CNG, LNG or hydrogen shall be provided with [an approved flammable] a gas detection
41 system [meeting the requirements of the construction codes, including the Building Code] in
42 accordance with FC 908 and 2311.8.4.1 through 2311.8.4.3.

43
44 **2311.8.4.1 System design.** The gas detection system shall be designed to detect leakage of
45 nonodorized gaseous fuel. Where lubrication or chassis service pits are provided in garages
46 used for repairing nonodorized LNG-fueled vehicles, gas sensors shall be provided in such
47 pits.

1
2 **2311.8.4.2 System activation.** Activation of the gas detection system alarm shall initiate
3 the following actions:

- 4
5 1. Activation of local audible and visual alarms in approved locations.
6
7 2. Deactivation of heating systems located in the repair garage.
8
9 3. Activation of the mechanical exhaust ventilation system, where the ventilation
10 system is interlocked with gas detection.

11
12 **2311.8.4.3 System failure.** Failure of the gas detection system shall automatically
13 deactivate the heating system, activate the mechanical exhaust ventilation system where
14 the system is interlocked with the gas detection system, and transmit a supervisory signal
15 to the control panel and a central station.

16
17 **2311.8.5 Electrical requirements.** Areas within 18 inches (450 mm) of a ceiling within a
18 motor vehicle repair room or motor vehicle repair booth shall be designed and installed in
19 accordance with the requirements for Class I, Division 2 classified locations, as set forth in the
20 Electrical Code.

21
22 **Exceptions:**

- 23
24 1. Motor vehicle repair rooms with exhaust ventilation of not less than 1 cfm per square
25 foot (0.03 m³/minute/m²) of floor area, with suction taken from a point within 18
26 inches (450 mm) of the highest point in the ceiling in repair garages for vehicles that
27 use CNG, liquefied natural gas (LNG) or other lighter-than-air motor fuels.
28
29 2. Motor vehicle repair rooms used for the repair of hydrogen-fueled vehicles that have
30 an approved exhaust ventilation system in accordance with the Mechanical Code and
31 NFPA 2.

32
33 **2311.8.6 Preparation of vehicles for repair.** For vehicles powered by gaseous fuels, the fuel
34 shutoff valves shall be closed prior to repairing any portion of the vehicle fuel system. Where
35 the fuel system of a vehicle powered by a gaseous fuel has been damaged, the entire fuel system
36 of the vehicle shall be inspected and evaluated for integrity prior to being brought into the
37 repair garage.

38
39 **2311.8.7 Other requirements.** Repair garages for vehicles fueled by lighter-than-air motor
40 fuels shall comply with the requirements of FC 2311.1.2, 2311.3 and 2311.7 with respect to
41 supervision, sources of ignition and portable fire extinguishers.

42
43 **[2211.8] 2311.8.8 Defueling [of hydrogen from motor vehicle fuel storage containers.**
44 Discharge or defueling of hydrogen from motor vehicle fuel storage containers for the purpose
45 of maintenance, container certification or other purposes shall be performed in accordance with
46 FC2211.8.1.]equipment required at vehicle maintenance and repair facilities. Repair
47 garages that repair or replace hydrogen fuel systems on hydrogen-fueled vehicles shall have

1 equipment to defuel hydrogen fuel storage tanks. Where work must be performed on a
2 vehicle's fuel storage tank for the purpose of maintenance, repair or cylinder certification,
3 defueling and purging shall be conducted in accordance with FC 2309.8 and NFPA 2.
4

5 **[2211.8.1 Methods of discharge.** The discharge of hydrogen from motor vehicle fuel storage
6 containers shall be accomplished through a closed transfer system in accordance with
7 FC2211.8.1.1 or an approved method of atmospheric venting in accordance with FC2211.8.1.2.
8

9 **2211.8.1.1 Closed transfer system.** A documented procedure that explains the logic
10 sequence for discharging the storage container shall be provided to the commissioner for
11 review and approval. The procedure shall include the actions the operator is required to
12 take in the event of a low-pressure or high-pressure hydrogen release during discharging
13 activity. Schematic design documents shall be provided illustrating the arrangement of
14 piping, regulators and equipment settings. The design and installation documents shall
15 illustrate the piping and regulator arrangement and shall be shown in spatial relation to the
16 location of the compressor, storage vessels and emergency shutdown devices.
17

18 **2211.8.1.2 Atmospheric venting of hydrogen from motor vehicle fuel storage**
19 **containers.** When atmospheric venting is used for the discharge of hydrogen from motor
20 vehicle fuel storage containers, such venting shall be performed in accordance with FC
21 2211.8.1.2.1 through 2211.8.1.2.4.
22

23 **2211.8.1.2.1 Defueling equipment required at vehicle maintenance and repair**
24 **facilities.** All facilities for repairing hydrogen systems on hydrogen-fueled vehicles
25 shall have equipment to defuel vehicle storage containers. Equipment used for
26 defueling shall be listed and labeled for the intended use.
27

28 **2211.8.1.2.1.1 Manufacturer's equipment required.** Equipment supplied by the
29 vehicle manufacturer shall be used to connect the vehicle storage containers to be
30 defueled to the vent pipe system.
31

32 **2211.8.1.2.1.2 Vent pipe maximum diameter.** Defueling vent pipes shall have a
33 maximum inside diameter of 1 inch (25 mm) and be installed in an approved
34 manner.
35

36 **2211.8.1.2.1.3 Maximum flow rate.** The maximum rate of hydrogen flow through
37 the vent pipe system shall not exceed 1,000 SCF/min (28.3 m³/min) and shall be
38 controlled by means of the manufacturer's equipment, at low pressure and without
39 adjustment.
40

41 **2211.8.1.2.1.4 Isolated use.** The vent pipe used for defueling shall not be connected
42 to a venting system used for another purpose.
43

44 **2211.8.1.2.2 Design and installation documents.** Design and installation documents
45 shall be provided illustrating the defueling system to be utilized. Plan details shall be
46 of sufficient detail and clarity to allow for evaluation of the piping and control systems
47 to be utilized and include the method of support for containers to be used as part of a

1 closed transfer system, the method of grounding and bonding, and other requirements
2 set forth in this section.
3

4 **2211.8.1.2.3 Stability of containers.** A method of rigidly supporting containers used
5 during defueling of hydrogen shall be provided. The method shall provide not less than
6 two points of support and shall be designed to resist lateral movement of the receiving
7 container. The system shall be designed to resist movement of the receiver based on
8 the highest gas-release velocity through valve orifices at the receiver's rated service
9 pressure and volume. Supporting structures or appurtenances used to support
10 containers shall be constructed of noncombustible materials in accordance with the
11 construction codes, including the Building Code.
12

13 **2211.8.1.2.4 Grounding and bonding.** Containers and piping systems used for
14 defueling shall be bonded and grounded. Structures or appurtenances used for
15 supporting the containers shall be grounded in accordance with the Electrical Code.
16 The valve of the vehicle storage container shall be bonded with the defueling system
17 prior to the commencement of discharge or defueling operations.
18

19 **2211.8.2 Repair of hydrogen piping.** Piping systems containing hydrogen shall not be opened
20 to the atmosphere for repair without first purging the piping with an inert gas to achieve 1
21 percent hydrogen or less by volume. Defueling operations and exiting purge flow shall be
22 vented in accordance with FC2211.8.1.2.
23

24 **2211.8.3 Purging.** Each individual component of a hydrogen defueling system shall have a
25 label affixed as well as a description in the installation and owner's manuals describing the
26 procedure for purging air from the system during startup, regular maintenance and for purging
27 hydrogen from the system prior to disassembly (to admit air). For the interconnecting piping
28 between the individual manufactured components, the pressure rating must be at least twenty
29 times the absolute pressure present in the piping when any hydrogen meets any air.
30

31 **2211.8.3.1 System purge required.** After installation, repair or maintenance, the hydrogen
32 piping system shall be purged of air in accordance with the manufacturer's specifications.]
33

34
35 **CHAPTER 24**
36 **FLAMMABLE FINISHES**

37
38 **SECTION FC [1501] 2401**
39 **GENERAL**
40

41 **[1501.1] 2401.1 Scope.** This chapter shall govern the following operations, and the design,
42 installation, operation and maintenance of any building, structure or premises wherein such
43 operations are conducted:
44

- 45 1. The application of flammable finishes to articles or materials by means of spray apparatus.
46

1 transported through the container immediately above the charged and aerated materials in order to
2 be coated.]

3
4 **FLAMMABLE FINISHES.** [Material coatings in which the material being applied is a
5 flammable liquid, combustible liquid, combustible powder or flammable or combustible gel
6 coating.]

7
8 **FLAMMABLE VAPOR AREA.** [The interior of any room, booth or area, including spray rooms,
9 spray booths, exhaust ducts and drying rooms, or other areas in which, as a result of flammable
10 finishing operations, the concentration of flammable constituents (vapor, gas, fume, mist or dust)
11 in air exceeds 25 percent of their lower flammable limit (LFL).]

12
13 **FLOOR FINISHING OPERATION.** [Any activity involving the surfacing or finishing of a
14 floor, including but not limited to cleaning, stripping, sealing, painting, varnishing, lacquering,
15 staining and waxing.]

16
17 **FLUIDIZED BED.** [A container holding powder coating material that is aerated from below so
18 as to form an air-supported expanded cloud of such material through which the preheated object
19 to be coated is immersed and transported.]

20
21 **LIMITED-SPRAYING SPACE.** [An area in which spraying operations for touch-up or spot
22 painting of a surface area of 9 square feet (0.84m²) or less per workpiece are conducted.]

23
24 **RESIN APPLICATION AREA.** [An area where reinforced plastics are used to manufacture
25 products by hand lay-up or spray-fabrication methods.]

26
27 **ROLL COATING.** [The process of coating, spreading and impregnating fabrics, paper or other
28 materials as they are passed directly through a tank or trough containing flammable or combustible
29 liquids, or over the surface of a roller revolving partially submerged in a flammable or combustible
30 liquid.]

31
32 **SPRAY BOOTH.** [A mechanically ventilated appliance of varying dimensions and construction
33 provided to enclose or accommodate a spraying operation and to confine and limit the escape of
34 spray vapor and residue and to exhaust it safely.]

35
36 **SPRAY ROOM.** [A room designed to accommodate spraying operations constructed in
37 accordance with the Building Code. The room enclosure shall be at least 2-hour fire-resistant
38 rated.]

39
40 **SPRAYING SPACE.** [The interior of a spray room, spray booth, exhaust duct, or other area in
41 which, as a result of flammable finishing operations, surfaces are exposed to flammable vapors or
42 mists or combustible dust, and are susceptible to accumulation of flammable or combustible
43 residues or deposits.]

44
45 **SECTION FC [1503] 2403**
46 **PROTECTION OF OPERATIONS**
47

1 **[1503.1] 2403.1 General.** Operations covered by this chapter shall be protected as required by this
2 section and the Electrical Code.

3
4 **[1503.2] 2403.2 Sources of ignition.** Protection against sources of ignition shall be provided in
5 accordance with FC [1503.2.1] 2403.2.1 through [1503.2.8] 2403.2.8.

6
7 **[1503.2.1] 2403.2.1 Electrical wiring and equipment.** Electrical wiring and equipment shall
8 comply with the requirements of this chapter and the Electrical Code.

9
10 **[1503.2.1.1] 2403.2.1.1 Flammable vapor areas.** Electrical wiring and equipment in
11 flammable vapor areas shall be of an explosion-proof type approved for use in such
12 hazardous locations. Such areas shall be considered to be Class I, Division 1 or Class II,
13 Division 1 hazardous locations in accordance with the Electrical Code.

14
15 **[1503.2.1.2] 2403.2.1.2 Areas subject to deposits of residues.** Electrical equipment in
16 flammable vapor areas and drying operations which are subject to splashing or dripping of
17 liquids shall be specifically approved for locations containing deposits of readily ignitable
18 residue and explosive vapors.

19
20 **Exceptions:**

- 21
22 1. Wiring in rigid conduit and threaded boxes or fittings not containing taps, splices
23 or terminal connections.
24
25 2. Electrostatic equipment complying with the requirements of [FC1507] FC2407.

26
27 **[1503.2.1.2.1] 2403.2.1.2.1 Resin application areas.** In resin application areas,
28 electrical wiring and equipment that is subject to deposits of combustible residues shall
29 be listed for such exposure and shall be installed as required for hazardous (classified)
30 locations. Electrical wiring and equipment not subject to deposits of combustible
31 residues shall be installed as required for ordinary hazard locations.

32
33 **[1503.2.1.3] 2403.2.1.3 Areas adjacent to spray booths.** Electrical wiring and equipment
34 located outside of, but within 5 feet (1524 mm) horizontally and 3 feet (914 mm) vertically
35 of openings in a spray booth or a spray room shall be approved for Class I, Division 2 or
36 Class II, Division 2 hazardous locations, whichever is applicable.

37
38 **[1503.2.1.4] 2403.2.1.4 Areas subject to overspray deposits.** Electrical equipment in
39 flammable vapor areas located such that deposits of combustible residues could readily
40 accumulate thereon shall be specifically approved for locations containing deposits of
41 readily ignitable residue and explosive vapors in accordance with the Electrical Code.

42
43 **Exceptions:**

- 44
45 1. Wiring in rigid conduit and threaded boxes or fittings not containing taps, splices
46 or terminal connections.
47

1 **[1503.3] 2403.3 Storage, handling and use of flammable and combustible liquids.** Flammable
2 and combustible liquids shall be stored, handled and used in accordance with this section and
3 FC Chapter [34] 57.

4
5 **[1503.3.1] 2403.3.1 Use.** Containers supplying spray nozzles shall be of a closed type or
6 provided with metal covers which are kept closed. Containers not resting on floors shall be on
7 noncombustible supports or suspended by wire cables. Containers supplying spray nozzles by
8 gravity flow shall not exceed 10 gallons (37.9 L) in capacity.

9
10 **[1503.3.2] 2403.3.2 Valves.** Containers and piping to which a hose or flexible connection is
11 attached shall be provided with a shutoff valve at the connection. Such valves shall be kept
12 shut when hoses are not in use.

13
14 **[1503.3.3] 2403.3.3 Pumped liquid supplies.** Where flammable or combustible liquids are
15 supplied to spray nozzles by positive displacement pumps, pump discharge lines shall be
16 provided with an approved relief valve discharging to pump suction or a safe detached location.

17
18 **[1503.3.4] 2403.3.4 Liquid transfer.** Where a flammable liquid is transferred from one
19 portable container to another, a bond shall be provided between the two containers. At least
20 one container shall be grounded. Piping systems for Class I and Class II liquids shall be
21 permanently grounded.

22
23 **[1503.3.5] 2403.3.5 Class I liquids as solvents.** Class I liquids used as solvents shall be used
24 in spray gun and equipment cleaning machines which have been listed and approved for the
25 purpose or shall be used in spray booths or spray rooms in accordance with FC [1503.3.5.1]
26 2403.3.5.1 and [1503.3.5.2] 2403.3.5.2.

27
28 **[1503.3.5.1] 2403.3.5.1 Listed devices.** Cleaning machines for spray guns and equipment
29 shall not be located in areas open to the public and shall be separated from ignition sources
30 in accordance with their listings or by a distance of 3 feet (914 mm), whichever is greater.
31 The quantity of solvent used in a machine shall not exceed the design capacity of the
32 machine.

33
34 **[1503.3.5.2] 2403.3.5.2 Within spray booths and spray rooms.** Mechanical ventilation
35 equipment shall be operated when solvents are used for cleaning spray nozzles and
36 auxiliary equipment and for a period of time thereafter to allow for the exhaust of the vapors
37 within spray booths and spray rooms.

38
39 **[1503.3.6] 2403.3.6 Class II and Class III liquids.** Solvents used outside of spray booths,
40 spray rooms or listed and approved spray gun and equipment cleaning machines shall be
41 restricted to Class II and Class III liquids.

42
43 **[1503.4] 2403.4 Operations and maintenance.** Flammable vapor areas, exhaust fan blades and
44 exhaust ducts shall be kept free from the accumulation of deposits of combustible residues. Where
45 excessive residue accumulates in such areas, spraying operations shall be discontinued until the
46 accumulation is removed from such areas and properly disposed of.

1 [1503.4.1] 2403.4.1 **Tools.** Scrapers, spuds and other tools used for cleaning purposes shall be
2 constructed of non-sparking materials.
3

4 [1503.4.2] 2403.4.2 **Residue.** Residue removed during cleaning and debris contaminated with
5 residue shall be immediately removed from the premises and disposed of lawfully.
6

7 [1503.4.3] 2403.4.3 **Waste cans.** Approved metal waste cans equipped with self-closing lids
8 shall be provided wherever rags or waste are impregnated with finishing material. Such rags
9 and waste shall be deposited therein immediately after being utilized. The contents of waste
10 cans shall be properly disposed of at the end of each work shift and at least once daily.
11

12 [1503.4.4] 2403.4.4 **Solvent recycling.** Solvent distillation equipment used to recycle and
13 clean dirty solvents shall comply with the requirements of [FC3405.4] FC5705.4.
14

15 **SECTION FC [1504] 2404** 16 **SPRAY FINISHING** 17

18 [1504.1] 2404.1 **General.** Spraying operations involving the use of flammable or combustible
19 liquids in continuous or intermittent processes shall be conducted in accordance with this section
20 and FC [1503] 2403 and [1507] 2407, as applicable.
21

22 [1504.2] 2404.2 **Location.** Except in Group A, E, I and R occupancies, spraying operations shall
23 be conducted in a spray room or a spray booth complying with the applicable requirements of
24 FC [1504.3] 2404.3, unless the extent of such operations allows them to be conducted in a limited-
25 spraying space in accordance with [FC1504.5] FC2404.5. In Group A, E, I and R occupancies,
26 spray-finishing operations shall be conducted in a spray room in compliance with the applicable
27 requirements of [FC1504.3] FC2404.3.
28

29 **Exceptions:** 30

- 31 1. Approved automobile undercoating spray operations and spray-on automotive lining
32 operations, utilizing liquids having a flashpoint above 140°F (60°C), when conducted in
33 areas with approved natural or mechanical ventilation.
34
- 35 2. The application of resin in the manufacturing of reinforced plastics in accordance with
36 [FC1509] FC2409.
37

38 [1504.2.1] 2404.2.1 **Below grade areas.** Spray rooms and spray booths shall not be located in
39 basements, cellars or other areas below grade.
40

41 [1504.3] 2404.3 **Design and installation.** Spray rooms and spray booths shall be designed and
42 installed in compliance with the requirements of FC [1504.3.1] 2404.3.1 through [1504.3.7]
43 2404.3.7, as applicable.
44

45 [1504.3.1] 2404.3.1 **Construction of spray rooms.** Spray rooms shall be designed and
46 installed in compliance with the requirements of the Building Code and Mechanical Code,

1 including vertical and horizontal separation from other spaces. Spray rooms shall additionally
2 comply with the requirements of this section.

3
4 **[1504.3.2] 2404.3.2 Construction of spray booths.** Spray booths shall be designed and
5 installed in compliance with the requirements of the Building Code and Mechanical Code,
6 NFPA 33 and this section.

7
8 **[1504.3.2.1] 2404.3.2.1 Materials.** Spray booths shall be constructed of approved
9 noncombustible materials. Aluminum shall not be used. Where walls or ceiling assemblies
10 are constructed of sheet metal, single-skin assemblies shall be no thinner than 0.0478 inch
11 (18 [gage] gauge) (1.2 mm) and each sheet of double-skin assemblies shall be no thinner
12 than 0.0359 inch (20 [gage] gauge) (0.9 mm). Structural sections of spray booths may be
13 sealed with latex-based or similar caulks and sealants. The interior surfaces of spray booths
14 shall be smooth and shall be constructed so as to permit the free passage of exhaust air
15 from all parts of the interior and to facilitate washing and cleaning, and shall be designed
16 to confine residues within the booth.

17
18 **[1504.3.2.2] 2404.3.2.2 Clear space.** Spray booths shall be installed so that all parts of the
19 booth are readily accessible for cleaning and other maintenance. A clear space of not less
20 than 3 feet (914 mm) shall be maintained on all sides of the spray booth.

21
22 **Exception.** A clear space of less than 3 feet (914 mm) may be maintained from an
23 interior partition, wall or floor/ceiling assembly with a fire-resistance-rating of not less
24 than 1 hour, or an exterior wall or roof assembly of a noncombustible wall or roof.

25
26 **[1504.3.2.3] 2404.3.2.3 Size.** The aggregate area of spray booths in a building shall not
27 exceed the lesser of 10 percent of the area of any floor of the building or the floor area
28 allowed for a Group H-2 occupancy by the Building Code, as set forth in Table 503 of the
29 Building Code, excluding any area increases allowed by Section 506 of the Building Code.
30 The area of an individual spray booth in a building shall not exceed the lesser of the
31 aggregate size limit or 1,500 square feet (139 m²).

32
33 **Exception:** A single spray booth not exceeding 500 square feet (46 m²) is allowed
34 irrespective of the results of the required calculations.

35
36 **[1504.3.2.4] 2404.3.2.4 Waterwash spray booths.** Waterwash spray booths shall be of an
37 approved design so as to prevent excessive accumulation of deposits in ducts and residue
38 at duct outlets. Such booths shall be arranged so that air and overspray are drawn through
39 a continuously flowing water curtain before being exhausted outdoors.

40
41 **[1504.3.2.5] 2404.3.2.5 Means of egress.** Means of egress doors from pre-manufactured
42 spray booths shall not be less than 30 inches (762 mm) in width by 80 inches (2032 mm)
43 in height.

44
45 **[1504.3.3] 2404.3.3 Fire protection.** Spray rooms and spray booths shall be protected by a
46 fire extinguishing system, [in compliance with the requirements of this section.

1 **1504.3.3.1 Spray rooms.** Spray rooms shall be protected throughout by a sprinkler system.
2 Such sprinkler system shall also protect exhaust plenums, exhaust ducts and both sides of
3 dry filters when such filters are used.
4

5 **1504.3.3.2 Spray booths.** Spray booths shall be protected throughout by a fire
6 extinguishing system.] Such fire extinguishing system shall also protect exhaust plenums,
7 exhaust ducts and both sides of dry filters when such filters are used.
8

9 **[1504.3.3.3] 2404.3.3.1 Automated spraying operations.** The fire extinguishing system
10 for each spray room or spray booth designed for automatic spraying operations shall be
11 equipped with an interlock in accordance with [FC1504.3.5(7)] FC2404.3.5(7) and with a
12 manual shutdown device. Such manual shutdown device shall be located within the path
13 of emergency egress from such spray room or spray booth, shall be readily accessible to
14 personnel supervising the spraying operation, and when activated, shall initiate the same
15 functions as the automatic interlock.
16

17 **[1504.3.4] 2404.3.4 Drying operations.** Spray rooms and spray booths shall not be used for
18 drying operations that could cause an increase in the surface temperature of the spray room or
19 spray booth, unless such operations are conducted in compliance with the requirements of
20 FC [1504.3.4.1] 2404.3.4.1, [1504.3.4.2] 2404.3.4.2 and [1504.3.5] 2404.3.5.
21

22 **[1504.3.4.1] 2404.3.4.1 Spraying procedure.** The spraying procedure shall use low-
23 volume spray application.
24

25 **[1504.3.4.2] 2404.3.4.2 Drying and baking apparatus.** Fixed drying and baking
26 apparatus shall comply with the requirements of this chapter and the applicable provisions
27 of FC Chapter [21] 30. When recirculation ventilation is provided in accordance with
28 [FC1504.3.7.1] FC2404.3.7.1, the heating system shall not be within the recirculation air
29 path.
30

31 **[1504.3.5] 2404.3.5 Interlocks.** The spraying apparatus, drying apparatus and ventilating
32 system for the spray room or spray booth shall be equipped with interlocks designed to
33 automatically:
34

- 35 1. prevent operation of spraying apparatus while drying operations are in progress.
- 36
- 37 2. prevent the operation of the drying apparatus until the spray room or spray booth has
38 been purged of vapors for a period of at least 3 minutes.
- 39
- 40 3. shut down the drying apparatus in the event that the ventilation system fails to operate
41 within the spray room or spray booth during the drying process.
- 42
- 43 4. shut down the drying apparatus if the air temperature within the spray room or spray
44 booth exceeds 200°F (93°C).
- 45
- 46 5. prevent the spraying operation unless the ventilation system is in operation.
47

1 6. shut down the spraying operation in a spray booth equipped with a filter roll when the
2 filter roll fails to automatically advance when the air velocity falls below the minimum
3 design level.
4

5 7. shut down the spraying operation, drying operation and workpiece conveyors into and
6 out of the flammable vapor area, and notify the building fire alarm system, upon
7 activation of the fire extinguishing systems protecting an automated spraying operation.
8

9 **[1504.3.6] 2404.3.6 Illumination.** Only fixed luminaires protected by a glass panel shall be
10 utilized as a source of illumination in spray rooms and spray booths. Such luminaires and glass
11 panels shall comply with the requirements of FC [1504.3.6.1] 2404.3.6.1 through [1504.3.6.3]
12 2404.3.6.3, as applicable.
13

14 **[1504.3.6.1] 2404.3.6.1 Glass panels.** Panels for light fixtures or for observation shall be
15 of heat-treated glass, wired glass or hammered-wire glass, and shall be sealed to confine
16 vapor, gas, fume, mists or dust to the flammable vapor area. Panels for luminaires shall be
17 separated from the luminaire to prevent the surface temperature of the panel from
18 exceeding 200°F (93°C).
19

20 **[1504.3.6.2] 2404.3.6.2 Exterior luminaires.** Luminaires approved for use in ordinary
21 hazard locations may be used when the luminaire is attached to an exterior wall or ceiling
22 of a spray room or spray booth, but is separated and protected from the flammable vapor
23 area by a vapor-tight glass panel. Such luminaires shall be serviced exclusively from
24 outside the flammable vapor area.
25

26 **[1504.3.6.3] 2404.3.6.3 Integral luminaires.** Luminaires approved for use in hazardous
27 locations shall be used when the luminaire is an integral part of the walls or ceiling of a
28 spray room or spray booth. Such luminaires shall be listed for use in Class I, Division 2 or
29 Class II, Division 2 locations, as applicable. Such luminaires may be serviced from inside
30 the flammable vapor area.
31

32 **[1504.3.7] 2404.3.7 Ventilation.** Mechanical ventilation of flammable vapor areas shall be
33 provided in accordance with Chapter 5 of the Mechanical Code and this section.
34

35 **[1504.3.7.1] 2404.3.7.1 Recirculation.** Air exhausted from spraying operations shall not
36 be recirculated, except as authorized by the Mechanical Code.
37

38 **[1504.3.7.2] 2404.3.7.2 Prohibition.** Makeup air and flammable vapor area exhaust
39 systems shall not be interlocked with the fire alarm system. The ventilation system shall
40 remain in operation upon activation of the building fire alarm system.
41

42 **Exception:** Where the type of fire extinguishing system used requires that ventilation
43 be discontinued, makeup air and exhaust systems shall shut down and dampers shall
44 close.
45

1 [1504.3.7.3] **2404.3.7.3 Filters.** Spray rooms and spray booths shall be provided with
2 exhaust filters. Air intake filters are not required, but if part of a spray room or spray booth
3 wall or ceiling assembly shall be listed as Class I or Class II in accordance with UL 900.
4

5 [1504.3.7.3.1] **2404.3.7.3.1 Supports.** Supports and holders for filters shall be
6 constructed of noncombustible materials.
7

8 [1504.3.7.3.2] **2404.3.7.3.2 Attachment.** Overspray collection filters shall be readily
9 removable and accessible for cleaning or replacement.
10

11 [1504.3.7.3.3] **2404.3.7.3.3 Monitoring air velocity.** One or more devices shall be
12 provided to monitor the air velocity of the air being exhausted from a spray room or
13 spray booth and to provide an indication, alarm or system shutdown if the required
14 velocity is not being maintained. The device monitoring the air flow shall visually
15 display the pressure of the exhausted air, activate an alarm and/or shut down the
16 spraying operation.
17

18 [1504.4] **2404.4 Operation and maintenance.** Facilities in which spraying operations and drying
19 operations are conducted shall be operated and maintained in compliance with the requirements of
20 this section.
21

22 [1504.4.1] **2404.4.1 Spraying of incompatible materials.** Spray rooms and spray booths shall
23 not be utilized for spraying operations utilizing alternating incompatible materials, unless all
24 deposits of one material are removed from the room or booth and exhaust ducts, and dry filters
25 replaced, prior to spraying with the incompatible material.
26

27 [1504.4.2] **2404.4.2 Filter disposal.** Discarded exhaust filters shall be immediately removed
28 from the spray room or spray booth and disposed of in accordance with FC304.3.1.
29

30 [1504.4.3] **2404.4.3 Sprinkler head protection.** Sprinkler heads installed in spraying spaces
31 shall be protected in an approved manner from accumulation of residue from spraying
32 operations. Sprinkler heads shall be inspected at least once per week and cleaned as needed.
33 Bags used as a protective covering shall be of 0.003-inch-thick (0.076-mm-thick) polyethylene
34 or cellophane or shall be of thin paper. Sprinkler heads contaminated by overspray particles
35 shall be replaced with new sprinkler heads.
36

37 [1504.4.4] **2404.4.4 Floor protection.** Combustible floor construction in spraying spaces shall
38 be covered by an approved, noncombustible, nonsparking material, except that combustible
39 coverings, such as thin paper or plastic and strippable coatings, may be utilized over the
40 noncombustible, nonsparking floor covering material on combustible floors, and on
41 noncombustible floors, to facilitate cleaning operations in spraying spaces.
42

43 [1504.4.5] **2404.4.5 Portable electric lamps.** Portable electric lamps shall not be stored or
44 used in the flammable vapor area.
45

46 **Exception:** Portable electric lamps of a type approved for hazardous locations may be used
47 to provide additional lighting for cleaning or maintenance in such areas.

1
2 **[1504.4.6] 2404.4.6 Portable infrared apparatus.** Portable electrical equipment located
3 within 18 inches (457 mm) of floor level shall be approved for Class I, Division 2, hazardous
4 locations. Metallic parts of drying apparatus shall be electrically bonded and grounded. During
5 spraying operations, portable drying apparatus and electrical connections and wiring thereto
6 shall not be located within spray booths, spray rooms or other spraying space.
7

8 **[1504.4.7] 2404.4.7 Continuous ventilation.** Mechanical ventilation shall be kept in operation
9 at all times while spraying operations are being conducted and for a sufficient time thereafter
10 to allow vapors from drying coated articles and finishing material residue to be exhausted.
11

12 **[1504.4.8] 2404.4.8 Obstruction of exhaust ventilation.** Articles being sprayed shall be
13 positioned in a manner that does not obstruct collection of overspray.
14

15 **[1504.4.9] 2404.4.9 Hazardous and combustible material storage.** The clear space around
16 spray booths pursuant to [FC1504.3.2.2] FC2404.3.2.2 shall be kept free of hazardous material
17 and combustible material storage.
18

19 **[1504.4.10] 2404.4.10 Portable fire extinguishers.** Spraying spaces shall be provided with
20 portable fire extinguishers for an extra (high) hazard occupancy in accordance with FC906.
21

22 **[1504.5] 2404.5 Limited-spraying spaces.** Spray finishing operations may be conducted in a
23 limited-spraying space when the spraying operations are limited in size and frequency and are
24 conducted in a properly ventilated and electrically wired space in compliance with the
25 requirements of FC [1504.5.1] 2404.5.1 through [1504.5.5] 2404.5.5.
26

27 **[1504.5.1] 2404.5.1 Job size.** The surface area of any workpiece to be sprayed shall not exceed
28 9 square feet (0.84 m²).
29

30 **[1504.5.2] 2404.5.2 Frequency.** Spraying operations shall not be of a continuous nature and
31 shall be incidental to the operation of the facility.
32

33 **[1504.5.3] 2404.5.3 Ventilation.** Positive mechanical ventilation shall be provided in
34 accordance with Chapter 5 of the Mechanical Code. Such system shall meet the requirements
35 of the Mechanical Code for flammable vapor areas. Explosion venting is not required.
36

37 **[1504.5.4] 2404.5.4 Electrical wiring.** Electrical wiring within 10 feet (3048 mm) of the floor
38 and 20 feet (6096 mm) horizontally of the limited-spraying space shall be designed for Class
39 I, Division 2 locations in accordance with the Electrical Code.
40

41 **[1504.5.5] 2404.5.5 Portable fire extinguisher.** Limited-spraying space shall be provided
42 with a portable fire extinguisher in accordance with [FC1504.4.10] FC2404.4.10.
43

44 **SECTION FC [1505] 2405**
45 **DIP-TANK OPERATIONS**
46

1 **[1505.1] 2405.1 General.** Dip-tank operations shall be conducted in accordance with this section
2 and [FC1503] FC2403.

3
4 **[1505.2] 2405.2 Location.** In Group A, I and R occupancies, dip-tank operations shall be
5 conducted in a room designed for that purpose, protected throughout by a sprinkler system, and
6 separated vertically and horizontally from other areas by construction having a fire resistance
7 rating of not less than 2 hours, in accordance with the construction codes, including the Building
8 Code.

9
10 **[1505.3] 2405.3 Design and installation.** Dip tanks shall be designed and installed in compliance
11 with the requirements of FC [1505.3.1] 2405.3.1 through [1505.3.6] 2405.3.6.

12
13 **[1505.3.1] 2405.3.1 Construction.** Except as otherwise provided in [FC1505.4] FC2405.4
14 with respect to hardening and tempering tanks, dip tanks shall be constructed in accordance
15 with this section, and NFPA 34. Dip tanks, including drain boards, shall be constructed of
16 noncombustible material and their supports shall be sturdily constructed of metal, reinforced
17 concrete or masonry.

18
19 **[1505.3.1.1] 2405.3.1.1 Overflow.** Dip tanks greater than 150 gallons (568 L) in capacity
20 or 10 square feet (0.93 m²) in liquid surface area shall be equipped with a trapped overflow
21 pipe leading to an approved outdoor location. The bottom of the overflow connection shall
22 not be less than 6 inches (152 mm) below the top of the tank.

23
24 **[1505.3.1.2] 2405.3.1.2 Bottom drains.** Dip tanks greater than 500 gallons (1893 L) in
25 liquid capacity shall be equipped with bottom drains that are arranged to automatically and
26 manually drain the tank quickly in the event of a fire unless the viscosity of the liquid at
27 normal atmospheric temperature makes this impractical. Manual operation shall be from a
28 safe, accessible location. Where gravity flow is not practicable, automatic pumps shall be
29 provided. Such drains shall be provided with traps and shall discharge to a closed, vented
30 salvage tank or other approved location.

31
32 **Exception:** Dip tanks containing Class IIIB combustible liquids where the liquids are
33 not heated above room temperature, and the process area is protected throughout by a
34 sprinkler system.

35
36 **[1505.3.2] 2405.3.2 Dipping liquid temperature control.** Protection against the accumulation
37 of vapors, self-ignition and excessively high temperatures shall be provided for dip tanks in
38 which dipping liquids are heated directly or heated by the surfaces of the object being dipped.

39
40 **[1505.3.3] 2405.3.3 Dip tank covers.** Dip tank covers, if provided, shall be capable of manual
41 operation and shall be automatic-closing by approved automatic-closing devices designed to
42 operate in the event of fire. Dip tank covers shall be kept closed when tanks are not in use.

43
44 **[1505.3.3.1] 2405.3.3.1 Materials.** Dip tank covers shall be constructed of noncombustible
45 material or be of a tin-clad type designed in the same manner as fire doors.

1 [1505.3.3.2] **2405.3.3.2 Supports.** Chain or wire rope shall be utilized for cover supports
2 or operating mechanisms.
3

4 [1505.3.4] **2405.3.4 Fire protection.** Dip-tank operations shall be protected in compliance
5 with the requirements of FC [1505.3.4.1] 2405.3.4.1 and [1505.3.4.2] 2405.3.4.2.
6

7 [1505.3.4.1] **2405.3.4.1 Fire extinguishing equipment.** A fire extinguishing system shall
8 be provided for the following dip tanks unless such dip tanks are provided with a dip tank
9 cover in accordance with [FC1505.3.3] FC2405.3.3:

- 10 1. Dip tanks less than 150 gallons (568 L) in capacity or 10 square feet (0.93 m²) in
11 liquid surface area.
12
- 13 2. Dip tanks containing a liquid with a flash point below 110°F (43°C), used in such
14 manner that the liquid temperature could equal or be greater than its flash point from
15 artificial or natural causes, and having both a capacity of more than 10 gallons (37.9
16 L) and a liquid surface area exceeding 4 square feet (0.37 m²).
17
18

19 [1505.3.4.2] **2405.3.4.2 Fire extinguishing system.** Dip tanks with a capacity of 150
20 gallons (568 L) or more, or a liquid surface area of 10 square feet (0.93 m²) or more shall
21 be protected by a fire extinguishing system. Such fire extinguishing system shall be
22 designed in accordance with NFPA 34.
23

24 [1505.3.5] **2405.3.5 Interlocks.** Dip tanks utilizing a conveyor system shall be arranged such
25 that in the event of fire, the conveyor system shall automatically cease motion and the required
26 tank bottom drains shall open.
27

28 [1505.3.6] **2405.3.6 Ventilation.** Mechanical ventilation of flammable vapor areas shall be
29 provided in accordance with Chapter 5 of the Mechanical Code.
30

31 [1505.4] **2405.4 Hardening and tempering tanks.** Hardening and tempering tanks shall be
32 designed and installed in compliance with the requirements of FC [1505.4.1] 2405.4.1 through
33 [1505.4.5] 2405.4.5. Except as provided therein, hardening and tempering tanks shall not be
34 subject to the requirements for dip tanks set forth in [FC1505] FC2405.
35

36 [1505.4.1] **2405.4.1 Construction.** Hardening and tempering tanks shall be constructed in
37 accordance with FC [1505.3.1] 2405.3.1, [1505.3.1.1] 2405.3.1.1, [1505.3.1.2] 2405.3.1.2,
38 [1505.3.2] 2405.3.2 and [1505.3.5] 2405.3.5.
39

40 [1505.4.2] **2405.4.2 Location.** Hardening and tempering tanks located in a room containing an
41 industrial furnace shall be positioned to minimize the ignition risk from such furnace, and such
42 tanks shall not be located on a combustible floor.
43

44 [1505.4.3] **2405.4.3 Hoods.** Hardening and tempering tanks shall be provided with a
45 noncombustible hood and vent or other approved ventilation system that terminates outdoors.
46 Such exhaust hood and vent shall serve to provide a path for heat and flames in the event of a

1 fire in the tank. Such vent ducts shall be designed as flues, and clearances shall be maintained
2 from combustible materials to minimize their ignition risk.

3
4 **[1505.4.4] 2405.4.4 Fire extinguishing system.** Hardening and tempering tanks with a
5 capacity exceeding 500 gallons (1893 L) or a liquid surface area exceeding 25 square feet (2.3
6 m²) shall be protected by a fire extinguishing system.

7
8 **[1505.4.5] 2405.4.5 High temperature alarm.** Hardening and tempering tanks shall be
9 equipped with a high-temperature limit switch arranged to sound an alarm when the
10 temperature of the quenching medium reaches 50°F (10°C) below its flash point.

11
12 **[1505.5] 2405.5 Operation and maintenance.** Facilities in which dipping operations are
13 conducted shall be operated and maintained in compliance with the requirements of this section.

14
15 **[1505.5.1] 2405.5.1 Sources of ignition.** Protection against sources of ignition shall be
16 provided in accordance with [FC1503.2] FC2403.2.

17
18 **[1505.5.2] 2405.5.2 Use of compressed air.** Compressed air shall not be used to fill the tank
19 or agitate tank contents.

20
21 **[1505.5.3] 2405.5.3 Portable fire extinguishers.** Dip tank rooms and areas shall be provided
22 with portable fire extinguishers complying with the requirements of FC906 and rated for
23 flammable and combustible liquid fires in extra (high) hazard environments.

24
25 **[1505.6] 2405.6 Flow-coating operations.** Flow-coating operations shall be conducted in
26 compliance with the design, installation, operation and maintenance requirements for dip tanks.
27 For such purposes, the sump and any areas on which paint flows shall be considered to be the area
28 of a dip tank. Finishing products shall be supplied by a gravity tank not exceeding 10 gallons (37.9
29 L) in capacity or by direct low-pressure pumps arranged to shut down automatically in case of fire
30 by means of approved heat-activated devices.

31
32 **[1505.7] 2405.7 Roll-coating operations.** Roll-coating operations shall comply with the
33 requirements of [FC1505.6] FC2405.6. In roll-coating operations utilizing flammable or
34 combustible liquids, sparks from static electricity shall be prevented by electrically bonding and
35 grounding all metallic rotating and other parts of machinery and equipment and by the installation
36 of static collectors or by maintaining a conductive atmosphere such as a high relative humidity.

37
38 **SECTION FC [1506] 2406**
39 **POWDER COATING**
40

41 **[1506.1] 2406.1 General.** Operations using finely ground particles of protective finishing material
42 applied in dry powder form by fluidized bed, electrostatic fluidized bed, powder spray guns or
43 electrostatic powder spray guns shall be conducted in accordance with this section. When
44 stationary electrostatic equipment is utilized, such operations shall additionally be conducted in
45 accordance with [FC1507] FC2407.

1 **[1506.2] 2406.2 Location.** Powder coating operations shall be conducted in spray rooms or spray
2 booths located in accordance with [FC1504] FC2404.

3
4 **[1506.3] 2406.3 Design and installation.** Powder coating operations shall be conducted in powder
5 coating rooms and powder coating booths designed and installed in compliance with the
6 requirements of this section.

7
8 **[1506.3.1] 2406.3.1 Construction of powder coating rooms.** Powder coating rooms shall be
9 constructed of noncombustible materials.

10
11 **[1506.3.2] 2406.3.2 Construction of powder coating booths.** Powder coating booths shall be
12 constructed in accordance with [FC1504.3.2] FC2404.3.2, except that booth assemblies listed
13 for such purpose and constructed in accordance with such listing may be constructed of
14 materials other than as required by [FC1504.3.2.1] FC2404.3.2.1.

15
16 **[1506.3.3] 2406.3.3 Fire protection.** Powder coating rooms and booths shall be protected by
17 fire protection systems in accordance with this section.

18
19 **[1506.3.3.1] 2406.3.3.1 Fire extinguishing system.** Powder coating rooms and booths
20 shall be protected throughout by a fire extinguishing system.

21
22 **[1506.3.3.2] 2406.3.3.2 Flame detection system.** Automated powder coating application
23 equipment shall be protected by an approved, supervised flame detection device capable
24 of detecting the presence of flame within ½ second, that shall, upon activation,
25 automatically initiate the following actions:

- 26
27 1. Shut down electrical power and compressed air supply to the powder coating
28 operation, including the conveyor, ventilation, application, transfer and powder
29 collection systems.
30
31 2. Close segregation dampers in associated ductwork to interrupt airflows from
32 application equipment to powder collectors.
33
34 3. Activate a local alarm audible within the powder coating room or booth and
35 surrounding area.

36
37 **[1506.3.4] 2406.3.4 Drying, curing and fusion equipment.** Drying, curing and fusion
38 equipment shall comply with the requirements of FC Chapter [21] 30.

39
40 **[1506.3.5] 2406.3.5 Ventilation.** Exhaust ventilation and powder recovery systems shall be
41 provided in accordance with Chapter 5 of the Mechanical Code.

42
43 **[1506.4] 2406.4 Operation and maintenance.** Facilities in which powder coating operations are
44 conducted shall be operated and maintained in compliance with the requirements of this section.
45

1 [1506.4.1] **2406.4.1 Housekeeping.** Powder coating areas, including horizontal surfaces such
2 as ledges, beams, pipes, hoods, booths and floors, shall be kept free from the accumulation of
3 powder coating dusts.
4

5 [1506.4.2] **2406.4.2 Cleaning.** Surfaces shall be cleaned in such a manner as to avoid scattering
6 dust or creating a dust cloud. Vacuum cleaning equipment shall be of a type approved for use
7 in a hazardous location.
8

9 [1506.4.3] **2406.4.3 Spark-producing metals.** Magnetic separators, filter-type separators, or
10 other approved means shall be installed or used to prevent iron or other spark-producing metals
11 from being introduced into the powders or the powder-coating operation.
12

13 [1506.4.4] **2406.4.4 Preheating parts.** The temperature of the parts heated prior to coating
14 shall not exceed the ignition temperature of the powder to be used.
15

16 [1506.4.5] **2406.4.5 Sources of ignition.** Protection against sources of ignition shall be
17 provided in accordance with [FC1503.2] FC2403.2. Static bonding and grounding or other
18 appropriate precautions shall be taken to minimize the possibility of ignition by static electrical
19 sparks generated by powder transport, application and recovery systems.
20

21 [1506.4.6] **2406.4.6 Portable fire extinguishers.** Powder coating rooms and booths shall be
22 provided with portable fire extinguishers complying with the requirements of FC906 and rated
23 for flammable and combustible liquid fires in extra (high) hazard environments.
24

25 **SECTION FC [1507] 2407**
26 **ELECTROSTATIC SPRAY-FINISHING EQUIPMENT**
27

28 [1507.1] **2407.1 General.** Electrostatic spray-finishing equipment used in connection with paint-
29 spraying and paint-detearing operations shall be of an approved type, and shall be designed,
30 installed, operated and maintained in accordance with this section.
31

32 [1507.2] **2407.2 Location and clear space.** A space of at least twice the maximum potential
33 sparking distance shall be maintained between the workpiece being painted or deteared and any
34 electrodes, electrostatic atomizing heads or conductors.
35

36 **Exception:** Such distance is not required to be maintained between workpieces and portable
37 electrostatic spray-finishing equipment listed for use in Class I, Division 1 locations.
38

39 [1507.3] **2407.3 Design and installation.** Electrostatic spray-finishing equipment used in
40 connection with paint-spraying and paint-detearing operations shall be designed and installed in
41 compliance with the requirements of this section.
42

43 [1507.3.1] **2407.3.1 Construction.** Electrodes and electrostatic atomizing heads shall be of
44 approved construction, rigidly braced or otherwise supported to prevent movement and
45 insulated from grounding by nonporous and noncombustible insulators.
46

1 **Exception:** Such bracing and insulation is not required to be provided for portable
2 electrostatic spray-finishing equipment listed for use in Class I, Division 1 locations.
3

4 **[1507.3.1.1] 2407.3.1.1 Separation.** Electrostatic spray-finishing equipment shall be
5 separated from other areas and operations by means of booths, fencing, railings or other
6 barriers. Fencing, railings or other barriers shall be of conductive material, adequately
7 grounded, and shall be placed not less than 5 feet (1524 mm) from the electrostatic spray-
8 finishing equipment.
9

10 **Exception:** Such barrier and separation distance is not required to be provided for
11 portable electrostatic spray-finishing equipment listed for use in Class I, Division 1
12 locations.
13

14 **[1507.3.2] 2407.3.2 Fire protection.** Electrostatic spray finishing operations shall be protected
15 by fire protection systems in compliance with the requirements of this section.
16

17 **[1507.3.2.1] 2407.3.2.1 Fire extinguishing system.** Spraying areas shall be protected
18 throughout by a fire extinguishing system complying with FC Chapter 9.
19

20 **[1507.3.2.2] 2407.3.2.2 Flame detection system.** Automated liquid electrostatic spray-
21 finishing operation areas shall be protected by the installation of an approved, supervised
22 flame detection system capable of detecting the presence of flame within ½ second, which
23 shall, upon activation, automatically initiate the following actions:
24

- 25 1. Shut down electrical power to the electrostatic spray-finishing equipment, including
26 the coating material delivery system and the conveyors into and out of the flammable
27 vapor area, and terminating all spray-finishing operations.
28
- 29 2. Activate a local alarm in the spraying area, and the building fire alarm system if such
30 a system is provided.
31

32 **[1507.3.3] 2407.3.3 Interlocks.** Electrostatic spray-finishing equipment shall be provided with
33 emergency shut down devices and interlocks in compliance with the requirements of this
34 section.
35

36 **[1507.3.3.1] 2407.3.3.1 Emergency shutdown.** Electrostatic spray-finishing equipment
37 shall be equipped with automatic controls operating without time delay to disconnect the
38 power supply to the high-voltage transformer and signal the operator under any of the
39 following conditions:
40

- 41 1. Stoppage of ventilating fans or failure of ventilating equipment from any cause.
42
- 43 2. Stoppage of the conveyor carrying articles past the high-voltage grid.
44
- 45 3. Occurrence of a ground fault or an imminent ground fault at any point of the high-
46 voltage system.
47

1 4. Reduction of clearance below that required in [FC1507.2] FC2407.2.

2
3 **[1507.3.3.2] 2407.3.3.2 Ventilation interlock.** Electrostatic spray-finishing equipment
4 utilizing hand-held sprayers shall be interlocked with the ventilation system for the
5 spraying area so that the equipment cannot be operated unless the ventilating system is in
6 operation.

7
8 **[1507.3.4] 2407.3.4 Ventilation.** Mechanical ventilation in the flammable vapor area shall be
9 provided in accordance with Chapter 5 of the Mechanical Code.

10
11 **[1507.4] 2407.4 Operation and maintenance.** Facilities in which electrostatic spray-finishing
12 operations are conducted shall be operated and maintained in compliance with the requirements of
13 this section and FC [1503.3] 2403.3 and [1503.4] 2403.4, and FC [1507.4.1] 2407.4.1 through
14 [1507.4.3] 2407.4.3.

15
16 **[1507.4.1] 2407.4.1 Cleaning.** Insulators shall be kept clean and dry. Drip plates and screens
17 upon which paint is deposited shall be removable and shall be regularly removed and cleaned.
18 Grounding connections for the electrostatic spray-finishing equipment shall be regularly
19 cleaned so as to prevent overspray.

20
21 **[1507.4.2] 2407.4.2 Signage.** Durable signs that provide the following cautions and
22 information shall be conspicuously posted:

- 23
24 1. Designate the process zone as dangerous with respect to fire and accident.
25
26 2. Restrict access to qualified personnel only.
27
28 3. Indicate the grounding requirements for all electrically conductive objects in the
29 flammable vapor area, including persons working in that area.
30
31 4. Indicates the maximum potential sparking distance as set forth in [FC1507.2] FC2407.2.

32
33 **[1507.4.3] 2407.4.3 Sources of ignition.** Transformers, power packs, control apparatus and all
34 other electrical components of the electrostatic spray-finishing equipment, except high-voltage
35 grids and electrostatic atomizing heads and connections, shall be located outside of the
36 flammable vapor area or shall comply with the requirements of [FC1503.2] FC2403.2.

37
38 **SECTION FC [1508] 2408**
39 **ORGANIC PEROXIDES AND DUAL-COMPONENT COATINGS**
40

41 **[1508.1] 2408.1 General.** Spraying operations involving the use of organic peroxides and other
42 dual-component coatings shall be conducted in accordance with this section and [FC1503]
43 FC2403.

44
45 **[1508.2] 2408.2 Design and construction.** Spraying operations involving the use of organic
46 peroxides and other dual-component coatings shall be conducted in a facility designed and
47 installed in accordance with this section.

1
2 [1508.2.1] **2408.2.1 Construction.** Spraying operations shall be conducted in spray booths
3 complying with the requirements of [FC1504.3.2] FC2404.3.2.

4
5 [1508.2.2] **2408.2.2 Fire extinguishing systems.** Spray booths shall be protected throughout
6 by a sprinkler system.

7
8 [1508.2.3] **2408.2.3 Equipment.** Spray guns and related equipment shall be of a type
9 manufactured for such use.

10
11 [1508.2.4] **2408.2.4 Pressure tanks.** Separate pressure vessels and inserts shall be used for the
12 application of the resin and the organic peroxide, and shall not be interchanged. Organic
13 peroxide pressure tank inserts shall be constructed of stainless steel or polyethylene.

14
15 [1508.3] **2408.3 Operation and maintenance.** Facilities in which spraying operations involving
16 the use of organic peroxides and other dual-component coatings are conducted shall be operated
17 and maintained in compliance with the requirements of this section and FC [1503.3] 2403.3 and
18 [1503.4] 2403.4, and FC [1508.3.1] 2408.3.1 through [1508.3.8] 2408.3.8.

19
20 [1508.3.1] **2408.3.1 Contamination prevention.** Organic peroxide initiators shall not be
21 contaminated with foreign substances.

22
23 [1508.3.2] **2408.3.2 Spilled material.** Spilled organic peroxides shall be promptly removed so
24 there are no residues. Spilled material absorbed by using a noncombustible absorbent shall be
25 promptly removed from the premises and disposed of lawfully.

26
27 [1508.3.3] **2408.3.3 Residue control.** Materials shall not be contaminated by dusts and
28 overspray residues resulting from the sanding or spraying of finishing materials containing
29 organic peroxides.

30
31 [1508.3.4] **2408.3.4 Handling.** Handling of organic peroxides shall be conducted in a manner
32 that avoids shock and friction that produces decomposition and violent reaction hazards.

33
34 [1508.3.5] **2408.3.5 Mixing.** Organic peroxides shall not be mixed directly with accelerators
35 or promoters.

36
37 [1508.3.6] **2408.3.6 Personnel qualifications.** Personnel working with organic peroxides and
38 dual-component coatings shall be specifically trained to work with these materials.

39
40 [1508.3.7] **2408.3.7 Storage.** The storage of organic peroxides shall be in accordance with FC
41 Chapter [39] 62.

42
43 [1508.3.8] **2408.3.8 Sources of ignition.** Only nonsparking tools shall be used in areas where
44 organic peroxides are stored, mixed or applied.

45
46 **SECTION FC [1509] 2409**
47 **INDOOR MANUFACTURING OF REINFORCED PLASTICS**

1
2 **[1509.1] 2409.1 General.** Indoor manufacturing processes involving spray or hand application of
3 reinforced plastics and using more than 5 gallons (19 L) of resin in a 24-hour period shall be
4 conducted in accordance with this section and [FC1508] FC2408.

5
6 **[1509.2] 2409.2 Design and installation.** Indoor manufacturing processes involving spray or hand
7 application of reinforced plastics shall be conducted in a facility designed and installed in
8 compliance with the requirements of this section.

9
10 **[1509.2.1] 2409.2.1 Fire protection.** Resin application areas shall be protected throughout by
11 a sprinkler system. The sprinkler system design shall not be less than that required for Ordinary
12 Hazard, Group 2, with a minimum design area of 3,000 square feet (279 m²). Where the
13 materials or storage arrangements are required by other regulations to be provided with a higher
14 level of sprinkler system protection, the higher level of sprinkler system protection shall be
15 provided.

16
17 **[1509.2.2] 2409.2.2 Ventilation.** Mechanical ventilation shall be provided in resin application
18 areas in accordance with Chapter 5 of the Mechanical Code. The ventilation rate shall be
19 adequate to maintain the concentration of flammable vapors in the resin application area at or
20 below 25 percent of the lower flammable limit (LFL).

21
22 **Exception:** Mechanical ventilation is not required for buildings that are unenclosed for at
23 least 75 percent of the perimeter.

24
25 **[1509.2.2.1] 2409.2.2.1 Local ventilation.** Local ventilation shall additionally be provided
26 inside of workpieces where personnel will be under or inside of the workpiece.

27
28 **[1509.2.3] 2409.2.3 Sources of ignition.** Sources of ignition in resin application areas shall
29 comply with the requirements of [FC1503.2] FC2403.2.

30
31 **[1509.3] 2409.3 Operation and maintenance.** Facilities in which indoor manufacturing processes
32 involving spray or hand application of reinforced plastics are conducted shall be operated and
33 maintained in compliance with the requirements of this section and FC [1503.3] 2403.3 and
34 [1503.4] 2403.4.

35
36 **[1509.3.1] 2409.3.1 Handling of excess catalyzed resin.** A noncombustible, open-top
37 container shall be provided for disposal of excess catalyzed resin. Excess catalyzed resin shall
38 be drained into the container while still in the liquid state. Enough water shall be provided in
39 the container to maintain a minimum 2-inch (51-mm) water layer over contained resin.

40
41 **[1509.3.2] 2409.3.2 Control of overchop.** In areas where chopper guns are used, exposed wall
42 and floor surfaces shall be covered with paper, polyethylene film or other approved material
43 to allow for removal of overchop. Overchop shall be allowed to cure for not less than 4 hours
44 prior to removal of the wall and floor coverings. Used coverings shall be placed in a
45 noncombustible container and removed from the premises.

1 [1509.3.3] **2409.3.3 Storage and use of hazardous materials.** Storage and use of organic
2 peroxides shall be in accordance with [FC1508] FC2408 and FC Chapter [39] 62. Storage and
3 use of flammable and combustible liquids shall be in accordance with FC Chapter [34] 57.
4 Storage and use of unstable (reactive) materials shall be in accordance with FC Chapter [43]
5 66.
6

7 **SECTION FC [1510] 2410**
8 **FLOOR FINISHING OPERATIONS**
9

10 [1510.1] **2410.1 Scope.** All floor finishing operations using Class I or Class II liquids shall be
11 conducted in accordance with FC [1510.1.1] 2410.1.1 and [1510.1.2] 2410.1.2. Floor finishing
12 operations exceeding 168 square feet (15.6 m²) and using Class I or Class II liquids shall
13 additionally be conducted in accordance with FC [1510.2] 2410.2 through [1510.5] 2410.5.
14

15 [1510.1.1] **2410.1.1 Prohibitions.** It shall be unlawful to:

- 16
- 17 1. Use flammable floor finishing products with a flash point below 80°F (27°C) indoors.
- 18
- 19 2. Smoke, use or maintain open flames, including torches, in rooms or other indoor areas
20 in which floor finishing products are being stored and/or in which floor finishing
21 operations are being conducted.
22
- 23 3. Conduct floor finishing operations in rooms or other indoor areas occupied by anyone
24 other than the individuals engaged in such operations.
25

26 [1510.1.2] **2410.1.2 General requirements.** All floor finishing operations shall comply with
27 the following requirements:
28

- 29 1. Floor finishing operations shall be conducted in accordance with the manufacturer's
30 instructions for the storage, handling and use of floor finishing products.
31
- 32 2. Flammable or combustible liquids or mixtures, other than floor finishing products,
33 stored, handled or used in connection with floor finishing operations shall be stored,
34 handled or used in accordance with FC Chapter [34] 57.
35
- 36 3. Floor finishing product containers shall be closed when not in use.
37
- 38 4. Empty containers of floor finishing products and all other floor finishing product waste
39 and residue shall be removed from the premises not less than once a day.
40
- 41 5. Gas burners, pilot lights, electrical devices, electronic devices and other sources of
42 ignition in flammable vapor areas shall be shut off prior to commencing work.
43
- 44 6. At least one portable fire extinguisher with a minimum rating of 20-B shall be readily
45 accessible during floor finishing operations. The travel distance to such extinguisher shall
46 not exceed 30 feet (9144 mm).
47

1 7. Quantities of floor finishing products at a site shall not exceed the amount necessary for
2 that day's operations. In no circumstance shall such quantity exceed 20 gallons (76 L).
3

4 **[1510.2] 2410.2 Occupancy of premises during operations.** Floor finishing operations shall not
5 be conducted in occupied rooms or other areas. If occupants are allowed to return to the premises
6 in which the floor finishing operations were conducted before the surfaces have dried, fire safety
7 precautions shall be maintained and the occupants shall be given written instructions in regard
8 thereto. Floor finishing operations shall not be conducted in a Group A or Group M occupancy
9 while the premises is open to the public.
10

11 **[1510.3] 2410.3 Sources of ignition.** No electrical equipment or device that is a potential source
12 of ignition of floor finishing product vapors, including switches and outlets, shall be operated
13 during floor finishing operations. Precautions shall be taken prior to commencing work to prevent
14 inadvertent operation of such equipment or devices, such as shutting down electrical power,
15 unplugging equipment and taping over switches and outlets.
16

17 **[1510.4] 2410.4 Mechanical system operation.** Heating, ventilation and air-conditioning systems
18 shall not be operated during floor finishing operations and for the period of time thereafter until
19 the surfaces have dried.
20

21 **[1510.5] 2410.5 Ventilation.** To prevent the accumulation of flammable vapors, mechanical
22 ventilation at a minimum rate of 1 cubic foot per minute per square foot ($0.00508 \text{ m}^3/\text{s}/\text{m}^2$) of the
23 area being surfaced or finished shall be provided. Such ventilation shall be by approved temporary
24 or portable means. Vapors shall be exhausted outdoors. Such ventilation equipment shall be kept
25 in operation while the floor finishing operations are being conducted and for a period of time
26 thereafter to allow for the exhaust of the vapors.
27

28 **[1510.6] 2410.6 Retail sale.** Floor finishing products with a flash point below 80°F (27°C) shall
29 be provided with a conspicuous and durable tag bearing the words, "WARNING: INDOOR USE
30 OF THIS PRODUCT IS PROHIBITED IN NEW YORK CITY." A sign shall be conspicuously
31 posted in the area in which the floor finishing product is displayed, warning that the product is
32 prohibited for indoor use in New York City.
33
34

35 **CHAPTER 25**
36 **FRUIT AND CROP RIPENING**

37
38 **SECTION FC [1601] 2501**
39 **GENERAL**
40

41 **[1601.1] 2501.1 Scope.** This chapter shall govern the design, installation, operation and
42 maintenance of facilities in which ethylene gas is used, other than in self-contained equipment, to
43 promote the ripening of fruits, vegetables and other crops.
44

45 **Exception:** Mixtures of ethylene and one or more inert gases in concentrations which prevent
46 the gas from reaching greater than 25 percent of the lower explosive limit (LEL) when released
47 to the atmosphere.

1
2 **[1601.2] 2501.2 Permits.** Permits shall be required as set forth in FC105.6.

3
4 **[1601.3] 2501.3 Ethylene generators.** Approved ethylene generators shall be operated and
5 maintained in accordance with [FC1606] FC2506.

6
7 **[1601.4] 2501.4 General.** Facilities using ethylene gas to promote the ripening of fruits, vegetables
8 and other crops shall be designed, installed, operated and maintained in accordance with this
9 chapter.

10
11 **SECTION FC [1602] 2502**
12 **DEFINITIONS**

13
14 **[1602.1] 2502.1 Terms defined in FC Chapter 2.** Terms used in this chapter[, for the purposes
15 of this chapter and as used elsewhere in this code, have the meanings shown in FC Chapter 2 or
16 elsewhere in this code] and defined in FC202 shall have the meanings set forth therein.

17
18 **SECTION FC [1603] 2503**
19 **ETHYLENE GAS**

20
21 **[1603.1] 2503.1 Location.** Ethylene gas shall be discharged only into approved rooms or
22 enclosures designed and constructed for this purpose.

23
24 **[1603.2] 2503.2 Dispensing.** Valves controlling discharge of ethylene shall provide positive and
25 fail-closed control of flow and shall be set to limit the concentration of gas in air below 1,000 parts
26 per million (ppm).

27
28 **SECTION FC [1604] 2504**
29 **SOURCES OF IGNITION**

30
31 **[1604.1] 2504.1 Ignition prevention.** Sources of ignition shall be controlled or protected in
32 accordance with this section and FC Chapter 3.

33
34 **[1604.2] 2504.2 Electrical wiring and equipment.** Electrical wiring and equipment, including
35 luminaires, shall be approved for use in Class I, Division 2, Group C hazardous (classified)
36 locations.

37
38 **[1604.3] 2504.3 Static electricity.** Devices, equipment and systems, including containers and
39 piping, used to dispense ethylene, shall be bonded and grounded to prevent the discharge of static
40 sparks or arcs.

41
42 **[1604.4] 2504.4 Lighting.** Lighting shall be by approved electric lamps or luminaires only.

43
44 **[1604.5] 2504.5 Heating.** Heating shall be by indirect means utilizing low-pressure steam, hot
45 water, or warm air.

1 **Exception:** Electric or fuel-fired heaters approved for use in hazardous (classified) locations
2 which are installed and operated in accordance with the Electrical Code, the Mechanical Code
3 or the Fuel Gas Code.
4

5 **SECTION FC [1605] 2505**
6 **COMBUSTIBLE WASTE**
7

8 **[1605.1] 2505.1 Housekeeping.** Empty boxes, cartons, pallets and other combustible waste shall
9 be removed from ripening rooms or enclosures and properly disposed of at the end of each work
10 shift, but at least once a day.
11

12 **SECTION FC [1606] 2506**
13 **ETHYLENE GENERATORS**
14

15 **[1606.1] 2506.1 Ethylene generators.** Ethylene generators shall be listed and labeled by an
16 approved testing laboratory and used only in approved rooms in accordance with the ethylene
17 generator manufacturer's instructions. The listing evaluation shall include documentation that the
18 concentration of ethylene gas does not exceed 25 percent of the lower explosive limit (LEL).
19

20 **[1606.2] 2506.2 Ethylene generator rooms.** Ethylene generators shall be used in rooms having a
21 volume of not less than the minimum room size provided for in the manufacturer's specifications
22 and testing laboratory listing, but in no case less than 1,000 cubic feet (28 m³). Rooms shall have
23 air circulation to ensure even distribution of ethylene gas and shall be free from sparks, open flames
24 or other ignition sources.
25

26 **SECTION FC [1607] 2507**
27 **WARNING SIGNS**
28

29 **[1607.1] 2507.1 Required warning sign.** Approved warning signs identifying the hazard and
30 indicating the danger involved and necessary precautions shall be posted on all doors and entrances
31 to the premises in accordance with FC Chapter [27] 50.
32
33

34 **CHAPTER 26**
35 **FUMIGATION AND INSECTICIDAL FOGGING**
36

37 **SECTION FC [1701] 2601**
38 **GENERAL**
39

40 **[1701.1] 2601.1 Scope.** This chapter shall govern fumigation and insecticidal fogging operations
41 within buildings and structures.
42

43 **[1701.2] 2601.2 Permits.** Permits shall be required as set forth in FC105.6.
44

45 **[1701.3] 2601.3 General.** Fumigation and insecticidal fogging operations within buildings and
46 structures shall be conducted in accordance with this chapter.
47

1 **[1701.4] 2601.4 Supervision.** Fumigation and insecticidal fogging operations shall be supervised
2 in accordance with FC [1701.4.1] 2601.4.1 and [1701.4.2] 2601.4.2.

3
4 **[1701.4.1] 2601.4.1 Fumigation and insecticidal fogging operation company certificate.**
5 Persons engaged in the business of fumigation and insecticidal fogging operations shall obtain
6 a fumigation and insecticidal fogging operation company certificate.
7

8 **[1701.4.2] 2601.4.2 Fumigation and insecticidal fogging operations.** Fumigation and
9 insecticidal fogging operations requiring a permit or a company certificate shall be conducted
10 by or under the personal supervision of a person holding a certificate of fitness.
11

12 **[1701.5] 2601.5 Compliance with other provisions of law.** Fumigation and insecticidal fogging
13 operations shall comply with all applicable federal, state and city laws, rules and regulations.
14

15 **[1701.6] 2601.6 Prohibitions.** It shall be unlawful to:

- 16
17 1. Use insecticidal fogging liquids with a flash point below 100°F (38°C).
18
19 2. Use carbon disulfide and hydrogen cyanide for fumigation unless conducted on a premises
20 used solely for agriculture.
21

22 **SECTION FC [1702] 2602**
23 **DEFINITIONS**
24

25 **[1702.1] 2602.1 Definitions.** The following terms shall, for the purposes of this chapter and as
26 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
27

28 **FUMIGANT.** [A substance which by itself or in combination with any other substance emits or
29 liberates a gas, fume or vapor utilized for the destruction or control of insects, rats or other vermin
30 or fungi, germs or similar conditions, as distinguished from insecticides and disinfectants which
31 are essentially effective in the solid or liquid phases. Examples are methyl bromide, ethylene
32 dibromide, hydrogen cyanide, carbon disulfide and sulfuryl fluoride.]
33

34 **FUMIGATION.** [The utilization within an enclosed space of a fumigant in concentrations that
35 are hazardous or acutely toxic to humans.]
36

37 **FUMIGATION AND INSECTICIDAL FOGGING OPERATION COMPANY**
38 **CERTIFICATE.** [A certificate issued by the commissioner to a person engaged in the business
39 of fumigation and insecticidal fogging operations, which authorizes an owner or principal of such
40 business to conduct such fumigation and insecticidal fogging operations, for which such certificate
41 is required by this code or the rules.]
42

43 **INSECTICIDAL FOGGING.** [The utilization of insecticidal liquids passed through fog-
44 generating units where, by pressure and turbulence, and with or without addition of heat, such
45 liquids are transformed and discharged in the form of fog or mist blown into an area to be treated.]
46

47 **SECTION FC [1703] 2603**

1 **FIRE SAFETY REQUIREMENTS**

2
3 **[1703.1] 2603.1 General.** Fumigation and insecticidal fogging operations in buildings and
4 structures shall be conducted in compliance with the fire protection and safety requirements of FC
5 [1703.2] 2603.2 through [1703.5] 2603.5.

6
7 **[1703.2] 2603.2 Sources of ignition.** Open flames and similar sources of ignition shall be removed
8 from the space in which fumigation or insecticidal fogging operations are being conducted.
9 Heating, where needed, shall be of an approved type.

10
11 **[1703.2.1] 2603.2.1 Electricity.** Electricity in any part of the building or structure where
12 operation of switches or electrical devices, equipment and systems could serve as a source of
13 ignition during and for a reasonable time after any fumigation or insecticidal fogging operation
14 shall be shut off.

15
16 **Exception:** Circulating fans that have been specifically designed for utilization in
17 hazardous atmospheres and installed in accordance with the Electrical Code.

18
19 **[1703.2.2] 2603.2.2 Electronic devices.** Electronic devices, including portable equipment and
20 cellular phones, shall be shut off. Telephone lines shall be disconnected from telephones.

21
22 **[1703.3] 2603.3 Notification.** The department shall be notified in writing at least 48 hours before
23 the building or structure is to be closed in connection with the utilization of any toxic or flammable
24 fumigant. Notification shall give the location of the enclosed space to be fumigated or fogged, the
25 occupancy, the fumigants or insecticides to be utilized, the person or persons responsible for the
26 operation, and the date and time at which the operation will begin. Written notice of any fumigation
27 or insecticidal fogging operation shall be given to all affected occupants of the building, structure
28 or portion thereof in which such operations are to be conducted, with sufficient advance notice to
29 allow all such spaces to be vacated in an orderly manner. Such notice shall inform the occupants
30 as to the purposes and anticipated duration of the fumigation operations.

31
32 **[1703.3.1] 2603.3.1 Warning signs.** Approved warning signs indicating the danger, type of
33 chemical involved and necessary precautions shall be posted on all doors and entrances to the
34 premises and upon all gangplanks and ladders from the deck, pier or land to the marine vessel
35 or watercraft. Such notices shall be printed in red ink on a white background. Letters in the
36 headlines shall be at least 2 inches (51 mm) in height and shall state the date and time of the
37 operation, the name and address of the person conducting the fumigation or insecticidal
38 fogging, the name of the operator in charge, and a warning stating that the occupied premises
39 shall be vacated at least 1 hour before the operation begins and shall not be reentered until the
40 danger signs have been removed by the proper authorities. Advance notice shall be given to all
41 occupants of the building or structure where fumigation and insecticidal fogging operations
42 are to be conducted to warn of the hazards of such operation.

43
44 **[1703.3.2] 2603.3.2 Reserved.**

45
46 **[1703.3.3] 2603.3.3 Watchperson.** During the period fumigation is in progress, except when
47 fumigation is conducted in a gas-tight vault or tank, one or more watchpersons shall be

1 provided at each entrance to the space being fumigated to prevent entry into such space until
2 the fumigation is completed and the premises is properly ventilated and safe for occupancy.
3

4 **[1703.4] 2603.4 Wrapping of buildings.** Paper and other similar combustible materials that do
5 not meet the flame propagation performance criteria of NFPA 701 shall not be used to wrap or
6 cover a building in excess of that required for the sealing of cracks, casements and similar
7 openings.
8

9 **[1703.5] 2603.5 Ventilation and cleanup.** At the end of the exposure period, fumigators shall
10 safely and properly ventilate the premises and contents; properly dispose of fumigant containers,
11 residues, debris and other waste materials; and clear obstructions from gas-fired appliance vents.
12

13
14 **CHAPTER 27**
15 **SEMICONDUCTOR FABRICATION FACILITIES**

16
17 **SECTION FC [1801] 2701**
18 **GENERAL**
19

20 **[1801.1] 2701.1 Scope.** This chapter shall govern the design, installation, operation and
21 maintenance of semiconductor fabrication facilities and comparable research and development
22 facilities classified as Group H-5 occupancies, and the storage, handling and use of hazardous
23 materials therein.
24

25 **[1801.2] 2701.2 Application.** The requirements set forth in this chapter are requirements specific
26 only to Group H-5 and shall be applied as exceptions or additions to applicable requirements set
27 forth elsewhere in this code.
28

29 **[1801.3] 2701.3 Multiple hazards.** Where a material poses multiple hazards, all hazards shall be
30 addressed in accordance with [FC2701.1] FC5001.1.
31

32 **[1801.4] 2701.4 General.** Semiconductor fabrication facilities and comparable research and
33 development facilities classified as Group H-5 occupancies shall be designed, installed, operated
34 and maintained in accordance with this chapter. Such facilities and hazardous materials shall
35 additionally comply with the requirements of the construction codes, including the Building Code.
36

37 **[1801.5] 2701.5 Permits.** Permits shall be required as set forth in FC105.6.
38

39 **SECTION FC [1802] 2702**
40 **DEFINITIONS**
41

42 **[1802.1] 2702.1 Definitions.** The following terms shall, for the purposes of this chapter and as
43 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
44

45 **CONTINUOUS GAS DETECTION SYSTEM.** [A gas detection system where the analytical
46 instrument is maintained in continuous operation and sampling is performed without interruption
47 on a cyclical basis at intervals not to exceed 30 minutes.]

1
2 **EMERGENCY CONTROL STATION.** [An approved location on the premises of a
3 semiconductor fabrication facility staffed by trained personnel that monitor the operation of
4 equipment and systems including alert and alarm signals.]

5
6 **FABRICATION AREA.** [An area within a semiconductor fabrication facility in which processes
7 using hazardous production materials are conducted.]

8
9 **HAZARDOUS PRODUCTION MATERIAL (HPM).** [A solid, liquid or gas associated with
10 semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or
11 instability of Class 3 or 4 as defined in NFPA 704 and which is used directly in research, laboratory
12 or production processes which have, as their end product, materials that are not hazardous.]

13
14 **HPM FLAMMABLE LIQUID.** [An HPM liquid that is defined as either a Class I flammable
15 liquid or a Class II or Class IIIA combustible liquid.]

16
17 **HPM ROOM.** [A room used in conjunction with or serving a Group H-5 occupancy, where HPM
18 is stored or used and which is classified as a Group H-2, H-3 or H-4 occupancy.]

19
20 **PASS-THROUGH.** [An enclosure installed in a wall with a door on each side that allows
21 chemicals, HPM, equipment, and parts to be transferred from one side of the wall to the other.]

22
23 **SEMICONDUCTOR FABRICATION FACILITY.** [A building or structure, or part thereof, in
24 which electrical circuits or devices, commonly known as semiconductors, are manufactured on
25 solid crystalline substances having electrical conductivity greater than insulators but less than
26 conductors.]

27
28 **SERVICE CORRIDOR.** [A fully enclosed passage, other than one designated as a required
29 means of egress, through which HPM can be moved during handling.]

30
31 **TOOL.** [A device, storage container, workstation, or process machine used in a fabrication area.]

32
33 **WORKSTATION.** [A defined space within a fabrication area in which a specific function,
34 laboratory procedure or research activity relating to semiconductor manufacture is conducted. A
35 workstation may include equipment using HPM, hazardous materials storage cabinets, flammable
36 liquid storage cabinets or gas cabinets, ventilation equipment, fire protection devices, detection
37 devices and electrical devices.]

38
39 **SECTION FC [1803] 2703**
40 **GENERAL SAFETY PROVISIONS**

41
42 **[1803.1] 2703.1 Emergency control station.** An emergency control station shall be maintained in
43 accordance with FC [1803.1.1] 2703.1.1 through [1803.1.3] 2703.1.3.

44
45 **[1803.1.1] 2703.1.1 Location.** The emergency control station shall be located on the premises
46 at an approved location outside of the fabrication area.

1 [1803.1.2] 2703.1.2 **Staffing.** Trained personnel shall continuously staff the emergency
2 control station.

3
4 [1803.1.3] 2703.1.3 **Signals.** The emergency control station shall monitor signals from
5 emergency equipment and alarm and detection systems, including the following systems,
6 whether required by this code or the construction codes or voluntarily installed:

- 7
- 8 1. Sprinkler system alarm and monitoring systems.
- 9
- 10 2. Manual fire alarm systems.
- 11
- 12 3. Emergency alarm systems.
- 13
- 14 4. Continuous-gas detection systems.
- 15
- 16 5. Smoke detection systems.
- 17
- 18 6. Emergency power systems.
- 19
- 20 7. Automatic detection and alarm systems for pyrophoric liquids and Class 3
21 water-reactive liquids required by [FC1805.2.3.4] FC2705.2.3.4.
- 22
- 23 8. Exhaust ventilation flow alarm devices for pyrophoric liquids and Class 3 water-
24 reactive liquids cabinet exhaust ventilation systems required by [FC1805.2.3.4]
25 FC2705.2.3.4.
- 26

27 [1803.2] 2703.2 **Devices, equipment and systems.** Devices, equipment and systems including,
28 containers, piping, tubing, valves and fittings shall comply with the requirements of this section,
29 [FC2703.2] FC5003.2, and other applicable provisions of this code, and the construction codes,
30 including the Building Code and the Mechanical Code.

31
32 [1803.2.1] 2703.2.1 **Additional regulations for HPM supply piping and tubing.** The
33 requirements set forth in [FC2703.2.2.2] FC5003.2.2.2 shall apply to supply piping and tubing
34 for HPM gases and liquids. Supply piping and tubing for HPM gases and liquids having a
35 health-hazard ranking of 3 or 4 shall be welded throughout, except for connections located
36 within a ventilated enclosure if the material is a gas, or an approved method of drainage or
37 containment is provided for connections if the material is a liquid.

38
39 [1803.3] 2703.3 **Design and installation requirements.** Semiconductor fabrication facilities shall
40 be designed and installed in accordance with FC [1803.3.1] 2703.3.1 through [1803.3.9] 2703.3.9.

41
42 [1803.3.1] 2703.3.1 **Fabrication areas.** Design, installation and location of fabrication areas
43 shall comply with the requirements of the construction codes, including the Building Code.

44
45 [1803.3.2] 2703.3.2 **Pass-throughs in exit access corridors.** Pass-throughs in exit access
46 corridors shall be constructed in accordance with the construction codes, including the
47 Building Code.

1
2 [1803.3.3] **2703.3.3 Liquid storage rooms.** Liquid storage rooms shall comply with the
3 requirements of FC Chapter [34] 57 and the construction codes, including the Building Code.

4
5 [1803.3.4] **2703.3.4 HPM rooms.** HPM rooms shall comply with the requirements of the
6 construction codes, including the Building Code.

7
8 [1803.3.5] **2703.3.5 Gas cabinets.** Gas cabinets shall comply with the requirements of
9 [FC2703.8.6] FC5003.8.6.

10
11 [1803.3.6] **2703.3.6 Exhausted enclosures.** Exhausted enclosures shall comply with the
12 requirements of [FC2703.8.5] FC5003.8.5.

13
14 [1803.3.7] **2703.3.7 Gas rooms.** Gas rooms shall comply with the requirements of
15 [FC2703.8.4] FC5003.8.4.

16
17 [1803.3.8] **2703.3.8 Service corridors.** Service corridors shall comply with the requirements
18 of [FC1805.3.3] FC2705.3.3 and the Building Code.

19
20 [1803.3.9] **2703.3.9 Cabinets containing pyrophoric liquids or water-reactive Class**
21 **3 liquids.** Cabinets in fabrication areas containing pyrophoric liquids or Class 3 water-
22 reactive liquids in containers or in amounts greater than ½ gallon (2 L) shall comply with
23 [FC1805.2.3.4] FC2705.2.3.4.

24
25 [1803.4] **2703.4 Emergency plan.** An emergency preparedness plan shall be prepared in
26 accordance with FC Chapter 4.

27
28 [1803.5] **2703.5 Maintenance of devices, equipment, systems and processes.** Maintenance of
29 devices, equipment, systems and processes shall comply with the requirements of [FC2703.2.6]
30 FC5003.2.6.

31
32 [1803.6] **2703.6** Reserved.

33
34 [1803.7] **2703.7 Electrical wiring and equipment.** Electrical wiring and equipment in HPM
35 facilities shall comply with the requirements of FC [1803.7.1] 2703.7.1 through [1803.7.3]
36 2703.7.3.

37
38 [1803.7.1] **2703.7.1 Fabrication areas.** Electrical wiring and equipment in fabrication areas
39 shall comply with the requirements of the Building Code and Electrical Code.

40
41 [1803.7.2] **2703.7.2 Workstations.** Electrical equipment and devices within 5 feet (1524 mm)
42 of workstations in which flammable or pyrophoric gases or flammable liquids are used shall
43 comply with the requirements of the Electrical Code for Class I, Division 2 hazardous
44 locations. Workstations shall not be energized without adequate exhaust ventilation in
45 accordance with [FC1803.14] FC2703.14.

1 **Exception:** Class I, Division 2 hazardous electrical equipment is not required when the air
2 removal from the workstation or dilution will prevent the accumulation of flammable
3 vapors and fumes on a continuous basis.
4

5 **[1803.7.3] 2703.7.3 Hazardous production material (HPM) rooms, gas rooms and liquid**
6 **storage rooms.** Electrical wiring and equipment in HPM rooms, gas rooms and liquid storage
7 rooms shall comply with the requirements of the Electrical Code.
8

9 **[1803.8] 2703.8** Reserved.
10

11 **[1803.9] 2703.9** Reserved.
12

13 **[1803.10] 2703.10 Sprinkler system.** A sprinkler system shall be provided in accordance with FC
14 [1803.10.1] 2703.10.1 through [1803.10.5] 2703.10.5, FC Chapter 9 and the Building Code.
15

16 **[1803.10.1] 2703.10.1 Workstations and tools.** The design of the sprinkler system in the area
17 shall take into consideration the spray pattern and the effect on the equipment.
18

19 **[1803.10.1.1] 2703.10.1.1 Combustible workstations.** A sprinkler head shall be installed
20 within each branch exhaust connection or individual plenums of workstations of
21 combustible construction. The sprinkler head in the exhaust connection or plenum shall be
22 located not more than 2 feet (610 mm) from the point of the duct connection or the
23 connection to the plenum. When necessary to prevent corrosion, the sprinkler head and
24 connecting piping in the duct shall be coated with approved or listed corrosion-resistant
25 materials. The sprinkler head shall be accessible for periodic inspection in accordance with
26 FC Chapter 9.
27

28 **Exceptions:**
29

- 30 1. Alternative fire extinguishing systems shall be allowed where approved.
31 Activation of such systems shall deactivate the related processing equipment.
32
- 33 2. Process equipment that operates at temperatures exceeding 932°F (500°C) and
34 has automatic shutdown capabilities that will interrupt HPM flow for hazardous
35 materials.
36
- 37 3. Exhaust ducts 10 inches (254 mm) or less in diameter from flammable gas
38 storage cabinets that are part of a workstation.
39
- 40 4. Ducts listed or approved for use without internal sprinkler protection.
41

42 **[1803.10.1.2] 2703.10.1.2 Combustible tools.** Where the horizontal surface of a
43 combustible tool is obstructed from ceiling sprinkler discharge, sprinkler protection that
44 covers the horizontal surface of the tool shall be provided.
45

46 **Exceptions:**
47

1. A gaseous fire extinguishing local surface application system shall be allowed as an alternative to sprinklers when approved. Gaseous fire extinguishing systems shall be actuated by infrared (IR) or ultraviolet/infrared (UVIR) optical detectors.
2. Tools constructed of materials that are listed as Class 1 or Class 2 in accordance with UL 2360 or approved for use without internal fire extinguishing system protection.

[1803.10.2] 2703.10.2 Gas cabinets and exhausted enclosures. A sprinkler system shall be provided in gas cabinets and exhausted enclosures containing HPM compressed gases.

Exception: Gas cabinets located in a HPM room other than those cabinets containing pyrophoric gases.

[1803.10.3] 2703.10.3 Pass-throughs in exit access corridors. Pass-throughs in exit access corridors shall be protected throughout by a sprinkler system.

[1803.10.4] 2703.10.4 Exhaust ducts for HPM. A sprinkler system shall be provided in exhaust ducts conveying gases, vapors, fumes, mists or dusts generated from HPM in accordance with this section and the Mechanical Code and the Building Code.

[1803.10.4.1] 2703.10.4.1 Metallic and noncombustible nonmetallic exhaust ducts. A sprinkler system shall be provided in metallic and noncombustible nonmetallic exhaust ducts when the following conditions apply:

1. The largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).
2. The ducts are within the building.
3. The ducts are conveying flammable gases, vapors or fumes.

[1803.10.4.2] 2703.10.4.2 Combustible nonmetallic exhaust ducts. A sprinkler system shall be provided in combustible nonmetallic exhaust ducts when the largest cross-sectional diameter of the duct is equal to or greater than 10 inches (254 mm).

Exceptions:

1. Ducts listed or approved for applications without sprinkler system protection.
2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

[1803.10.4.3] 2703.10.4.3 Exhaust connections and plenums of combustible workstations. Fire extinguishing system protection for exhaust connections and plenums of combustible workstations shall comply with the requirements of [FC1803.10.1.1] FC2703.10.1.1.

1 [1803.10.4.4] **2703.10.4.4 Exhaust duct sprinkler system requirements.** Sprinkler
2 systems installed in exhaust duct systems shall be hydraulically designed to provide ½
3 gallon per minute (gpm) (1.9 L/min) over an area derived by multiplying the distance
4 between the sprinklers in a horizontal duct by the width of the duct. Minimum discharge
5 shall be 20 gpm (76 L/min) per sprinkler from the five hydraulically most remote
6 sprinklers.

7
8 [1803.10.4.4.1] **2703.10.4.4.1 Sprinkler head locations.** Sprinkler heads shall be
9 installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction.
10 In vertical runs, sprinkler heads shall be installed at the top and at alternate floor levels.

11
12 [1803.10.4.4.2] **2703.10.4.4.2 Control valve.** A separate indicating control valve shall
13 be provided for sprinkler heads installed in exhaust ducts.

14
15 [1803.10.4.4.3] **2703.10.4.4.3 Drainage.** Drainage shall be provided to remove
16 sprinkler water discharged in exhaust ducts.

17
18 [1803.10.4.4.4] **2703.10.4.4.4 Corrosive atmospheres.** Where corrosive atmospheres
19 exist, exhaust duct sprinkler heads and pipe fittings shall be manufactured of corrosion-
20 resistant materials or coated with approved materials.

21
22 [1803.10.4.4.5] **2703.10.4.4.5 Maintenance and inspection.** Sprinkler heads in
23 exhaust ducts shall be accessible for inspection and maintenance and shall be inspected
24 and maintained on not less than an annual basis.

25
26 [1803.10.5] **2703.10.5 Sprinkler alarms and supervision.** Sprinkler systems shall be
27 electrically supervised and provided with alarms in accordance with the construction codes,
28 including the Building Code. Sprinkler system alarm and supervisory signals shall be
29 transmitted to the emergency control station.

30
31 [1803.11] **2703.11 Manual fire alarm system.** A manual fire alarm system shall be installed
32 throughout buildings containing a Group H-5 occupancy. Activation of the alarm system shall
33 initiate a local alarm and transmit a signal to the emergency control station. Manual fire alarm
34 systems shall be designed and installed in accordance with the construction codes, including the
35 Building Code.

36
37 [1803.12] **2703.12 Emergency alarm system.** Emergency alarm systems shall be provided in
38 accordance with this section, [FC2704.9] FC5004.9 and [FC2705.4.4] FC5005.4.4. The maximum
39 allowable quantity per control area provisions of [FC2704.1] FC5004.1 shall not apply to
40 emergency alarm systems required for HPM.

41
42 [1803.12.1] **2703.12.1 Where required.** Emergency alarm systems shall be provided in the
43 areas indicated in FC [1803.12.1.1] 2703.12.1.1 through [1803.12.1.3] 2703.12.1.3.

44
45 [1803.12.1.1] **2703.12.1.1 Service corridors.** An approved emergency alarm system shall
46 be provided in service corridors, with at least one alarm device in the service corridor.

1 [1803.12.1.2] **2703.12.1.2 Exit access corridors and exit enclosures.** Emergency alarms
2 for exit access corridors and exit enclosures shall comply with the requirements of
3 [FC2703.10.4] FC5005.4.4.

4
5 [1803.12.1.3] **2703.12.1.3 Liquid storage rooms, HPM rooms and gas rooms.**
6 Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with
7 the requirements of [FC2704.9] FC5004.9.

8
9 [1803.12.2] **2703.12.2 Alarm-initiating devices.** An approved emergency telephone system,
10 local alarm manual pull stations, or other approved alarm-initiating devices are allowed to be
11 used as emergency alarm-initiating devices.

12
13 [1803.12.3] **2703.12.3 Alarm signals.** Activation of the emergency alarm system shall sound
14 a local alarm and transmit a signal to the emergency control station.

15
16 [1803.13] **2703.13 Continuous gas detection systems.** A continuous gas detection system shall
17 be provided for HPM gases when the physiological warning properties of the gas are at a higher
18 level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in
19 accordance with the construction codes, including the Building Code.

20
21 [1803.14] **2703.14 Exhaust ventilation systems for HPM.** Exhaust ventilation systems and
22 materials for exhaust ducts utilized for the exhaust of HPM shall comply with the requirements of
23 this section, other applicable provisions of this code, the construction codes, including the Building
24 Code and the Mechanical Code.

25
26 [1803.14.1] **2703.14.1 Where required.** Exhaust ventilation systems shall be provided in the
27 following locations in accordance with this section and the construction codes, including the
28 Building Code:

- 29
- 30 1. Fabrication areas: Exhaust ventilation for fabrication areas shall comply with the
31 requirements of the construction codes, including the Building Code. Additional manual
32 control switches shall be provided as may be required by the commissioner.
33
 - 34 2. Workstations: A ventilation system shall be provided to capture and exhaust fumes and
35 vapors at workstations.
36
 - 37 3. Liquid storage rooms: Exhaust ventilation for liquid storage rooms shall comply with
38 the requirements of [FC2704.3.1] FC5004.3.1 and the construction codes, including the
39 Building Code and Mechanical Code.
40
 - 41 4. HPM rooms: Exhaust ventilation for HPM rooms shall comply with the requirements of
42 [FC2704.3.1] FC5004.3.1 and the construction codes, including the Building Code and
43 the Mechanical Code.
44
 - 45 5. Gas cabinets: Exhaust ventilation for gas cabinets shall comply with the requirements of
46 [FC2703.8.6.2] FC5003.8.6.2. The gas cabinet ventilation system is allowed to connect
47 to a workstation ventilation system. Exhaust ventilation for gas cabinets containing

1 highly toxic or toxic gases shall additionally comply with the requirements of FC Chapter
2 [37] 60.

3
4 6. Exhausted enclosures: Exhaust ventilation for exhausted enclosures shall comply with
5 the requirements of [FC2703.8.5.2] FC5003.8.5.2. Exhaust ventilation for exhausted
6 enclosures containing highly toxic or toxic gases shall additionally comply with the
7 requirements of FC Chapter [37] 60.

8
9 7. Gas rooms: Exhaust ventilation for gas rooms shall comply with the requirements of
10 [FC2703.8.4.2] FC5003.8.4.2. Exhaust ventilation for gas rooms containing highly toxic
11 or toxic gases shall additionally comply with the requirements of FC Chapter [37] 60.

12
13 8. Cabinets containing pyrophoric liquids or Class 3 water-reactive liquids: Exhaust
14 ventilation for cabinets in fabrication areas containing pyrophoric liquids or Class 3
15 water-reactive liquids shall be as required in [FC1805.2.3.4] FC2705.2.3.4.

16
17 **[1803.14.2] 2703.14.2 Penetrations.** Exhaust ducts penetrating fire barrier assemblies shall be
18 contained in a shaft of equivalent fire-resistance-rated construction. Exhaust ducts shall not
19 penetrate fire walls. Fire dampers shall not be installed in exhaust ducts.

20
21 **[1803.14.3] 2703.14.3 Treatment systems.** Treatment systems for highly toxic and toxic gases
22 shall comply with the requirements of FC Chapter [37] 60.

23
24 **[1803.15] 2703.15 Emergency power system.** An emergency power system shall be provided in
25 Group H-5 occupancies where required by the construction codes, including the Building Code.
26 The emergency power system shall be designed to supply power automatically to required
27 electrical systems when the normal supply system is interrupted.

28
29 **[1803.15.1] 2703.15.1 Required electrical systems.** Emergency power shall be provided for
30 electrically operated equipment and connected control circuits as required by Chapter 4 of the
31 Building Code or this code.

32
33 **2703.16 Sub-atmospheric pressure gas systems.** Sub-atmospheric pressure gas systems (SAGS)
34 shall be designed, installed, operated and maintained in accordance with NFPA 318.

35
36 **SECTION FC [1804] 2704**
37 **STORAGE**

38
39 **[1804.1] 2704.1 General.** Hazardous materials shall be stored in semiconductor fabrication
40 facilities in accordance with this section and the provisions of other applicable chapters of this
41 code.

42
43 **[1804.2] 2704.2 Fabrication areas.** Hazardous materials shall be stored in accordance with FC
44 [1804.2.1] 2704.2.1 through [1804.2.2.1] 2704.2.2.1.

[1804.2.1] 2704.2.1 Location of HPM storage in fabrication areas. Storage of HPM in fabrication areas shall be within approved or listed storage cabinets, gas cabinets or within a workstation as follows:

1. Flammable and combustible liquid storage cabinets shall comply with the requirements of FC Chapter [34] 57.
2. Hazardous materials storage cabinets shall comply with the requirements of [FC2703.8.7] FC5003.8.7.
3. Gas cabinets shall comply with the requirements of [FC2703.8.6] FC5003.8.6. Gas cabinets for highly toxic or toxic gases shall additionally comply with the requirements of [FC3704.1.2] FC6004.1.2.
4. Exhausted enclosures shall comply with [FC2703.8.5] FC5003.8.5. Exhausted enclosures for highly toxic or toxic gases shall also comply with [FC3704.1.3] FC6004.1.3.
5. Workstations shall comply with the requirements of [FC1805.2.3] FC2705.2.3.

[1804.2.2] 2704.2.2 Maximum aggregate quantities in fabrication areas. The aggregate quantities of hazardous materials stored, handled and used in a single fabrication area shall be limited as specified in this section.

Exception: Fabrication areas containing quantities of hazardous materials not exceeding the maximum allowable quantities per control area established by FC [2703.1.1] 5003.1.1, [3404.3.4] 5704.3.4 and [3404.3.5] 5704.3.5.

**FC TABLE [1804.2.2.1] 2704.2.2.1
QUANTITY LIMITS FOR HAZARDOUS MATERIALS IN A SINGLE FABRICATION AREA IN GROUP H-5^a**

HAZARD CATEGORY	SOLIDS (pounds/square foot)	LIQUIDS (gallons/square foot)	GAS (SCF/square foot)
PHYSICAL-HAZARD MATERIALS			
Combustible dust	Note b	Not Applicable	Not Applicable
Combustible fiber Loose Baled	Note b Notes b, c	Not Applicable	Not Applicable
Combustible liquid Class II Class IIIA Class IIIB Combination Class I, II and IIIA	Not Applicable	0.01 0.02 Not Limited 0.04	Not Applicable
Cryogenic gas Flammable Oxidizing	Not Applicable	Not Applicable	Note d 1.25
Explosives	Note b	Note b	Note b
Flammable gas Gaseous Liquefied	Not Applicable	Not Applicable	Note d Note d
Flammable liquid Class IA Class IB Class IC	Not Applicable	0.0025 0.025 0.025	Not Applicable

Combination Class IA, IB and IC Combination Class I, II and IIIA		0.025 0.04	
Flammable solid	0.001	Not Applicable	Not Applicable
Organic peroxide Unclassified detonable Class I Class II Class III Class IV Class V	Note b Note b 0.025 0.1 Not Limited Not Limited	Not Applicable	Not Applicable
Oxidizing gas Gaseous Liquefied Combination of Gaseous and Liquefied	Not Applicable	Not Applicable	1.25 1.25 1.25
Oxidizer Class 4 Class 3 Class 2 Class 1 Combination oxidizer Class 1, 2, 3	Note b 0.003 0.003 0.003 0.003	Note b 0.03 0.03 0.03 0.03	Not Applicable
Pyrophoric	Note b	0.00125	Notes d and e
Unstable reactive Class 4 Class 3 Class 2 Class 1	Note b 0.025 0.1 Not Limited	Note b 0.0025 0.01 Not Limited	Note b Note b Note b Not Limited
Water reactive Class 3 Class 2 Class 1	Note b 0.25 Not Limited	0.00125 0.025 Not Limited	Not Applicable
HEALTH-HAZARD MATERIALS			
Corrosives	Not Limited	Not Limited	Not Limited
Highly toxics	Not Limited	Not Limited	Note d
Toxics	Not Limited	Not Limited	Note d

For SI: 1 pound per square foot = 4.882 kg/m², 1 gallon per square foot = 0.025 L/m², 1 cubic foot = 0.02832 m³.

- a. Hazardous materials within piping shall not be included in the calculated quantities.
- b. Quantity of hazardous materials in a single fabrication area shall not exceed the maximum allowable quantities per control area in FC Tables [2703.1.1(1)] 5003.1.1(1) and [2703.1.1(2)] 5003.1.1(2).
- c. Densely packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.
- d. The aggregate quantity of flammable, pyrophoric, toxic and highly toxic gases shall not exceed 9,000 SCF.
- e. The aggregate quantity of pyrophoric gases in the building shall not exceed the amounts set forth in FC Table [2703.8.2] 5003.8.2.

[1804.2.2.1] 2704.2.2.1 Storage and use in fabrication areas. The maximum quantities of hazardous materials stored in a single fabrication area shall not exceed the quantities set forth in FC Table [1804.2.2.1] 2704.2.2.1.

[1804.3] 2704.3 Indoor storage outside of fabrication areas. The indoor storage of hazardous materials outside of fabrication areas shall be in accordance with FC [1804.3.1] 2704.3.1 through [1804.3.3] 2704.3.3.

[1804.3.1] 2704.3.1 HPM storage. The indoor storage of HPM in quantities greater than those listed in FC [2703.1.1] 5003.1.1 and [3404.3.4] 5704.3.4 shall be in a room complying with the requirements of the construction codes, including the Building Code, and this code for a liquid storage room, HPM room or gas room as appropriate for the materials stored.

1 **[1804.3.2] 2704.3.2 Other hazardous materials storage.** The indoor storage of other
 2 hazardous materials shall comply with the requirements of FC [2701] 5001, [2703] 5003 and
 3 [2704] 5004 and other applicable provisions of this code.

4
 5 **[1804.3.3] 2704.3.3 Separation of incompatible hazardous materials.** Incompatible
 6 hazardous materials in storage shall be separated from each other in accordance with
 7 [FC2703.9.8] FC5003.9.8.

8
 9 **[1804.4] 2704.4 Exit access corridors and exit enclosures.** Hazardous materials shall not be
 10 stored in exit access corridors or exit access enclosures.

11
 12 **SECTION FC [1805] 2705**
 13 **HANDLING AND USE**
 14

15 **[1805.1] 2705.1 General.** Hazardous materials shall be handled and used in accordance with this
 16 section, [FC1803] FC2703 and other applicable provisions of this code.

17
 18 **[1805.2] 2705.2 Fabrication areas.** The use of hazardous materials in fabrication areas shall be in
 19 accordance with FC [1805.2.1] 2705.2.1 through [1805.2.3.4] 2705.2.3.4.

20
 21 **[1805.2.1] 2705.2.1 Location of HPM in use in fabrication areas.** Hazardous production
 22 materials in use in fabrication areas shall be within approved or listed gas cabinets, exhausted
 23 enclosures or within a workstation, in accordance with FC Chapter [27] 50.

24
 25 **[1805.2.2] 2705.2.2 Maximum aggregate quantities in fabrication areas.** The aggregate
 26 quantities of hazardous materials in a single fabrication area shall comply with the
 27 requirements of [FC1804.2.2] FC2704.2.2, and FC Table [1804.2.2.1] 2704.2.2.1. The quantity
 28 of HPM in use at a workstation shall not exceed the quantities listed in FC Table [1805.2.2]
 29 2705.2.2.

30
 31 **FC TABLE [1805.2.2] 2705.2.2**
 32 **MAXIMUM QUANTITIES OF HPM AT A WORKSTATION^d**

HPM CLASSIFICATION	STATE	MAXIMUM QUANTITY
Flammable, highly toxic, pyrophoric and toxic combined	Gas	Combined aggregate volume of all containers at a workstation shall not exceed an internal container volume of 39.6 gallons or 5.29 cubic feet
Flammable	Liquid Solid	15 gallons ^{a, b} 5 pounds ^{a, b}
Corrosive	Gas Liquid Solid	Combined aggregate volume of all containers at a workstation shall not exceed an internal container volume of 39.6 gallons or 5.29 cubic feet Use-Open System: 25 gallons ^b Use-Closed System: 150 gallons ^{b, e} 20 pounds ^{a, b}
Highly toxic	Liquid Solid	15 gallons ^a 5 pounds ^a
Oxidizer	Gas Liquid	Combined aggregate volume of all containers at a workstation shall not exceed an internal container volume of 39.6 gallons or 5.29 cubic feet Use-open system: 12 gallons ^b

	Solid	Use-closed system: 60 gallons ^b 20 pounds ^{a, b}
Pyrophoric	Liquid	½ gallon ^{c, f}
	Solid	See FC Table [1804.2.2.1] <u>2704.2.2.1</u>
Toxic	Liquid	Use-open system: 15 gallons ^b Use-closed system: 60 gallons ^b
	Solid	5 pounds ^{a, b}
Unstable reactive Class 3	Liquid	½ gallon ^{a, b}
	Solid	5 pounds ^{a, b}
Water-reactive Class 3	Liquid	½ gallon ^{c, f}
	Solid	See FC Table [1804.2.2.1] <u>2704.2.2.1</u>

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L.

- a. Maximum allowable quantities may be increased 100 percent for closed systems operations. When Note b applies, the quantities increased may be as set forth in both notes.
- b. Quantities may be increased 100 percent when workstations are internally protected throughout by a fire extinguishing system complying with the requirements of FC Chapter 9. When Note a applies, the quantities increased may be as set forth in both notes. When Note e applies, the maximum increase authorized by both Notes b and e shall not exceed 100 percent.
- c. Allowed only in workstations that are internally protected throughout by a fire extinguishing system compatible with the reactivity of materials in use at the workstation.
- d. The quantity limits apply only to materials classified as HPM.
- e. Quantities may be increased 100 percent for nonflammable, noncombustible corrosive liquids when the materials of construction for workstations are listed or approved for use without internal fire extinguishing system protection. When Note b applies, the maximum increase authorized by both Notes b and e shall not exceed 100 percent.
- f. A maximum quantity of 5.3 gallons shall be allowed at a workstation when in accordance with [FC1805.2.3.4] FC2705.2.3.4.

[1805.2.3] 2705.2.3 Workstations. Workstations in fabrication areas shall be in accordance with FC [1805.2.3.1] 2705.2.3.1 through [1805.2.3.4] 2705.2.3.4.

[1805.2.3.1] 2705.2.3.1 Construction. Workstations in fabrication areas shall be constructed of materials compatible with the materials stored and used at the workstation. The portion of the workstation that serves as a cabinet for HPM gases and flammable liquids shall be noncombustible and, if of metal, shall not be less than 0.0478-inch (1.2-mm) (18 gauge) steel.

[1805.2.3.2] 2705.2.3.2 Protection of vessels. Vessels containing hazardous materials located in or connected to a workstation shall be protected as follows:

1. HPM: Vessels containing HPM shall be protected from physical damage and shall not project from the workstation.
2. Hazardous cryogenic fluids, gases and liquids: Hazardous cryogenic fluids, gases and liquid vessels located within a workstation shall be protected from seismic forces in an approved manner in accordance with the construction codes, including the Building Code.
3. Compressed gases: Protection for compressed gases shall additionally comply with the requirements of [FC3003.3] FC5303.3.
4. Cryogenic fluids: Protection for cryogenic fluid vessels shall additionally comply with [FC3203.5] FC5503.5.

[1805.2.3.3] 2705.2.3.3 Drainage and containment for HPM liquids. Each workstation utilizing HPM liquids shall be provided with all of the following:

1. Drainage piping systems connected to a compatible system for disposition of such liquids.
2. The work surface provided with a slope or other means for directing spilled materials to the containment or drainage system.
3. An approved means of containing or directing spilled or leaked liquids to the drainage system.

[1805.2.3.4] 2705.2.3.4 Pyrophoric liquids and Class 3 water-reactive liquids. Pyrophoric liquids and Class 3 water-reactive liquids in containers of greater than ½-gallon (2-L) but not more than 5.3-gallon (20-L) capacity shall be allowed at workstations when located inside cabinets and the following conditions are met:

1. Maximum amount per cabinet: The maximum amount per cabinet shall be limited to 5.3 gallons (20 L).
2. Cabinet construction: Cabinets shall be constructed in accordance with the following:
 - 2.1. Cabinets shall be constructed of not less than 0.097-inch (2.5-mm) (12 gauge) steel.
 - 2.2. Cabinets shall be allowed to have self-closing limited access ports or noncombustible windows that provide access to equipment controls.
 - 2.3. Cabinets shall be provided with self- or manual-closing doors. Manual-closing doors shall be equipped with a door switch that will initiate local audible and visual alarms when the door is in the open position.
3. Cabinet exhaust ventilation system: An exhaust ventilation system shall be provided for cabinets and shall comply with the following:
 - 3.1. The system shall be designed to operate at a negative pressure in relation to the surrounding area.
 - 3.2. The system shall be equipped with a pressure monitor and a flow switch alarm monitored at the on-site emergency control station.
4. Cabinet spill containment: Spill containment shall be provided in each cabinet, with the spill containment capable of holding the contents of the aggregate amount of liquids in containers in each cabinet.
5. Valves: Valves in supply piping between the product containers in the cabinet and the workstation served by the containers shall fail in the closed position upon power failure, loss of exhaust ventilation and upon actuation of the fire control system.

1
2 6. Fire detection system: Each cabinet shall be equipped with an automatic fire
3 detection system complying with the following conditions:
4

5 6.1. Automatic detection system: UV/IR, high-sensitivity smoke detection
6 (HSSD) or other approved detection systems shall be provided inside each
7 cabinet.
8

9 6.2. Automatic shutoff: Activation of the detection system shall automatically
10 close the shutoff valves at the source on the liquid supply.
11

12 6.3. Alarms and signals: Activation of the detection system shall initiate a local
13 alarm within the fabrication area and transmit a signal to the emergency
14 control station. The alarms and signals shall be both visual and audible.
15

16 **[1805.2.4] 2705.2.4 Exit access corridors and exit enclosures.** Hazardous materials shall not
17 be used in exit access corridors or exit access enclosures.
18

19 **[1805.2.5] 2705.2.5 Service corridors.** Hazardous materials shall not be used in service
20 corridors.
21

22 **[1805.3] 2705.3 Handling.** The handling of hazardous materials shall comply with the
23 requirements of this section and other applicable provisions of this code.
24

25 **[1805.3.1] 2705.3.1 Exit corridors access and exit enclosures.** Exit access corridors and exit
26 enclosures shall not contain HPM except as allowed for exit access corridors by the
27 construction codes, including the Building Code.
28

29 **[1805.3.2] 2705.3.2** Reserved.
30

31 **[1805.3.3] 2705.3.3 Service corridors.** A service corridor shall be provided where it is
32 necessary to move HPM during handling from a liquid storage room, HPM room, gas room or
33 from the outdoors to the perimeter wall of a fabrication area. Service corridors shall be
34 designed and constructed in accordance with the construction codes, including the Building
35 Code.
36

37 **[1805.3.4] 2705.3.4 Carts and hand trucks.** Carts and hand trucks used to move HPM during
38 handling in exit access corridors and exit enclosures shall comply with the requirements of
39 [FC2703.10.3] FC5003.10.3.
40

41 **[1805.3.4.1] 2705.3.4.1 Identification.** Carts and hand trucks shall be marked to indicate
42 the contents.
43

44
45 **CHAPTER 28**
46 **LUMBER YARDS AND WOOD WASTE MATERIALS**
47

1
2 [1903.5.2 Reserved.] **2803.5.2 Static electricity.** Static electricity shall be prevented from
3 accumulating on equipment and systems subject to static electricity buildup by permanent
4 grounding and bonding wires or other approved means.

5
6 [1903.5.3] **2803.5.3 Smoking.** It shall be unlawful to smoke in a lumber yard [or wood waste
7 material facility], woodworking facility or other facility in which wood or wood waste
8 materials are manufactured, stored or handled.

9
10 **SECTION FC [1904] 2804**
11 **THROUGH AND INCLUDING**
12 **SECTION [1907] 2807**
13 **RESERVED**

14
15 **SECTION FC [1908] 2808**
16 **OUTDOOR STORAGE OF WOOD CHIPS AND OTHER WOOD WASTE MATERIALS**

17
18 [1908.1] **2808.1 General.** Wood chips and other wood waste materials shall be stored and handled
19 in accordance with this section.

20
21 [1908.2] **2808.2 Storage areas.** Storage areas shall be level and on solid ground or other all-
22 weather surface. Storage areas shall be thoroughly cleaned before transferring wood products to
23 the area.

24
25 [1908.3] **2808.3 Size of piles.** Piles shall not exceed 25 feet (7620 mm) in height, 150 feet (45 720
26 mm) in width and 250 feet (76 200 mm) in length.

27
28 **Exception:** The commissioner may authorize increased pile sizes provided that adequate fire
29 safety is ensured by installing additional fire protection in accordance with FC Chapter 9 and
30 the construction codes, including the Building Code. The increase shall be based upon the
31 capabilities of the system installed.

32
33 [1908.4] **2808.4 Pile separation.** Piles shall be separated from adjacent piles by approved fire
34 apparatus access roads.

35
36 [1908.5] **2808.5 Combustible waste.** The storage of wood chips or other wood waste materials,
37 the accumulation and handling of combustible materials, the control of vegetation and the disposal
38 of combustible waste shall comply with the requirements of FC Chapter 3.

39
40 [1908.6] **2808.6 Pile protection.** Piles of wood chips or other wood waste materials shall be
41 monitored by an approved means to measure internal temperatures within the piles. Internal pile
42 temperatures shall be measured and recorded weekly.

43
44 [1908.7] **2808.7** Reserved.

45
46 [1908.8] **2808.8 Fire protection.** The commissioner may require that a yard hydrant system and/or
47 monitor nozzles connected to a fixed water supply be installed upon the premises where the facility

1 arrangement, pile arrangement, pile heights, number of piles or total volume of piles would hamper
2 the effectiveness of hose streams to control or extinguish a fire. Portable fire extinguishers in
3 compliance with the requirements of FC906 and with a minimum rating of 4-A:60-B:C shall be
4 readily available throughout the premises.

5
6 **[1908.9] 2808.9 Material-handling equipment.** Approved material-handling equipment shall be
7 available for moving wood chips and other wood waste materials during firefighting operations.

8
9
10 **SECTION FC [1909] 2809**
11 **OUTDOOR STORAGE OF FINISHED LUMBER PRODUCTS**

12 **[1909.1] 2809.1 General.** Finished lumber products shall be stored in accordance with this section.

13
14 **[1909.2] 2809.2 Size of piles.** Outdoor lumber storage shall be arranged to form stable piles with
15 a maximum height of 20 feet (6096 mm). Piles shall not exceed 150,000 cubic feet (4248 m³) in
16 volume.

17
18 **[1909.3] 2809.3 Fire apparatus access roads.** Fire apparatus access roads in accordance with
19 FC503 and the construction codes, including the Building Code, shall be located so that a
20 maximum grid system unit of 50 feet by 150 feet (15 240 mm by 45 720 mm) is established.

21
22 **[1909.4] 2809.4 Security.** Permanent outdoor lumber storage areas shall be surrounded with an
23 approved fence. [Fences shall be a minimum of 6 feet (1829 mm) in height.]

24
25 **[1909.5] 2809.5 Fire protection.** The commissioner may require that the yard hydrant system
26 specified in [FC508.2.3] FC507.2.3 to include monitor nozzles connected to the fixed water supply
27 where the facility arrangement, pile arrangement, pile heights, number of piles or total volume of
28 piles would hamper the effectiveness of hose streams to control or extinguish a fire. Portable fire
29 extinguishers shall be provided in accordance with FC906 for extra-high hazards and located so
30 that the travel distance to the nearest portable fire extinguisher does not exceed
31

1 75 feet (22 860 mm).
2
3

4 **CHAPTER 29**
5 **MANUFACTURE OF ORGANIC COATINGS**

6
7 **SECTION FC [2001] 2901**
8 **GENERAL**
9

10 **[2001.1] 2901.1 Scope.** This chapter shall govern facilities and processes where flammable and
11 combustible liquids are used for the manufacture of organic coatings, other than facilities and
12 processes using nonflammable coatings and operations applying coating materials.

13
14 **[2001.2] 2901.2 Permits.** Permits shall be required as set forth in FC105.6.
15

16 **[2001.3] 2901.3 Maintenance.** Service equipment within a building, structure or premises shall
17 be maintained in accordance with this code and NFPA 35.
18

19 **[2001.4] 2901.4 General.** Organic coating manufacturing facilities and processes shall be
20 designed, installed, operated and maintained in accordance with this chapter.
21

22 **[2001.5] 2901.5 Prohibited organic coatings.** It shall be unlawful to use nitrocellulose in the
23 manufacture of an organic coating.
24

25 **SECTION FC [2002] 2902**
26 **DEFINITIONS**
27

28 **[2002.1] 2902.1 Definition.** The following term shall, for the purposes of this chapter and as used
29 elsewhere in this code, have the meaning [shown herein] set forth in FC202.
30

31 **ORGANIC COATING.** [A liquid mixture of binders such as alkyd, acrylic or oil, and flammable
32 and combustible liquids, such as hydrocarbon, ester, ketone or alcohol, which, when spread in a
33 thin film, convert to a durable protective and decorative finish.]
34

35 **SECTION FC [2003] 2903**
36 **GENERAL PRECAUTIONS**
37

38 **[2003.1] 2903.1 Building design.** Manufacturing of organic coatings shall be conducted only in
39 buildings or structures that do not have pits, basements or other areas below grade.
40

41 **[2003.2] 2903.2 Location.** Organic coating manufacturing operations and operations incidental to
42 or connected with organic coating manufacturing shall not be located in buildings having other
43 occupancies.
44

45 **[2003.2.1] 2903.2.1 Location restrictions.** It shall be unlawful to manufacture organic
46 coatings in any building that is located within 50 feet (15 240 mm) of a building occupied as a
47 multiple dwelling, school, hospital, theater, or other place of assembly.

1
2 **[2003.3] 2903.3 Firefighting access.** Organic coating manufacturing operations shall be
3 accessible from at least one side for the purpose of fire control. Approved aisles shall be maintained
4 for the unobstructed movement of personnel and fire suppression equipment.

5
6 **[2003.4] 2903.4 Fire protection systems.** It shall be unlawful to manufacture an organic coating
7 in any building unless the building is protected throughout by a fire extinguishing system. Fire
8 protection systems shall be designed, installed, operated and maintained, including performing all
9 required tests and inspections, in accordance with FC Chapter 9 and the Building Code.

10
11 **[2003.5] 2903.5 Portable fire extinguishers.** A minimum of one portable fire extinguisher
12 complying with the requirements of FC906 for extra hazard shall be provided in organic coating
13 areas.

14
15 **[2003.6] 2903.6 Open flames.** Open flames and open-flame devices are prohibited in areas where
16 flammable vapor-air mixtures exist.

17
18 **[2003.7] 2903.7 Smoking.** It shall be unlawful to smoke in any organic coating manufacturing
19 facility.

20
21 **[2003.8] 2903.8 Power equipment.** Power-operated equipment and industrial trucks shall be of a
22 type approved for the location.

23
24 **[2003.9] 2903.9 Tank maintenance.** The cleaning of tanks that have contained flammable or
25 combustible liquids shall be performed under the supervision of a person trained in and
26 knowledgeable about the fire and explosion potential.

27
28 **[2003.9.1] 2903.9.1 Repairs.** Where necessary to make repairs involving hot work, the work
29 shall be conducted in accordance with FC Chapter [26] 35.

30
31 **[2003.9.2] 2903.9.2** Reserved.

32
33 **[2003.10] 2903.10 Drainage.** Drainage shall be provided to direct flammable and combustible
34 liquid leakage and fire protection water to an approved location away from the building, any other
35 structure, storage area or adjoining premises.

36
37 **[2003.11] 2903.11 Alarm system.** An approved fire alarm system shall be provided in accordance
38 with the construction codes, including the Building Code.

39
40 **SECTION FC [2004] 2904**
41 **ELECTRICAL EQUIPMENT AND PROTECTION**

42
43 **[2004.1] 2904.1 Wiring and equipment.** Electrical wiring and equipment shall be designed,
44 installed, operated and maintained in accordance with this chapter and the Electrical Code.

1 **[2004.2] 2904.2 Hazardous locations.** Where Class I liquids are exposed to the air, the facility,
2 including all equipment and the ventilation system, shall be designed in a manner that limits Class
3 I, Division 1, locations to the following:

- 4
- 5 1. Piping trenches.
- 6
- 7 2. Within the equipment.
- 8
- 9 3. The immediate vicinity of pumps or equipment locations, such as dispensing stations, open
10 centrifuges, plate and frame filters, opened vacuum filters, change cans and the surfaces of
11 open equipment. The immediate vicinity shall include a zone extending from the vapor
12 liberation point 5 feet (1524 mm) horizontally in all directions and vertically from the floor
13 to a level 3 feet (914 mm) above the highest point of vapor liberation.
- 14

15 **[2004.2.1] 2904.2.1 Other locations.** Locations within the confines of the manufacturing room
16 where Class I liquids are handled shall be Class I, Division 2, except locations indicated in
17 [FC2004.2] FC2904.2.

18
19 **[2004.2.2] 2904.2.2 Ordinary equipment.** Ordinary electrical equipment, including
20 switchgear, is prohibited except where installed in a room maintained under positive pressure
21 with respect to the hazardous area. The air or other media utilized for pressurization shall be
22 obtained from a source that will not cause any amount or type of flammable vapor to be
23 introduced into the room.

24
25 **[2004.3] 2904.3 Bonding.** In any area of the facility in which an ignitable mixture may be present
26 in the atmosphere, equipment, including, but not limited to, tanks, machinery and piping, shall be
27 bonded and connected to a ground.

28
29 **[2004.3.1] 2904.3.1 Piping.** Electrically isolated sections of metallic piping or equipment shall
30 be grounded or bonded to the other grounded portions of the system.

31
32 **[2004.3.2] 2904.3.2 Vehicles.** Cargo tanks loaded or unloaded through open connections shall
33 be grounded and bonded to the receiving system.

34
35 **[2004.3.3] 2904.3.3 Containers.** Where a flammable mixture is transferred from one portable
36 container to another, a bond shall be provided between the two containers, and one shall be
37 grounded.

38
39 **[2004.4] 2904.4 Ground.** Metal framing of buildings shall be grounded with resistance of not
40 more than 5 ohms.

41
42 **SECTION FC [2005] 2905**
43 **PROCESS STRUCTURES**
44

45 **[2005.1] 2905.1 Design.** Process structures shall be designed and constructed in accordance with
46 the construction codes, including the Building Code.

1 **[2005.2] 2905.2 Fire apparatus access.** Fire apparatus access complying with the requirements
2 of FC503 shall be provided for the purpose of fire control to at least one side of organic coating
3 manufacturing operations.

4
5 **[2005.3] 2905.3 Drainage.** Drainage facilities shall be provided in accordance with [FC2003.10]
6 FC2903.10 where topographical conditions are such that flammable and combustible liquids are
7 capable of flowing from the organic coating manufacturing operation so as to constitute a fire
8 hazard to other premises.

9
10 **[2005.4] 2905.4 Explosion control.** Explosion control shall be provided in areas subject to
11 potential deflagration hazards as set forth in NFPA 35. Explosion control shall be provided in
12 accordance with FC911.

13
14 **[2005.5] 2905.5 Ventilation.** Buildings in which Class I liquids are processed or handled shall be
15 ventilated at a rate of not less than 1 cubic foot per minute per square foot (0.00508 m³/s/m²) of
16 solid floor area. Ventilation shall be accomplished by exhaust fans that take suction at floor levels
17 and discharge to a safe location outdoors. Noncontaminated intake air shall be introduced in such
18 a manner that all portions of solid floor areas are provided with continuous uniformly distributed
19 air movement.

20
21 **[2005.6] 2905.6 Heating.** Heating provided in hazardous areas shall be by indirect means. Ignition
22 sources such as open flames or electrical heating elements, except as provided for in [FC2004]
23 FC2904, are prohibited within the building.

24
25 **SECTION FC [2006] 2906**
26 **PROCESS MILLS AND KETTLES**
27

28 **[2006.1] 2906.1 Mills.** Mills, operating with close clearances, which process flammable and heat-
29 sensitive materials shall be located in a detached building or in a noncombustible structure without
30 other occupancies. The amount of flammable material brought into the area shall not be more than
31 the amount required for a batch.

32
33 **[2006.2] 2906.2 Mixers.** Mixers shall be of the enclosed type or, where of the open type, shall be
34 provided with properly fitted covers. Where flow is by gravity, a shutoff valve shall be installed
35 as close as practical to the mixer, and a control valve shall be provided near the end of the fill pipe.

36
37 **[2006.3] 2906.3 Open kettles.** Open kettles shall be located in outdoor areas provided with a
38 protective roof; in a separate structure of noncombustible construction; or separated from other
39 areas by a noncombustible wall having a fire-resistance rating of at least 2 hours.

40
41 **[2006.4] 2906.4 Closed kettles.** Contact-heated kettles containing solvents shall be equipped with
42 safety devices that, in case of a fire, will turn off the process heat, turn on the cooling medium and
43 inject inert gas into the kettle.

44
45 **[2006.4.1] 2906.4.1 Vaporizer location.** The vaporizer section of heat-transfer systems that
46 heat closed kettles containing solvents shall be remotely located.
47

1 **[2006.5] 2906.5 Kettle controls.** The kettle and thin-down tank shall be instrumented, controlled
2 and interlocked so that any failure of the controls will not result in an unsafe condition. The kettle
3 shall be provided with a pressure-rupture disc in addition to the primary vent. The vent piping from
4 the rupture disc shall be of minimum length and shall discharge to an approved location. The thin-
5 down tank shall be adequately vented. Thinning operations shall be provided with a vapor removal
6 system capable of ensuring a safe atmosphere.

7
8 **SECTION FC [2007] 2907**
9 **PROCESS PIPING**

10
11 **[2007.1] 2907.1 Design.** All piping, valves and fittings shall be designed for the working pressures
12 and structural stresses to which the piping, valves and fittings will be subjected, and shall be of
13 steel or other material approved for the service intended.

14
15 **[2007.2] 2907.2 Valves and fittings.** Valves shall be of an indicating type. Terminal valves on
16 remote pumping systems shall be of the dead-man type, shutting off both the pump and the flow
17 of solvent. Valves and fittings shall not be constructed of cast iron.

18
19 **[2007.3] 2907.3 Support.** Piping systems shall be supported and protected against physical
20 damage. Piping shall be pitched to avoid unintentional trapping of liquids, or approved drains shall
21 be provided.

22
23 **[2007.4] 2907.4 Connectors.** Approved flexible connectors shall be installed where vibration
24 exists or frequent movement is necessary. Hoses at dispensing stations shall be of an approved
25 type.

26
27 **[2007.5] 2907.5 Tests.** Before being placed in service, all piping shall be free of leaks when tested
28 for a minimum of 30 minutes at not less than one and one-half times the working pressure or a
29 minimum of 5 pounds per square inch gauge (psig) (35 kPa) at the highest point in the system.

30
31 **SECTION FC [2008] 2908**
32 **RAW MATERIALS IN PROCESS AREAS**

33
34 **[2008.1] 2908.1** Reserved.

35
36 **[2008.2] 2908.2 Organic peroxides.** Organic peroxides brought into the process area shall be in
37 the original shipping container. When in the process area, the organic peroxide shall not be placed
38 in locations exposed to ignition sources, heat, mechanical shocks or flammable liquids, except that
39 organic peroxide may be exposed to flammable liquid during raw material processing.

40
41 **SECTION FC [2009] 2909**
42 **RAW MATERIALS AND FINISHED PRODUCTS**

43
44 **[2009.1] 2909.1 General.** The storage, handling and use of flammable and combustible liquids in
45 process areas shall be in accordance with FC Chapter [34] 57. The storage, handling and use of
46 organic peroxides shall be in accordance with FC Chapter [39] 62 and the storage, handling and
47 use of oxidizers shall be in accordance with FC Chapter [40] 63.

1
2 **[2009.2] 2909.2 Tank storage.** Tanks for the storage of flammable and combustible liquids shall
3 be installed in accordance with FC Chapter [34] 57. Process equipment storing or using flammable
4 or combustible liquids and storage in quantities necessary for maintaining the operation is allowed
5 in the process area.

6
7 **[2009.3] 2909.3 Loading and unloading.** Tank car and cargo tank loading and unloading stations
8 for Class I liquids shall be separated from the process area, other facility structures, the nearest lot
9 line, public street or private road by a minimum distance in accordance with FC Chapter [34] 57.

10
11 **[2009.3.1] 2909.3.1 Loading.** Loading and unloading structures and platforms for flammable
12 and combustible liquids shall be designed and installed in accordance with FC Chapter [34]
13 57.

14
15 **[2009.3.2] 2909.3.2 Safety.** Tank cars and cargo tanks for flammable and combustible liquids
16 shall be loaded and unloaded in accordance with FC Chapter [34] 57.

17
18 **[2009.4] 2909.4** Reserved.

19
20 **[2009.5] 2909.5 Organic peroxide storage.** The storage of organic peroxides shall be in
21 accordance with FC Chapter [39] 62.

22
23 **[2009.5.1] 2909.5.1 Size.** The size of the package containing organic peroxide shall be selected
24 so that, as nearly as practical, full packages are utilized at one time. Spilled peroxide shall be
25 promptly removed and disposed of lawfully.

26
27 **[2009.6] 2909.6 Finished products.** Finished products that are flammable or combustible liquids
28 shall be stored outdoors, in a separate building, or in a room separate from the process area, in
29 accordance with the construction codes, including the Building Code. The storage of finished
30 products shall be in tanks or closed containers in accordance with FC Chapter [34] 57.

31
32
33 **CHAPTER 30**
34 **INDUSTRIAL FURNACES**

35
36 **SECTION FC [2101] 3001**
37 **GENERAL**

38
39 **[2101.1] 3001.1 Scope.** This chapter shall govern the design, installation, operation and
40 maintenance of industrial furnaces used for commercial and industrial processing of materials.

41
42 **[2101.2] 3001.2 Permits.** Permits shall be required as set forth in FC105.6.

43
44 **[2101.3] 3001.3 General.** Industrial furnaces shall be designed, installed, operated and maintained
45 in accordance with this chapter, NFPA 86, and the construction codes, including the Fuel Gas
46 Code and the Mechanical Code.

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SECTION FC [2102] 3002
DEFINITIONS

[2102.1] **3002.1 Definitions.** The following words shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

FURNACE. [A compartment, receptacle, enclosed chamber or structure that is capable of being heated to a high temperature in order to heat the contents thereof. Furnaces may be heated by internal or external sources, including gas burners, oil burners, electrical elements, infrared lamps, induction heaters and steam radiation systems, regardless of whether denominated as an oven or furnace. Furnaces shall be classified as follows:]

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CLASS A. [A furnace that has heat utilization equipment operating at or near atmospheric pressure and that presents a potential explosion or fire hazard if flammable volatiles or combustible materials are processed or heated in the furnace. Such flammable volatiles or combustible materials include those originating from paints, powders, inks, and adhesives from finishing processes, such as dipped, coated, sprayed and impregnated materials; the substrate material; wood, paper and plastic pallets, spacers or packaging materials; or polymerization or other molecular rearrangements.]

21
22
23
24

CLASS B. [A furnace that has heat utilization equipment operating at approximately atmospheric pressure wherein there are no flammable volatiles or combustible materials being heated.]

25
26
27
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29

CLASS C. [A furnace with any type of heating system and a special atmosphere supply system that is potentially hazardous due to a flammable or other special atmosphere being used for treatment of material in process, including integral quench furnaces and molten salt bath furnaces.]

30
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32
33

CLASS D. [A furnace with any type of heating system that operates at temperatures from above ambient to over 5,000°F (2760°C) and at pressures normally below atmospheric, including special processing atmosphere furnaces.]

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36

SECTION FC [2103] 3003
LOCATION

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[2103.1] **3003.1 Ventilation.** Enclosed rooms, basements or other areas below grade containing industrial furnaces shall be provided with combustion air in accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code, and with ventilation in accordance with the Mechanical Code.

42
43
44
45

[2103.2] **3003.2 Location.** Industrial furnaces and heaters shall be located such that in the event of fire or explosion resulting from overheating or from the escape of fuel gas or fuel oil, damage to the building and injury to persons is minimized.

1 **[2103.3] 3003.3 Ignition source.** Industrial furnaces shall be located so as not to pose an ignition
2 hazard to flammable vapors or mists or combustible dusts that may be present as a result of a
3 manufacturing operation or other lawful use and occupancy of the building.
4

5 **[2103.4] 3003.4 Temperatures.** Roofs and floors of furnaces shall be insulated and ventilated to
6 prevent temperatures at combustible ceilings and floors from exceeding 160°F (71°C).
7

8 **SECTION FC [2104] 3004** 9 **FUEL PIPING**

10
11 **[2104.1] 3004.1 Fuel-gas piping.** Fuel-gas piping serving industrial furnaces shall be designed
12 and installed in accordance with the Fuel Gas Code. Piping for other fuel sources shall comply
13 with the requirements of this section.
14

15 **[2104.2] 3004.2 Shutoff valves.** Each industrial furnace shall be provided with an approved
16 manual fuel shutoff valve in accordance with the construction codes, including the Mechanical
17 Code and the Fuel Gas Code.
18

19 **[2104.2.1] 3004.2.1 Fuel supply lines.** Valves for fuel supply lines shall be located within 6
20 feet (1829 mm) of the appliance served.
21

22 **Exception:** When approved and the valve is located in the same general area as the
23 appliance served.
24

25 **[2104.3] 3004.3 Valve position.** The design of manual fuel shutoff valves shall incorporate a
26 permanent feature that visually indicates the open or closed position of the valve. Manual fuel
27 shutoff valves shall not be equipped with removable handles or wrenches unless the handle or
28 wrench can only be installed parallel with the fuel line when the valve is in the open position.
29

30 **SECTION FC [2105] 3005** 31 **INTERLOCKS**

32
33 **[2105.1] 3005.1 Shut down.** Interlocks shall be provided for Class A furnaces so that conveyors
34 or sources of flammable or combustible materials shall shut down if either the exhaust or
35 recirculation air supply fails.
36

37 **SECTION FC [2106] 3006** 38 **FIRE PROTECTION**

39
40 **[2106.1] 3006.1 Required protection.** Class A and B furnaces that contain, or are utilized for the
41 processing of, combustible materials shall be protected throughout by a fire extinguishing system
42 complying with the requirements of FC Chapter 9.
43

44 **[2106.2] 3006.2 Fixed fire extinguishing systems.** A fixed fire extinguishing system shall be
45 provided for Class C or D furnaces to protect against such hazards as overheating, spillage of
46 molten salts or metals, quench tanks, ignition of hydraulic oil and escape of fuel.
47

1 [2106.3] **3006.3 Portable fire extinguishers.** Portable fire extinguishers complying with the
2 requirements of FC906 shall be provided not closer than 15 feet (4572 mm) or a maximum of
3 50 feet (15 240 mm) from each furnace or in accordance with NFPA 10.
4

5 **SECTION FC [2107] 3007**
6 **OPERATION AND MAINTENANCE**
7

8 [2107.1] **3007.1 Furnace operation and maintenance instructions.** The furnace manufacturer's
9 complete installation, inspection, testing, operation and maintenance instructions shall be available
10 on the premises to those individuals responsible for the operation, maintenance and supervision of
11 the furnace.
12

13 [2107.2] **3007.2 Furnace nameplate.** The following data for Class A furnaces shall be furnished
14 on the manufacturer's nameplate:
15

- 16 1. The solvent used.
- 17
- 18 2. The number of gallons (liters) used per batch or per hour of solvent entering the furnace.
- 19
- 20 3. The required purge time.
- 21
- 22 4. The oven operating temperature.
- 23
- 24 5. The exhaust blower rating for the number of gallons (liters) of solvent per hour or batch at
25 the maximum operating temperature, or with regard to low-oxygen furnaces, the maximum
26 allowable oxygen concentration.
27

28 [2107.3] **3007.3 Training.** The operation and maintenance of furnaces shall be performed by a
29 person knowledgeable and trained in the operation and maintenance of such furnaces.
30

31 [2107.4] **3007.4 Equipment maintenance.** Equipment shall be maintained in accordance with the
32 manufacturer's instructions.
33
34

35 **CHAPTER 31**
36 **TENTS AND OTHER MEMBRANE STRUCTURES**
37

38 **SECTION FC [2401] 3101**
39 **GENERAL**
40

41 [2401.1] **3101.1 Scope.** This chapter shall govern membrane structures.
42

43 [2401.2] **3101.2 Permits.** Permits shall be required as set forth in FC105.6.
44

45 **SECTION FC [2402] 3102**
46 **DEFINITIONS**
47

1 **[2402.1] 3102.1 Definitions.** The following terms shall, for the purposes of this chapter and as
2 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

3
4 **AIR-INFLATED STRUCTURE.** [A structure whose structural elements are inflated and
5 maintained by elevated air pressure and are not occupiable spaces.]

6
7 **AIR-SUPPORTED STRUCTURE.** [A structure, the shape of which is attained and maintained
8 by elevated air pressure, and the occupancy of which is within the area of elevated pressure.]

9
10 **MEMBRANE STRUCTURE.** [An air-inflated, air-supported, cable or frame-covered structure
11 or tent, as defined in Chapter 31 of the Building Code.]

12
13 **TENT.** [A nonpressurized membrane structure of a fabric weather barrier supported by poles and
14 guys in which the fabric weather barrier does not impart stability to the structure. Tents need not
15 be fully enclosed on the sides.]

16
17 **SECTION FC [2403] 3103**
18 **RESERVED**

19
20 **SECTION FC [2404] 3104**
21 **TENTS AND OTHER MEMBRANE STRUCTURES**

22
23 **[2404.1] 3104.1 General.** All membrane structures shall be designed, installed, operated and
24 maintained in accordance with this section and the construction codes, including the Building
25 Code.

26
27 **[2404.2] 3104.2 Flame-resistant treatment.** The owner or agent shall file with the commissioner
28 a certificate issued by an approved testing laboratory, certifying that the tent materials and their
29 appurtenances, sidewalls, drops and tarpaulins, floor coverings, bunting, combustible decorative
30 materials and effects, including sawdust when used on floors or passageways, are composed of
31 flame-resistant material meeting the flame propagation performance criteria of NFPA 701 or shall
32 be treated with a flame retardant in an approved manner and meet the flame propagation
33 performance criteria of NFPA 701, and that such flame resistance is effective for the period
34 specified by the permit.

35
36 **[2404.2.1] 3104.2.1 Certification.** An affidavit or affirmation shall be submitted to the
37 commissioner and a copy retained on the premises on which the tent is located. The affidavit
38 shall attest to the information required in FC Chapter 8 and the rules.

39
40 **[2404.2.2] 3104.2.2 Label.** Membrane structures shall have a label permanently affixed to
41 them identifying the type and quality of the fabric or other material.

42
43 **[2404.3] 3104.3 Location and access.** Membrane structures shall be placed and afforded access
44 for firefighting apparatus in accordance with this section.

45
46 **[2404.3.1] 3104.3.1 Access.** Fire apparatus access roads shall be provided in accordance with
47 FC503 and the Building Code.

1
2 **[2404.3.2] 3104.3.2 Location.** Membrane structures shall not be located within 20 feet (6096
3 mm) of parked vehicles or internal combustion engines. For the purpose of determining
4 required distances, support ropes and guy wires shall be considered as part of the membrane
5 structure.

6
7 **[2404.3.3] 3104.3.3 Fire break.** An unobstructed fire break not less than 12 feet (3658 mm)
8 wide and free from guy ropes or other obstructions shall be maintained on all sides of all
9 membrane structures unless otherwise approved by the commissioner.

10
11 **[2404.4] 3104.4 Means of egress.** Means of egress for membrane structures shall be in accordance
12 with this section and the construction codes, including the Building Code.

13
14 **[2404.4.1] 3104.4.1 Seating arrangements.** Seating in membrane structures shall be in
15 accordance with the construction codes, including the Building Code.

16
17 **[2404.4.2] 3104.4.2 Exit openings from tents.** Exit openings from tents shall remain open
18 unless covered by a flame-resistant curtain. The curtain shall comply with the following
19 requirements:

- 20
21 1. Curtains shall be free sliding on a metal support. The support shall be a minimum of 80
22 inches (2032 mm) above the floor level at the exit. The curtains shall be so arranged that,
23 when open, no part of the curtain obstructs the exit.
24
25 2. Curtains shall be of a color, or colors, that contrasts with the color of the tent.
26
27 3. Curtains shall be flame resistant in accordance with FC Chapter 8.

28
29 **[2404.4.2.1] 3104.4.2.1 Door operation in air-supported structures.** During high winds
30 exceeding 50 miles per hour (80 kph) or in snow conditions, the use of doors in air-
31 supported structures shall be controlled to avoid excessive air loss. Doors shall not be left
32 open.

33
34 **[2404.4.3] 3104.4.3 Aisle arrangement and maintenance.** The arrangement of aisles shall be
35 subject to the approval of the commissioner and shall be maintained clear at all times.

36
37 **[2404.4.4] 3104.4.4 Maintenance of means of egress.** The required width of exits, aisles and
38 passageways to a public street shall be maintained at all times. Guy wires, guy ropes and other
39 support members shall not cross a means of egress at a height of less than 8 feet (2438 mm).
40 The surface of means of egress shall be maintained in an approved manner.

41
42 **[2404.5] 3104.5 Combustible materials.** Hay, straw, shavings or similar combustible materials
43 shall not be located within any membrane structure containing an assembly occupancy, except the
44 materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for a
45 public performance or exhibit shall not be prohibited provided the sawdust and shavings are kept
46 damp. Combustible materials shall not be allowed under stands or seats at any time.
47

1 [2404.6] **3104.6 Smoking.** Smoking shall not be allowed in membrane structures. “No Smoking”
2 signs complying with the requirements of FC310 shall be conspicuously posted.

3
4 [2404.7] **3104.7 Open or exposed flame.** Open flame or other devices emitting flame, fire or heat
5 or any flammable or combustible liquids, gas, charcoal or other cooking device or any other
6 unapproved devices shall not be allowed inside or located within 20 feet (6096 mm) of a membrane
7 structure while open to the public unless an open-flame permit has been issued.

8
9 [2404.8] **3104.8 Fireworks and special effects.** Any fireworks or special effects displays in or
10 near any membrane structure shall be conducted in accordance with FC Chapter [33] 56.

11
12 [2404.9] **3104.9 Spot lighting.** Spot or effect lighting shall only be by electricity, and all
13 combustible construction located within 6 feet (1829 mm) of such equipment shall be protected
14 with approved noncombustible insulation not less than 9.25 inches (235 mm) thick.

15
16 [2404.10] **3104.10 Safety film.** Motion pictures shall not be displayed in membrane structures
17 unless the motion picture film is safety film.

18
19 [2404.11] **3104.11 Clearance.** There shall be a minimum clearance of at least 3 feet (914 mm)
20 between the surface of a membrane structure and all contents therein.

21
22 [2404.12] **3104.12 Portable fire extinguishers.** Portable fire extinguishers shall be provided as
23 required by FC906.

24
25 [2404.13] **3104.13 Fire protection equipment.** Fire hose lines, water supplies and other auxiliary
26 fire equipment shall be maintained at the site in such numbers and sizes as required by the
27 commissioner.

28
29 [2404.14] **3104.14 Occupant load.** The occupant load allowed in a membrane structure, shall be
30 determined in accordance with the construction codes, including the Building Code.

31
32 [2404.15] **3104.15 Heating and cooking equipment.** Heating and cooking equipment shall be in
33 accordance with this section.

34
35 [2404.15.1] **3104.15.1 Installation.** Heating or cooking equipment, tanks, piping, hoses,
36 fittings, valves, tubing and other related components shall be installed as set forth in the
37 construction codes, including the Mechanical Code and the Fuel Gas Code.

38
39 [2404.15.2] **3104.15.2 Venting.** Gas, liquid and solid fuel-burning equipment designed to be
40 vented shall be vented to the outdoors in accordance with the construction codes, including the
41 Mechanical Code and the Fuel Gas Code. Such vents shall be equipped with approved spark
42 arresters when required. Where vents or flues are used, all portions of the membrane structure
43 shall be not less than 12 inches (305 mm) from the flue or vent.

44
45 [2404.15.3] **3104.15.3 Location.** Cooking and heating equipment shall not be located within
46 10 feet (3048 mm) of exits or combustible materials.

1 [2404.15.4] **3104.15.4 Operations.** Operations such as warming of foods, cooking
2 demonstrations and similar operations that use solid flammables shall be approved by the
3 commissioner.

4
5 [2404.15.5] **3104.15.5 Cooking.** Membrane structures in which cooking is performed shall be
6 separated from other membrane structures by a minimum of 20 feet (6096 mm).

7
8 [2404.15.6] **3104.15.6 Outdoor cooking.** Outdoor cooking that produces sparks or grease-
9 laden vapors shall not be performed within 20 feet (6096 mm) from a membrane structure.

10
11 [2404.15.7] **3104.15.7 Electrical heating and cooking equipment.** Electrical cooking and
12 heating equipment shall comply with the requirements of the Electrical Code.

13
14 [2404.16] **3104.16 LPG.** The storage, handling and use of LPG and LPG equipment shall be in
15 accordance with this section and FC Chapter [38] 61.

16
17 [2404.16.1] **3104.16.1 General.** Stationary LPG installations, including tanks, piping, hoses,
18 fittings, valves, tubing and other related components shall be approved and in accordance with
19 FC Chapter [38] 61.

20
21 [2404.16.2] **3104.16.2 Location of containers.** LPG containers shall be located outside the
22 membrane structure. Pressure relief valves shall be pointed away from the membrane structure.

23
24 [2404.16.2.1] **3104.16.2.1 Containers.** Portable LPG containers shall have a minimum
25 separation between the container and structure of not less than 10 feet (3048 mm).

26
27 [2404.16.3] **3104.16.3 Protection from movement.** Portable LPG containers, piping, valves
28 and fittings which are being used to fuel LPG-fueled devices, equipment or systems inside a
29 membrane structure shall be located outside the membrane structure and shall be secured from
30 movement or other hazard.

31
32 [2404.17] **3104.17 Flammable and combustible liquids.** The storage of flammable and
33 combustible liquids and the use of flammable-liquid-fueled equipment shall be in accordance with
34 this section.

35
36 [2404.17.1] **3104.17.1 Use.** Flammable-liquid-fueled equipment shall not be used in
37 membrane structures.

38
39 [2404.17.2] **3104.17.2 Flammable and combustible liquid storage.** Flammable and
40 combustible liquids shall be stored outside the membrane structure in an approved manner not
41 less than 50 feet (15 240 mm) from the membrane structure. Storage shall be in accordance
42 with FC Chapter [34] 57.

43
44 [2404.17.3] **3104.17.3 Refueling.** Refueling shall be performed at an approved location not
45 less than 20 feet (6096 mm) from membrane structures.

1 **[2404.18] 3104.18 Display of liquid- and gas-fueled motor vehicles.** Liquid- and gas-fueled
2 vehicles and equipment may be displayed within a membrane structure in accordance with this
3 section and FC Chapter 3.

4
5 **[2404.18.1] 3104.18.1 Batteries.** Batteries shall be disconnected in an appropriate manner.

6
7 **[2404.18.2] 3104.18.2 Fuel systems.** Vehicles or equipment shall not be fueled or defueled
8 within the membrane structure.

9
10 **[2404.18.2.1] 3104.18.2.1 Quantity limit.** Fuel in the fuel tank shall not exceed 1 gallon
11 (3.8 L).

12
13 **[2404.18.2.2] 3104.18.2.2 Inspection.** Fuel systems shall be inspected for leaks.

14
15 **[2404.18.2.3] 3104.18.2.3 Closure.** Fuel tank openings shall be locked and sealed to
16 prevent the escape of vapors.

17
18 **[2404.18.3] 3104.18.3 Location.** The location of vehicles or equipment shall not obstruct
19 means of egress.

20
21 **[2404.18.4] 3104.18.4 Display of CNG/LPG vehicles.** When a compressed natural gas (CNG)
22 or liquefied petroleum gas (LPG) powered vehicle is parked inside a membrane structure, all
23 of the following conditions shall be met:

24
25 1. The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LPG
26 container shall be closed and the engine shall be operated until it stops. Valves shall
27 remain closed while the vehicle is indoors.

28
29 2. The hot lead of the battery shall be disconnected.

30
31 3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LPG shall comply with
32 the requirements of this section and FC [2404.18] 3104.18 through [2404.18.3]
33 3104.18.3 for gasoline-powered vehicles.

34
35 **[2404.18.5] 3104.18.5 Competitions and demonstrations.** Liquid and gas-fueled vehicles
36 and equipment used for competition or demonstration within a membrane structure shall
37 comply with the requirements of [FC2404.18.5.1] 3104.18.5.1.

38
39 **[2404.18.5.1] 3104.18.5.1 Fuel storage and dispensing.** Fuel for vehicles or equipment
40 shall be stored and dispensed in an approved location outside of the membrane structure in
41 accordance with FC [2404.17.2] 3104.17.2 and [2404.17.3] 3104.17.3, and FC Chapter
42 [22] 23.

43
44 **[2404.19] 3104.19 Separation of generators.** Generators and other internal combustion power
45 sources shall be separated from membrane structures by a minimum of 20 feet (6096 mm) and
46 shall be isolated from contact with the public by fencing, enclosure or other approved means.

1 **[2404.20] 3104.20 Fire guards.** When the interest of public safety so requires, the commissioner
2 may order the owner of any membrane structure in which a performance, exhibition, display,
3 contest or other activity is to be conducted to provide one or more fire guards or other qualified
4 persons to remain on duty during the times such places are open to the public, or when such activity
5 is being conducted. Persons conducting such fire watch shall have duties and responsibilities set
6 forth in FC901.7.2.1 with respect to the areas being monitored in connection with such membrane
7 structure, and shall assist in the evacuation of the occupants from the structure in the event of a
8 fire or other emergency.

9
10 **[2404.21] 3104.21 Vegetation removal.** Vegetation shall be removed from the area occupied by
11 a membrane structure, and from areas within 30 feet (9144 mm) of such structures.

12
13 **[2404.22] 3104.22 Combustible waste and storage of combustible material.** The floor
14 surface inside membrane structures and the grounds within 30 feet (9144 mm) of the membrane
15 structure shall be kept free of combustible waste and storage of combustible materials.

16
17
18 **CHAPTER 32**
19 **HIGH-PILED COMBUSTIBLE STORAGE**

20
21 **SECTION FC [2301] 3201**
22 **GENERAL**

23
24 **[2301.1] 3201.1 Scope.** This chapter shall govern high-piled combustible storage, and the design,
25 installation, operation and maintenance of any building, structure or premises used for such
26 purpose.

27
28 **[2301.2] 3201.2 Permits.** Permits shall be required as set forth in FC105.6.

29
30 **[2301.3] 3201.3 Permit application.** Applications for permits for high-piled combustible storage
31 shall include design and installation documents that contain the following information, and such
32 other information and documentation as the commissioner may prescribe:

- 33
34 1. Floor plan of the building showing locations and dimensions of high-piled storage areas.
35
36 2. Usable storage height for each storage area.
37
38 3. Number of tiers within each rack, if applicable.
39
40 4. Commodity clearance between top of storage and the sprinkler deflector for each storage
41 arrangement.
42
43 5. Aisle dimensions between each storage array.
44
45 6. Maximum pile volume for each storage array.
46
47 7. Location and classification of commodities in accordance with [FC2303] FC3203.

- 1
- 2 8. Location of commodities that are banded or encapsulated.
- 3
- 4 9. Location of required fire department access doors.
- 5
- 6 10. Type of fire extinguishing and fire detection systems.
- 7
- 8 11. Location of valves controlling the water supply of ceiling and in-rack sprinklers.
- 9
- 10 12. Type, location and specifications of smoke removal and curtain board systems.
- 11
- 12 13. Dimension and location of transverse and longitudinal flue spaces.
- 13
- 14 14. Such other information, regarding design features, commodities, storage arrangement and
- 15 fire protection features within the high-piled storage area, as may be required by the
- 16 commissioner to ensure compliance with the requirements of this chapter.
- 17

18 **[2301.3.1] 3201.3.1 Records.** A copy of the permit application documents shall be maintained
19 on the premises and made available for inspection by any department representative.
20

21 **[2301.4] 3201.4 Egress plan.** Where the area of the high-piled combustible storage requires a
22 permit, the owner shall prepare and familiarize employees with an egress plan that indicates the
23 location and width of aisles, exits, exit access doors, exit signs, height of storage and location of
24 hazardous materials. Such plan shall be maintained in an approved location and shall be made
25 available for inspection by any representative of the department.
26

27 **Exception.** Any high-piled combustible storage facility or area required to have an emergency
28 preparedness plan pursuant to FC Chapter 4.
29

30 **[2301.5] 3201.5 General.** All buildings, structures and premises that contain high-piled
31 combustible storage shall be designed, installed, operated and maintained in accordance with this
32 chapter. In addition to the requirements of this chapter, the following material-specific
33 requirements shall apply:
34

- 35 1. Aerosols shall be in accordance with FC Chapter [28] 51.
- 36
- 37 2. Flammable and combustible liquids shall be in accordance with FC Chapter [34] 57.
- 38
- 39 3. Hazardous materials shall be in accordance with FC Chapter [27] 50.
- 40
- 41 4. Storage of combustible paper records shall be in accordance with NFPA 13, as modified by
- 42 FC Appendix B.
- 43
- 44 5. Storage of combustible fibers shall be in accordance with FC Chapter [29] 37.
- 45
- 46 6. Storage of miscellaneous combustible material shall be in accordance with FC Chapter 3.
- 47

1
2
3
SECTION FC [2302] 3202
DEFINITIONS

4 **[2302.1] 3202.1 Definitions.** The following terms shall, for the purposes of this chapter and as
5 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
6

7 **ARRAY.** [Each separate storage configuration, taking into consideration the type of packaging,
8 flue spaces, height of storage and compactness of storage.]
9

10 **ARRAY, CLOSED.** [A storage configuration having a 6-inch (152-mm) or smaller width vertical
11 flue space that restricts air movement through the stored commodity.]
12

13 **AUTOMATED RACK STORAGE.** [A method of stocking racks and retrieving stored products
14 or pallets of products from racks, whereby the movement of products and pallets of products is
15 controlled by computer or other automated means.]
16

17 **BIN BOX.** [A five-sided container with the open side facing an aisle. Bin boxes are self-supporting
18 or supported by a structure designed so that little or no horizontal or vertical space exists around
19 the boxes.]
20

21 **COMMODITY.** [Items in high-piled combustible storage, including products and product
22 packaging.]
23

24 **DRAFT CURTAIN.** [A structure arranged to limit the spread of smoke and heat along the
25 underside of the ceiling or roof.]
26

27 **EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER.** [A sprinkler listed for
28 early suppression fast-response performance.]
29

30 **ENCAPSULATION.**

31
32 **EXPANDED PLASTIC.** [A foam or cellular plastic material having a reduced density based on
33 the presence of numerous small cavities or cells dispersed throughout the material.]
34

35 **EXTRA-HIGH-RACK COMBUSTIBLE STORAGE.** [Storage on racks of Class I, II, III or IV
36 commodities that exceed 40 feet (12 192 mm) in height and storage on racks of high-hazard
37 commodities that exceed 30 feet (9144 mm) in height.]
38

39 **FLUE SPACE, LONGITUDINAL.**

40
41 **FLUE SPACE, TRANSVERSE.**

42
43 **HIGH-PILED COMBUSTIBLE STORAGE.** [Storage of combustible materials in closely
44 packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is
45 greater than 12 feet (3658 mm) in height. High-piled combustible storage also includes certain
46 high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets
47 and similar commodities, where the top of storage is greater than 6 feet (1829 mm) in height.]

1
2 **HIGH-PILED STORAGE AREA.** [An area within a building, structure or premises that is
3 designed or used for high-piled combustible storage.]
4

5 **[LONGITUDINAL FLUE SPACE.** The flue space between rows of storage perpendicular to the
6 direction of loading.]
7

8 **MANUAL STOCKING METHODS.** [Stocking methods utilizing ladders or other
9 nonmechanical equipment to move stock.]
10

11 **MECHANICAL STOCKING METHODS.** [Stocking methods utilizing motorized vehicles or
12 hydraulic jacks to move stock.]
13

14 **RACK STORAGE.** [Any storage system, except shelf storage.]
15

16 **SHELF STORAGE.** [Storage on shelves less than 30 inches (762 mm) deep with the distance
17 between shelves not exceeding 3 feet (914 mm) vertically.]
18

19 **SOLID SHELVING.** [Shelving that is solid, slatted or of other construction located in racks and
20 that obstructs sprinkler discharge down into the racks.]
21

22 **[TRANSVERSE FLUE SPACE.** The space between rows of storage parallel to the direction of
23 loading.]
24

25 **SECTION FC [2303] 3203**
26 **COMMODITY CLASSIFICATION**
27

28 **[2303.1] 3203.1 Classification of commodities.** Commodities shall be classified as Class I, II, III,
29 IV or high hazard in accordance with this section. Materials listed within each commodity
30 classification are assumed to be unmodified for improved combustibility characteristics. Use of
31 flame-retarding modifiers or the physical form of the material could change the classification. [See
32 FC2303.7 for classification of] Group A, B and C [plastics] plastic commodities are classified in
33 FC3203.7 and plastic shelving and pallets are addressed in FC3208.2.1.
34

35 **[2303.2] 3203.2 Class I commodities.** Class I commodities are essentially noncombustible
36 products on wooden [or nonexpanded polyethylene solid deck] pallets, in ordinary corrugated
37 cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without
38 pallets. Class I commodities are allowed to contain a limited amount of Group A plastics in
39 accordance with [FC2303.7.4] FC3203.7.4. Examples of Class I commodities include the
40 following:
41

- 42 Alcoholic beverages not more than 20-percent alcohol
- 43 Cement in bags
- 44 Ceramics
- 45 Dairy products in nonwax-coated containers (excluding bottles)
- 46 Dry insecticides
- 47 Electrical appliances, noncombustible

- 1 Foods in noncombustible containers
- 2 Fresh fruits and vegetables in nonplastic trays or containers
- 3 Frozen foods
- 4 Glass
- 5 Glycol in metal cans
- 6 Gypsum board
- 7 Inert materials, bagged
- 8 Insulation, noncombustible
- 9 Liquids, noncombustible, in plastic containers having less than a 5-gallon (19 L) capacity
- 10 Metal products, noncombustible

11
12 **[2303.3] 3203.3 Class II commodities.** Class II commodities are Class I products in slatted
13 wooden crates, solid wooden boxes, multiple-thickness paperboard cartons or equivalent
14 combustible packaging material with or without pallets. Class II commodities are allowed to
15 contain a limited amount of Group A plastics in accordance with [FC2303.7.4] FC3203.7.4.
16 Examples of Class II commodities include the following:

- 17
- 18 Alcoholic beverages not more than 20-percent alcohol, in combustible containers
- 19 Foods in combustible containers
- 20 Incandescent or fluorescent light bulbs in cartons
- 21 Thinly coated fine wire on reels or in cartons

22
23 **[2303.4] 3203.4 Class III commodities.** Class III commodities are commodities of wood, paper,
24 natural fiber cloth, or Group C plastics or products thereof, with or without pallets. Products are
25 allowed to contain limited amounts of Group A or B plastics, such as metal bicycles with plastic
26 handles, pedals, seats and tires. Group A plastics shall be limited in accordance with [FC2303.7.4]
27 FC3203.7.4. Examples of Class III commodities include the following:

- 28
- 29 Aerosol, Level 1 (see FC Chapter [28] 51)
- 30 Combustible fiberboard
- 31 Cork, baled
- 32 Feed, bagged
- 33 Fertilizers, bagged
- 34 Food in plastic containers
- 35 Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic-padded and
36 covered arm rests
- 37 Glycol in combustible containers not more than 25 percent
- 38 Liquids, noncombustible, in plastic containers having a capacity of more than 5 gallons (19 L)
- 39 Lubricating or hydraulic fluid in metal cans
- 40 Lumber
- 41 Mattresses, excluding foam rubber and foam plastics
- 42 Paints, oil base, in metal cans
- 43 Paper, waste, baled
- 44 Paper and pulp, horizontal storage, or vertical storage that is banded or protected with approved
45 wrap
- 46 Paper in cardboard boxes
- 47 Pillows, excluding foam rubber and foam plastics

- 1 Plastic-coated paper food containers
- 2 Plywood
- 3 Rags, baled
- 4 Rugs, without foam backing
- 5 Sugar, bagged
- 6 Wood, baled
- 7 Wood doors, frames and cabinets
- 8 Yarns of natural fiber and viscose
- 9

10 **[2303.5] 3203.5 Class IV commodities.** Class IV commodities are Class I, II or III products
11 containing Group A plastics in ordinary corrugated cartons and Class I, II and III products, with
12 Group A plastic packaging, with or without pallets. Group B plastics and free-flowing Group A
13 plastics are also included in this class. The total amount of nonfree-flowing Group A plastics shall
14 be in accordance with [FC2303.7.4] FC3203.7.4. Examples of Class IV commodities include the
15 following:

- 16
- 17 Aerosol, Level 2 (see FC Chapter [28] 51)
- 18 Alcoholic beverages, more than 20-percent but less than 80-percent alcohol, in cans or bottles
19 in cartons[.]
- 20 Clothing, synthetic or nonviscose
- 21 Combustible metal products (solid)
- 22 Furniture, plastic upholstered
- 23 Furniture, wood or metal with plastic covering and padding
- 24 Glycol in combustible containers (more than 25 percent and less than 50 percent)
- 25 Linoleum products
- 26 Paints, oil base in combustible containers
- 27 Pharmaceutical, alcoholic elixirs, tonics, etc.
- 28 Rugs, foam back
- 29 Shingles, asphalt
- 30 Thread or yarn, synthetic or nonviscose
- 31

32 **[2303.6] 3203.6 High-hazard commodities.** High-hazard commodities are high-hazard products
33 presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastics not otherwise
34 classified are included in this class. Examples of high-hazard commodities include the following:

- 35
- 36 Aerosol, Level 3 (see FC Chapter [28] 51)
- 37 Alcoholic beverages, more than 80-percent alcohol, in bottles or cartons
- 38 Commodities of any class in plastic containers in carousel storage
- 39 Flammable solids (except solid combustible metals)
- 40 Glycol in combustible containers (50 percent or more)
- 41 Lacquers, which dry by solvent evaporation, in metal cans or cartons
- 42 Lubricating or hydraulic fluid in plastic containers
- 43 Mattresses, foam rubber or foam plastics
- 44 Pallets and flats which are idle combustible
- 45 Paper, asphalt, rolled, horizontal storage
- 46 Paper, asphalt, rolled, vertical storage

1 Paper and pulp, rolled, in vertical storage which is unbanded or not protected with an approved
2 wrap
3 Pillows, foam rubber and foam plastics
4 Pyroxylin
5 Rubber tires
6 Vegetable oil and butter in plastic containers
7

8 **[2303.7] 3203.7 Classification of plastics.** Plastics shall be designated as Group A, B or C in
9 accordance with this section.

10
11 **[2303.7.1] 3203.7.1 Group A plastics.** Group A plastics are plastic materials having a heat of
12 combustion that is much higher than that of ordinary combustibles, and a burning rate higher
13 than that of Group B plastics. Examples of Group A plastics include the following:

14
15 ABS (acrylonitrile-butadiene-styrene copolymer)
16 Acetal (polyformaldehyde)
17 Acrylic (polymethyl methacrylate)
18 Butyl rubber
19 EPDM (ethylene propylene rubber)
20 FRP (fiberglass-reinforced polyester)
21 Natural rubber (expanded)
22 Nitrile rubber (acrylonitrile butadiene rubber)
23 PET or PETE (polyethylene terephthalate)
24 Polybutadiene
25 Polycarbonate
26 Polyester elastomer
27 Polyethylene
28 Polypropylene
29 Polystyrene (expanded and unexpanded)
30 Polyurethane (expanded and unexpanded)
31 PVC (polyvinyl chloride more than 15 percent plasticized, e.g., coated fabric unsupported
32 film)
33 SAN (styrene acrylonitrile)
34 SBR (styrene butadiene rubber)
35

36 **[2303.7.2] 3203.7.2 Group B plastics.** Group B plastics are plastic materials having a heat of
37 combustion and a burning rate higher than that of ordinary combustibles, but not as high as
38 those of Group A plastics. Examples of Group B plastics include the following:

39
40 Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)
41 Chloroprene rubber
42 Fluoroplastics (ECTFE, ethylene-chlorotrifluoroethylene copolymer; ETFE, ethylene-
43 tetrafluoroethylene copolymer; FEP, fluorinated ethylene-propylene copolymer)
44 Natural rubber (nonexpanded)
45 Nylon (Nylon 6, Nylon 6/6)
46 PVC (polyvinyl chloride more than 5-percent, but not more than 15-percent plasticized)
47 Silicone rubber

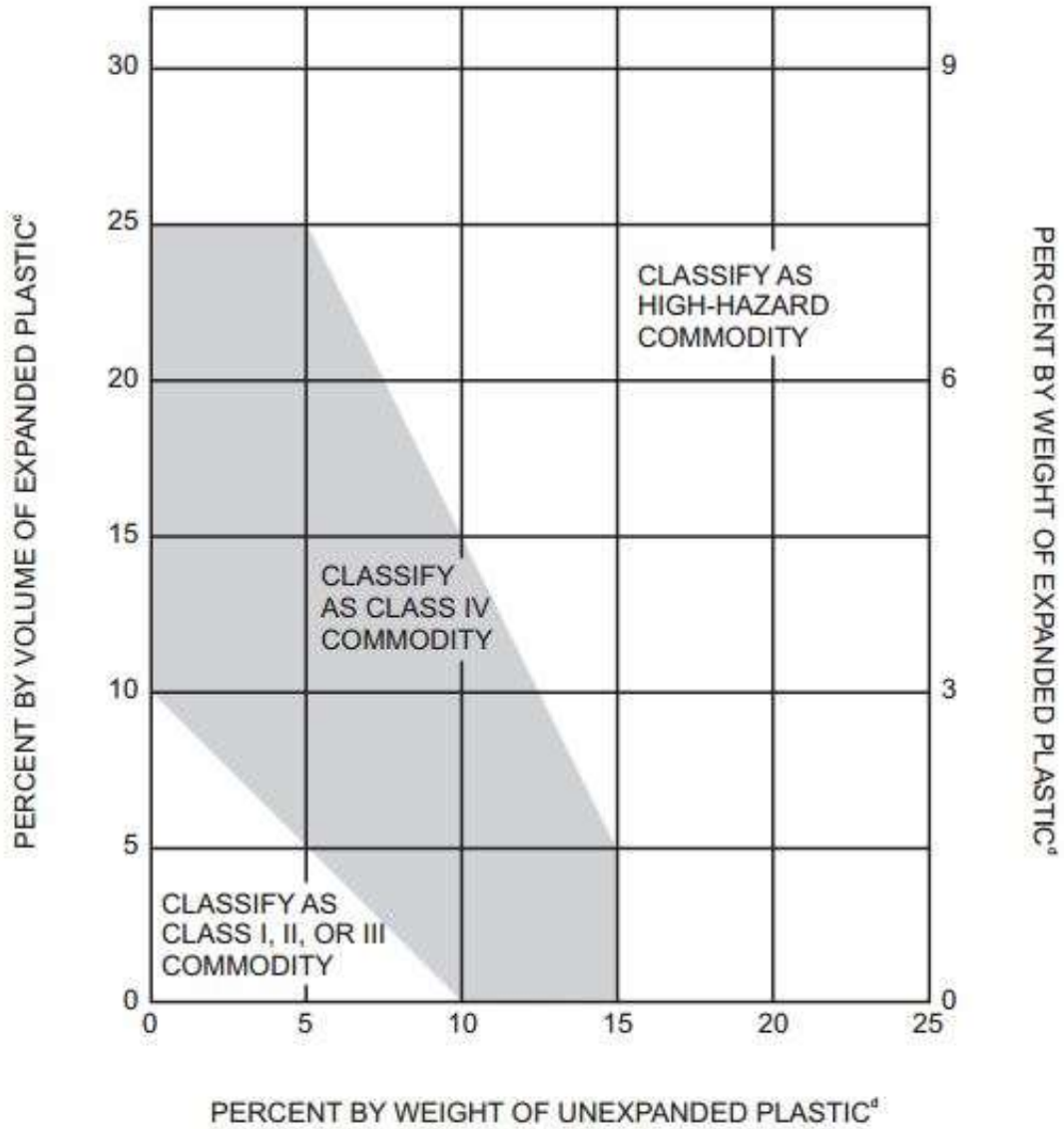
1
2 **[2303.7.3] 3203.7.3 Group C plastics.** Group C plastics are plastic materials having a heat of
3 combustion and a burning rate similar to those of ordinary combustibles. Examples of Group
4 C plastics include the following:

- 5
- 6 Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene)
- 7 Melamine (melamine formaldehyde)
- 8 Phenol
- 9 PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings)
- 10 PVDC (polyvinylidene chloride)
- 11 PVDF (polyvinylidene fluoride)
- 12 PVF (polyvinyl fluoride)
- 13 Urea (urea formaldehyde)
- 14

15 **[2303.7.4] 3203.7.4 Limited quantities of Group A plastics in mixed commodities.** FC
16 Figure [2303.7.4] 3203.7.4 shall be used to determine the quantity of Group A plastics allowed
17 to be stored in a package or carton or on a pallet without increasing the commodity
18 classification.

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**FC FIGURE 3203.7.4
MIXED COMMODITIES^{a, b}**



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a. This figure is intended to determine the commodity classification of a mixed commodity in a package, carton or on a pallet where plastics are involved.

b. The following is an example of how to apply the figure: A package containing a Class III commodity has 12-percent Group A expanded plastic by volume. The weight of the unexpanded Group A plastic is 10 percent. This commodity is classified as a Class IV commodity. If the weight of the unexpanded plastic is increased to 14 percent, the classification changes to a high-hazard commodity.

c. Percent by volume = $\frac{\text{Volume of plastic in pallet load}}{\text{Total volume of pallet load, including pallet}}$

d. Percent by weight = $\frac{\text{Weight of plastic in pallet load}}{\text{Total weight of pallet load, including pallet}}$

1
2
3 **SECTION FC [2304] 3204**
4 **DESIGNATION OF HIGH-PILED STORAGE AREAS**

5 **[2304.1] 3204.1 General.** High-piled storage areas, and portions of high-piled storage areas for
6 storage of a commodity class different from adjacent areas, shall be designed and specifically
7 designated to contain Class I, Class II, Class III, Class IV or high-hazard commodities. The
8 designation of a high-piled combustible storage area, or portion thereof intended for storage of a
9 different commodity class, shall be based on the highest hazard commodity class stored except as
10 provided in [FC2304.2] FC3204.2.

11
12 **[2304.2] 3204.2 Designation based on engineering analysis.** The designation of a high-piled
13 combustible storage area, or portion thereof, is allowed to be based on a lower hazard class than
14 that of the highest class of commodity stored when a limited quantity of the higher hazard
15 commodity has been demonstrated by engineering analysis to be adequately protected by the
16 sprinkler system provided. The engineering analysis shall consider the ability of the sprinkler
17 system to deliver the higher density required by the higher hazard commodity. The higher density
18 shall be based on the actual storage height of the pile or rack and the minimum allowable design
19 area for sprinkler operation as set forth in the density/area figures provided in NFPA 13, as
20 modified by FC Appendix B. The contiguous area occupied by the higher hazard commodity shall
21 not exceed 120 square feet (11 m²), and additional areas of higher hazard commodity shall be
22 separated from other such areas by 25 feet (7620 mm) or more. The sprinkler system shall be
23 capable of delivering the higher density over a minimum area of 900 square feet (84 m²) for wet
24 pipe systems and 1,200 square feet (111 m²) for dry pipe systems. The shape of the design area
25 shall be in accordance with the construction codes, including the Building Code.

26
27 **SECTION FC [2305] 3205**
28 **HOUSEKEEPING AND MAINTENANCE**

29
30 **[2305.1] 3205.1 Rack structures.** The structural integrity of racks shall be maintained.

31
32 **[2305.2] 3205.2 Ignition sources.** Clearance from ignition sources shall be provided in accordance
33 with FC305.

34
35 **[2305.3] 3205.3 Smoking.** Smoking is prohibited in high-piled storage areas. “No Smoking” signs
36 complying with the requirements of FC310 shall be conspicuously posted in such areas.

37
38 **[2305.4] 3205.4 Aisle maintenance.** When restocking is not being conducted, aisles shall be kept
39 clear of stored or waste material. Fire department access doors, aisles and exit doors shall not be
40 obstructed. During restocking operations using manual stocking methods, a minimum
41 unobstructed aisle width of 24 inches (610 mm) shall be maintained in 48-inch (1219-mm) or
42 smaller aisles, and a minimum unobstructed aisle width of one-half of the required aisle width
43 shall be maintained in aisles greater than 48 inches (1219 mm). During mechanical stocking
44 operations, a minimum unobstructed aisle width of 44 inches (1118 mm) shall be maintained in
45 accordance with [FC2306.9] FC3206.9.

1 **[2305.5] 3205.5 Pile dimension and height limitations.** Pile dimensions and height limitations
2 shall comply with the requirements of [FC2307.3] FC3207.3.

3
4 **[2305.6] 3205.6 Arrays.** Arrays shall comply with the requirements of [FC2307.4] FC3207.4.

5
6 **[2305.7] 3205.7 Flue spaces.** Flue spaces shall comply with the requirements of [FC2308.3]
7 FC3208.3.

8
9
10 **SECTION FC [2306] 3206**
11 **GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES**

12 **[2306.1] 3206.1 General.** Fire protection and life safety features for high-piled storage areas shall
13 be in accordance with this section.

14
15 **[2306.2] 3206.2 Extent and type of protection.** Where required by FC Table [2306.2] 3206.2,
16 fire detection systems, smoke and heat removal, draft curtains and sprinkler design densities shall
17 extend the lesser of 15 feet (4572 mm) beyond the high-piled storage area or to a permanent
18 partition. Where portions of high-piled storage areas have different fire protection requirements
19 because of commodity, method of storage or storage height, the fire protection features required
20 by FC Table [2306.2] 3206.2 within this area shall be based on the most restrictive design
21 requirements.

22
23 **[2306.3] 3206.3 Separation of high-piled storage areas.** High-piled storage areas shall be
24 separated from other portions of the building where required by FC [2306.3.1] 3206.3.1 through
25 [2306.3.2.2] 3206.3.2.2.

26
27 **[2306.3.1] 3206.3.1 Separation from other uses.** Mixed occupancies shall be separated in
28 accordance with the construction codes, including the Building Code.

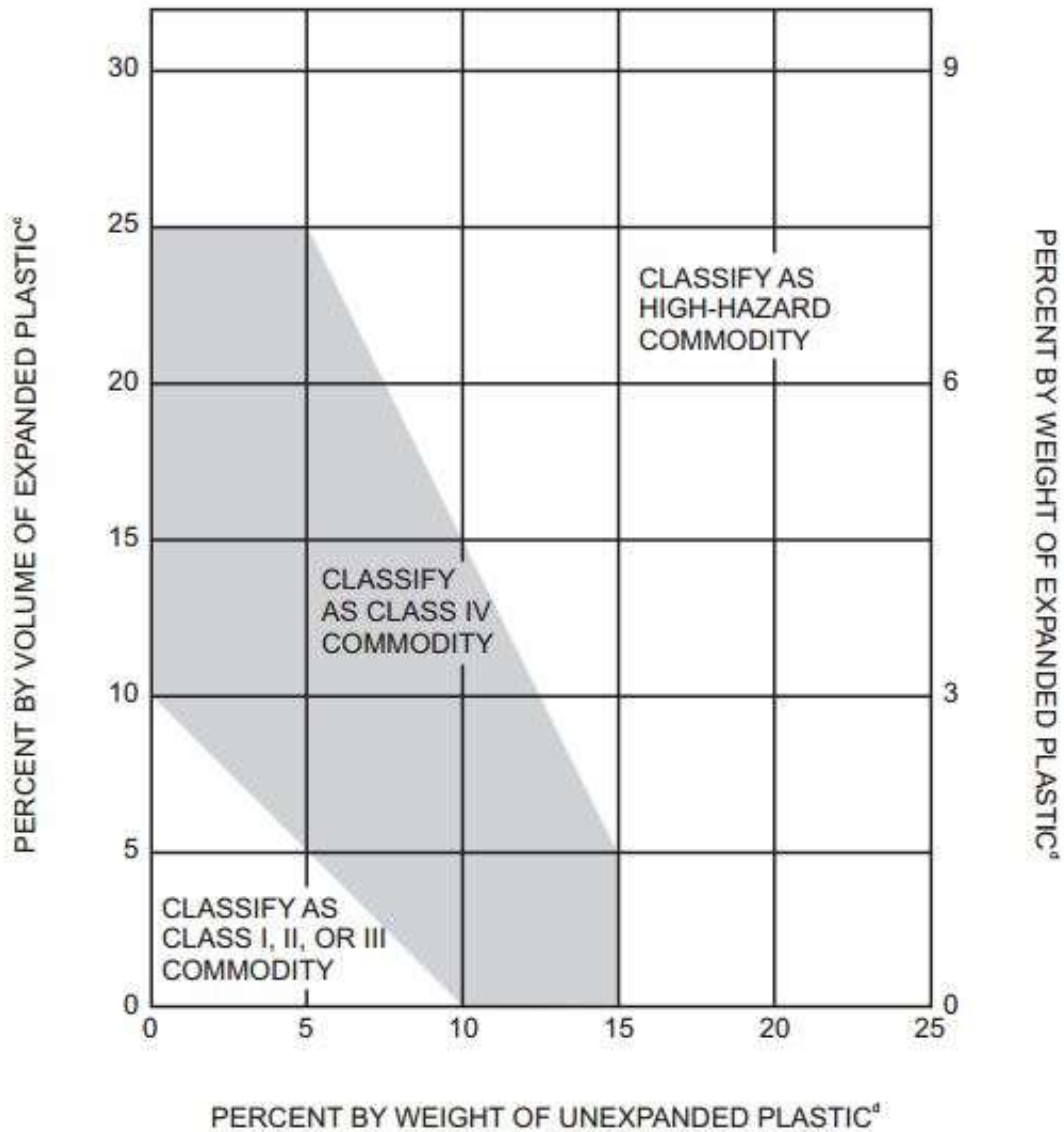
29
30 **[2306.3.2] 3206.3.2 Multiple high-piled storage areas.** Multiple high-piled storage areas
31 shall be designed and installed in accordance with FC [2306.3.2.1] 3206.3.2.1 or [2306.3.2.2]
32 3206.3.2.2.

33
34 **[2306.3.2.1] 3206.3.2.1 Aggregate area.** The aggregate of all high-piled storage areas
35 within a building shall be used for application of FC Table [2306.2] 3206.2 unless such
36 areas are separated from each other by 1-hour fire-resistance-rated fire barrier walls
37 constructed in accordance with the construction codes, including the Building Code.
38 Openings in such walls shall be protected by opening protective assemblies having a 1-
39 hour fire protection rating.

40
41 **[2306.3.2.2] 3206.3.2.2 Multiclass high-piled storage areas.** High-piled storage areas
42 classified as Class I through Class IV not separated from high-piled storage areas classified
43 as high hazard shall utilize the aggregate of all high-piled storage areas as high hazard for
44 purposes of application of FC Table [2306.2] 3206.2. To be considered as separated, 1-
45 hour fire-resistance-rated fire barrier walls shall be constructed in accordance with the
46 construction codes, including the Building Code. Openings in such walls shall be protected
47 by opening protective assemblies having a 1-hour fire protection rating.

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Exception: As provided for in [FC2304.2] FC3204.2. [



PERCENT BY WEIGHT OF UNEXPANDED PLASTIC^d

FIGURE 2303.7.4

MIXED COMMODITIES^{a, b}

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9
- a. This figure is intended to determine the commodity classification of a mixed commodity in a package, carton or on a pallet where plastics are involved.
 - b. The following is an example of how to apply the figure: A package containing a Class III commodity has 12-percent Group A expanded plastic by volume. The weight of the unexpanded Group A plastic is 10 percent. This commodity is classified as a Class IV commodity. If the weight of the unexpanded plastic is increased to 14 percent, the classification changes to a high-hazard commodity.

10
11
12
13

- c. Percent by volume = $\frac{\text{Volume of plastic in pallet load}}{\text{Total volume of pallet load, including pallet}}$
- d. Percent by weight = $\frac{\text{Weight of plastic in pallet load}}{\text{Total weight of pallet load, including pallet}}$]

1
2
3

**FC TABLE [2306.2] 3206.2
GENERAL FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS**

COMMODITY CLASS	SIZE OF HIGH-PILED STORAGE AREA ^a (square feet) (see FC [2306.2] 3206.2 and [2306.4] 3206.4)	ALL STORAGE AREAS (See FC [2306] 3206, [2307] 3207 and [2308] 3208) ^b					SOLID-PILED STORAGE, SHELF STORAGE AND PALLETIZED STORAGE (see [FC2307.3] FC3207.3)		
		Automatic fire-extinguishing system (see [FC2306.4] FC3206.4)	Fire detection system (see [FC2306.5] FC3206.5)	Building Access (see [FC2306.6] FC3206.6)	Smoke and heat removal (see [FC2306.7] FC3206.7)	Draft curtains (see [FC2306.7] FC3206.7)	Maximum pile dimension ^c (feet)	Maximum permissible storage height ^d (feet)	Maximum pile volume (cubic feet)
I-IV	0-500	Not Required ^a	Not Required	Not Required ^e	Not Required	Not Required	Not Required	Not Required	Not Required
	501-2,500	Not Required ^a	Yes ⁱ	Not Required ^e	Not Required	Not Required	100	40	100,000
	2,501-12,000 Public accessible	Yes	Not Required	Not Required ^e	Not Required	Not Required	100	40	400,000
	2,501-12,000 Nonpublic accessible (Option 1)	Yes	Not Required	Not Required ^e	Not Required	Not Required	100	40	400,000
	2,501-12,000 Nonpublic accessible (Option 2)	Not Required ^a	Yes	Yes	Yes ^j	Yes ^j	100	30 ^f	200,000
	12,001-20,000	Yes	Not Required	Yes	Yes ^j	Not Required	100	40	400,000
	20,001-500,000	Yes	Not Required	Yes	Yes ^j	Not Required	100	40	400,000
	Greater than 500,000 ^g	Yes	Not Required	Yes	Yes ^j	Not Required	100	40	400,000
High hazard	0-500	Not Required ^a	Not Required	Not Required ^e	Not Required	Not Required	50	Not Required	Not Required
	501-2,500 Public accessible	Yes	Not Required	Not Required ^e	Not Required	Not Required	50	30	75,000
	501-2,500 Nonpublic accessible (Option 1)	Yes	Not Required	Not Required ^e	Not Required	Not Required	50	30	75,000
	501-2,500 Nonpublic accessible (Option 2)	Not Required ^a	Yes	Yes	Yes ^j	Yes ^j	50	20	50,000
	2,501-300,000	Yes	Not Required	Yes	Yes ^j	Not Required	50	30	75,000
	300,001-500,000 ^{g, h}	Yes	Not Required	Yes	Yes ^j	Not Required	50	30	75,000

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³, 1 square foot = 0.0929 m².

- a. When sprinkler systems are required for reasons other than those in FC Chapter [23] 32, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with FC [2307] 3207 and [2308] 3208.
- b. For aisles, see [FC2306.9] FC3206.9.
- c. Piles shall be separated by aisles complying with the requirements of [FC2306.9] FC3206.9.
- d. For storage in excess of the height indicated, special fire protection shall be provided in accordance with Note g when required by the commissioner. See also FC Chapters [28] 51 and [34] 57 for special limitations for aerosols and flammable and combustible liquids.
- e. FC503 shall apply for fire apparatus access.
- f. For storage exceeding 30 feet in height, Option 1 shall be used.
- g. Special fire protection provisions including fire protection of exposed steel columns; increased sprinkler density; additional in-rack sprinklers, without associated reductions in ceiling sprinkler density; or additional fire department hose connections shall be provided when required by the commissioner.
- h. High-piled storage areas shall not exceed 500,000 square feet. A 2-hour fire wall constructed in accordance with the construction codes, including the Building Code shall be used to divide high-piled storage exceeding 500,000 square feet in area.

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- 1 i. Not required when a fire extinguishing system is designed and installed to protect the high-piled storage area in accordance with FC [2307] 3207
2 and [2308] 3208.
3 j. Not required when storage areas are protected throughout by early suppression fast response (ESFR) sprinkler systems installed in accordance
4 with NFPA 13, as modified by FC Appendix B.
5

6 **[2306.4] 3206.4 Sprinkler systems.** Sprinkler systems shall be provided in accordance with FC
7 [2307] 3207, [2308] 3208 and [2309] 3209.
8

9 **[2306.5] 3206.5 Fire detection.** Where fire detection is required by FC Table [2306.2] 3206.2, an
10 approved automatic fire detection system shall be installed throughout the high-piled storage area.
11 The system shall be monitored and be in accordance with FC907.
12

13 **[2306.6] 3206.6 Building access.** Where building access is required by FC Table [2306.2] 3206.2,
14 fire apparatus access roads in accordance with FC503 shall be provided within
15 150 feet (45 720 mm) of all portions of the exterior walls of buildings used for high-piled storage.
16

17 **Exception:** Where fire apparatus access roads cannot be installed because of topography,
18 railways, waterways, non-negotiable grades or other similar conditions, the commissioner may
19 require additional fire protection.
20

21 **[2306.6.1] 3206.6.1 Access doors.** Where building access is required by FC Table [2306.2]
22 3206.2, fire department access doors shall be provided in accordance with this section. Access
23 doors shall be accessible without the use of a ladder.
24

25 **[2306.6.1.1] 3206.6.1.1 Number of doors required.** A minimum of one access door shall
26 be provided in each 100 lineal feet (30 480 mm), or fraction thereof, of the exterior walls
27 which face required fire apparatus access roads. The required access doors shall be
28 distributed such that the lineal distance between adjacent access doors does not exceed
29 100 feet (30 480 mm).
30

31 **[2306.6.1.2] 3206.6.1.2 Door size and type.** Access doors shall not be less than 3 feet (914
32 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be used
33 unless approved.
34

35 **[2306.6.1.3] 3206.6.1.3 Locking devices.** Only approved locking devices shall be used.
36

37 **[2306.7] 3206.7 Smoke and heat removal.** Where smoke and heat removal are required by FC
38 Table [2306.2] 3206.2, smoke and heat vents shall be provided in accordance with the construction
39 codes, including the Building Code. Where draft curtains are required by FC Table [2306.2]
40 3206.2, they shall be provided in accordance with the construction codes, including the Building
41 Code.
42

43 **[2306.8] 3206.8 Fire department hose connections.** Where exit passageways are required by the
44 construction codes, including the Building Code for egress, a Class I standpipe system shall be
45 provided in accordance with the construction codes, including the Building Code.
46

47 **[2306.9] 3206.9 Aisles.** Aisles providing access to exits and fire department access doors shall be
48 provided in high-piled storage areas exceeding 500 square feet (46 m²), in accordance with FC
49 [2306.9.1] 3206.9.1 through [2306.9.3] 3206.9.3. Aisles separating storage piles or racks shall

1 comply with the requirements of NFPA 13, as modified by FC Appendix B. Aisles shall also
2 comply with the requirements of the construction codes, including the Building Code.

3
4 **Exception:** Where aisles are precluded by rack storage systems, alternate methods of access
5 and protection are allowed when approved.

6
7 **[2306.9.1] 3206.9.1 Width.** Aisle width shall be in accordance with FC [2306.9.1.1]
8 3206.9.1.1 and [2306.9.1.2] 3206.9.1.2.

9
10 **Exceptions:**

- 11
12 1. Aisles crossing rack structures or storage piles, which are used only for
13 employee access between aisles shall be a minimum of 24 inches (610 mm) wide.
14
15 2. Aisles separating shelves classified as shelf storage shall be a minimum of 30 inches
16 (762 mm) wide.

17
18 **[2306.9.1.1] 3206.9.1.1 Sprinklered buildings.** Aisles in buildings protected throughout
19 by a sprinkler system shall be a minimum of 44 inches (1118 mm) wide. Aisles shall be a
20 minimum of 96 inches (2438 mm) wide in high-piled storage areas that exceed
21 2,500 square feet (232 m²) in area, and that are accessible to the public and designated to
22 contain high-hazard commodities.

23
24 **Exception:** Aisles in high-piled storage areas exceeding 2,500 square feet (232 m²) in
25 area, that are accessible to the public and designated to contain high-hazard
26 commodities, and that are protected throughout by a sprinkler system designed for
27 multiple-row racks of high-hazard commodities, shall be a minimum of
28 44 inches (1118 mm) wide.

29
30 Aisles shall be a minimum of 96 inches (2438 mm) wide in areas accessible to the
31 public where mechanical stocking methods are used.

32
33 **[2306.9.1.2] 3206.9.1.2 Nonsprinklered buildings.** Aisles in buildings not protected
34 throughout by a sprinkler system shall be a minimum of 96 inches (2438 mm) wide.

35
36 **[2306.9.2] 3206.9.2 Clear height.** The required aisle width shall extend from floor to ceiling.
37 Rack structural supports and catwalks are allowed to cross aisles at a minimum height of
38 6 feet 8 inches (2032 mm) above the finished floor level, provided that such supports do not
39 interfere with fire department hose stream trajectory.

40
41 **[2306.9.3] 3206.9.3 Dead ends.** Dead-end aisles shall be in accordance with the construction
42 codes, including the Building Code.

43
44 **[2306.10] 3206.10 Portable fire extinguishers.** Portable fire extinguishers shall be provided in
45 accordance with FC906.

46
47 **SECTION FC [2307] 3207**

1 **SOLID-PILED AND SHELF STORAGE**

2
3 **[2307.1] 3207.1 General.** Shelf storage and storage in solid piles, solid piles on pallets and bin
4 box storage in bin boxes not exceeding 5 feet (1524 mm) in any dimension, shall be designed and
5 maintained in accordance with [FC2306] FC3206 and this section.
6

7 **[2307.2] 3207.2 Fire protection.** Where sprinkler systems are required for solid-piled and shelf
8 storage pursuant to FC Table [2306.2] 3206.2, a sprinkler system shall be provided in any area
9 containing such storage that is enclosed in 1-hour fire-rated walls in accordance with the Building
10 Code, or, if such storage is not enclosed within such fire-rated walls, throughout the building.
11 Openings in such walls shall be protected by opening protective assemblies having 1-hour fire
12 protection ratings. The design and installation of the sprinkler system and other applicable fire
13 protection shall be in accordance with this code, the construction codes, including the Building
14 Code, and NFPA 13, as modified by FC Appendix B.
15

16 **[2307.2.1] 3207.2.1 Shelf storage.** Shelf storage greater than 12 feet (3658 mm) but less than
17 15 feet (4572 mm) in height shall be in accordance with the fire protection requirements set
18 forth in NFPA 13, as modified by FC Appendix B. Shelf storage 15 feet (4572 mm) or more
19 in height shall be protected in an approved manner with special fire protection, such as in-rack
20 sprinklers.
21

22 **[2307.3] 3207.3 Pile dimension and height limitations.** Pile dimensions, the maximum
23 permissible storage height and pile volume shall be in accordance with FC Table [2306.2] 3206.2.
24

25 **[2307.4] 3207.4 Array.** Where a sprinkler system design utilizes protection based on a closed
26 array, array clearances shall be provided and maintained as specified by the standard used.
27

28 **SECTION FC [2308] 3208**
29 **RACK STORAGE**

30
31 **[2308.1] 3208.1 General.** Rack storage shall be designed and maintained in accordance with
32 [FC2306] FC3206 and this section. Bin boxes exceeding 5 feet (1524 mm) in any dimension shall
33 be regulated as rack storage.
34

35 **[2308.2] 3208.2 Fire protection.** Where a sprinkler system is required for rack storage pursuant
36 to FC Table [2306.2] 3206.2, a sprinkler system shall be provided in any area containing such
37 storage that is enclosed in 1-hour fire-rated walls in accordance with the Building Code, or, if such
38 storage is not enclosed within such fire-rated walls, throughout the building. Openings in such
39 walls shall be protected by opening protective assemblies having 1-hour fire protection ratings.
40 The design and installation of the sprinkler system and other applicable fire protection shall be in
41 accordance with this code, the construction codes, including the Building Code, and NFPA 13, as
42 modified by FC Appendix B.
43

44 **[2308.2.1] 3208.2.1 Plastic pallets and shelves.** Storage on plastic pallets or plastic shelves
45 shall be protected by approved specially-engineered fire protection systems, except that plastic
46 pallets listed and labeled in accordance with UL 2335 or FM 4996 shall be treated as wood
47 pallets for determining required sprinkler protection.

[2308.2.2] 3208.2.2 Racks with solid shelving. Racks with solid shelving having an area greater than 32 square feet (3 m²), measured between approved flue spaces at all four edges of the shelf, shall be in accordance with this section.

Exceptions:

1. Racks with mesh, grated, slatted or similar shelves having uniform openings not more than 6 inches (152 mm) apart, comprising at least 50 percent of overall shelf area, and with approved flue spaces, are allowed to be treated as racks without solid shelves.
2. Racks used for the storage of combustible paper records, with solid shelving, shall be in accordance with NFPA 13, as modified by FC Appendix B.

[2308.2.2.1] 3208.2.2.1 Fire protection. Fire protection for racks with solid shelving shall be in accordance with NFPA 13, as modified by FC Appendix B.

**FC TABLE [2308.3] 3208.3
REQUIRED FLUE SPACES FOR RACK STORAGE**

RACK CONFIGURATION	SPRINKLER PROTECTION		SPRINKLER AT THE CEILING WITH OR WITHOUT MINIMUM IN-RACK SPRINKLERS			IN-RACK SPRINKLERS AT EVERY TIER	NONSPRINKLERED
			≤ 25 feet		> 25 feet		
	Storage height	Size ^b	Option 1	Option 2		Any height	Any height
Single-row rack	Transverse flue space	Size ^b	3 inches	Not Applicable	3 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Applicable	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	Not Applicable	Not Required	Not Required	Not Required
Double-row rack	Transverse flue space	Size ^b	6 inches ^a	3 inches	3 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Required	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	6 inches	6 inches	Not Required	Not Required
Multi-row rack	Transverse flue space	Size ^b	6 inches	Not Applicable	6 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Applicable	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	Not Applicable	Not Required	Not Required	Not Required

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Three-inch transverse flue spaces shall be provided at least every 10 feet where ESFR sprinkler protection is provided.

b. Random variations are allowed, provided that the configuration does not obstruct water penetration.

[2308.3] 3208.3 Flue spaces. Flue spaces shall be provided in accordance with FC Table [2308.3] 3208.3. Required flue spaces shall be maintained. When the flue spaces are not being maintained, the department may require the installation of approved devices to protect the flue spaces by preventing the placement or storage of obstructing materials in such spaces. Such protective devices shall not be removed or modified without department approval.

[2308.4] 3208.4 Column protection. Steel building columns shall be protected in accordance with NFPA 13, as modified by FC Appendix B.

[2308.5] 3208.5 Extra-high-rack storage systems. Approval of the commissioner shall be obtained prior to installing extra-high-rack combustible storage.

1 **[2308.5.1] 3208.5.1 Fire protection.** Buildings with extra-high-rack combustible storage shall
2 be protected with a specially engineered sprinkler system. Extra-high-rack combustible storage
3 shall be provided with additional special fire protection, such as separation from other
4 buildings and additional built-in fire protection features and fire department access, when
5 required by the commissioner.
6

7 **SECTION FC [2309] 3209**
8 **AUTOMATED STORAGE**
9

10 **[2309.1] 3209.1 General.** Automated storage shall be designed and maintained in accordance with
11 this section.
12

13 **[2309.2] 3209.2 Sprinkler systems.** Where a sprinkler system is required by FC Table [2306.2]
14 3206.2, a sprinkler system shall be installed throughout the building. The design and installation
15 of such system shall be in accordance with this code and the construction codes, including the
16 Building Code.
17

18 **[2309.3] 3209.3 Carousel storage.** High-piled storage areas having greater than 500 square feet
19 (46 m²) of carousel storage shall be provided with automatic shutdown in accordance with one of
20 the following:
21

22 1. An automatic smoke detection system installed in accordance with the construction codes,
23 including the Building Code, with coverage extending 15 feet ([4575] 4572 mm) in all
24 directions beyond unenclosed carousel storage systems and which sounds a local alarm at
25 the operator's station and stops the carousel storage system upon the activation of a single
26 detector.
27

28 2. An automatic smoke detection system installed in accordance with the construction codes,
29 including the Building Code and within enclosed carousel storage systems, that sounds a
30 local alarm at the operator's station and stops the carousel storage system upon the activation
31 of a single detector.
32

33 1.3. A single dead-man-type control switch that allows the operation of the carousel storage
34 system only when the operator is present. The switch shall be in the same room as the
35 carousel storage system and located to allow for observation of the carousel system.
36

37 **[2309.4] 3209.4 Automated rack storage.** High-piled storage areas with automated rack storage
38 shall be provided with a manually activated emergency shutdown switch for use by firefighters and
39 other emergency response personnel. The switch shall be clearly marked and shall be located at
40 the fire command center. In buildings without a fire command center, such switch shall be located
41 in a conspicuous, readily accessible location near the entrance to the building, occupancy or area
42 containing the automated rack storage, or other approved location.
43

44 **SECTION FC [2310] 3210**
45 **RECORD STORAGE**
46

1 [2310.1] **3210.1 General.** Records storage facilities used for the rack or shelf storage of
2 combustible paper records greater than 12 feet (3658 mm) in height shall be designed, installed,
3 operated and maintained in accordance with FC [2306] 3206 and [2308] 3208 and NFPA 13, as
4 modified by FC Appendix B. Palletized storage of records shall be designed, installed, operated
5 and maintained in accordance with [FC2307] FC3207.

6
7
8 **CHAPTER 33**
9 **FIRE SAFETY DURING CONSTRUCTION, ALTERATION AND DEMOLITION**

10
11 **SECTION FC [1401] 3301**
12 **GENERAL**

13
14 [1401.1] **3301.1 Scope.** This chapter shall govern fire safety measures during the construction,
15 alteration, or demolition of buildings, structures, premises and facilities.

16
17 [1401.2] **3301.2 General.** Buildings, structures, premises and facilities undergoing construction,
18 alteration or demolition shall comply with the fire safety measures set forth in this chapter, and
19 shall additionally comply with the requirements of NFPA 241 as to measures not specifically
20 addressed herein.

21
22 [1401.3] **3301.3 Permits.** Permits shall be required as set forth in FC105.6.

23
24 [1401.4] **3301.4 Prohibitions.** It shall be unlawful at a construction site to store, handle or use
25 portable fueled space heating devices or equipment[:].

26
27 [1. For purposes of human comfort or any other purpose other than construction-related curing
28 and drying.

29
30 [2. Utilizing a flammable liquid as a fuel.] **Exception:** Portable space heating devices may be
31 used for construction-related curing and drying in accordance with FC3303.

32
33 **SECTION FC [1402] 3302**
34 **DEFINITIONS**

35
36 [1402.1] **3302.1 Definitions.** The following term shall, for the purposes of this chapter and as used
37 elsewhere in this code, have the meaning [shown herein] set forth in FC202.

38
39 **CONSTRUCTION SITE.** [Any location at which a building, structure, premises or facility is
40 undergoing construction, alteration or demolition.]

41
42 **SECTION FC [1403] 3303**
43 **PORTABLE FUELED SPACE HEATERS**

44
45 [1403.1] **3303.1 Design.** Portable fueled space heaters shall be designed, listed and labeled in
46 accordance with the construction codes, including the Mechanical Code and the Fuel Gas Code,
47 this code, and standards promulgated by the commissioner by rule, as applicable. Portable fueled

1 space heaters shall be installed, operated and maintained in accordance with this chapter, the terms
2 of the listing, and manufacturer's specifications.

3
4 **[1403.2] 3303.2 Portable oil-fueled heaters.** Portable oil-fueled space heaters may be stored,
5 handled and used at construction sites for construction-related curing and drying purposes during
6 the heating season beginning on October 15 and ending on May 30 of the following year, and at
7 such other times of year as may be authorized by permit. Such heaters shall be stored, handled and
8 used in accordance with this code and the rules.

9
10 **[1403.3] 3303.3 Portable gas-fueled heaters.** Portable gas-fueled space heaters utilizing liquefied
11 petroleum gas (LPG), compressed natural gas (CNG) and piped natural gas may be stored, handled
12 and used at construction sites for construction-related curing and drying purposes during the
13 heating season beginning on October 15 and ending on May 30 of the following year, and at such
14 other times of year as may be authorized by permit. Such heaters shall be stored, handled and used
15 in accordance with this code and the rules.

16
17 **[1403.4] 3303.4 Refueling.** Refueling operations shall be conducted in accordance with [FC3405]
18 FC5705. Portable fueled space heaters shall be shut down and cool to the touch before refueling.

19
20 **[1403.5] 3303.5 Installation.** Clearance to combustibles from portable fueled space heaters shall
21 be maintained in accordance with the manufacturer's specifications. When in operation, portable
22 fueled space heaters shall be fixed in place and protected from overturning, movement or damage
23 in accordance with the manufacturer's specifications.

24
25 **[1403.5.1] 3303.5.1 Protection of heating element.** The heating element or combustion
26 chamber shall have a permanent device to prevent accidental contact by persons or material.

27
28 **[1403.6] 3303.6 Supervision.** The handling and use of portable fueled space heaters shall be under
29 the personal supervision of a person holding a certificate of fitness. The storage of portable fueled
30 space heaters, and the fuel therefore, shall be under the general supervision of a certificate of fitness
31 holder.

32
33 **SECTION FC [1404] 3304**
34 **PRECAUTIONS AGAINST FIRE**

35
36 **[1404.1] 3304.1 Smoking prohibited.** Smoking is prohibited at all construction sites.

37
38 **[1404.1.1] 3304.1.1 Areas affected.** At construction sites required by the Building Code to be
39 enclosed with a fence, including buildings under construction or demolition, smoking shall be
40 prohibited within the area enclosed by such fence, including in construction trailers and other
41 indoor or outdoor areas. At construction sites not required by the Building Code to be enclosed
42 with a fence, including existing buildings undergoing interior alterations, smoking shall be
43 prohibited in those areas of the building in which work is to be conducted under the work
44 permit issued by the Department of Buildings.

45
46 **[1404.1.2] 3304.1.2 Signage.** "No Smoking" signs complying with FC310 shall be
47 conspicuously posted at construction sites at the following locations[and such other locations

1 as are necessary to provide notice to a person entering upon or working at the site of the
2 prohibition against smoking]:

- 3
- 4 1. at construction sites required by the Building Code to be enclosed with a fence, on all
5 sliding and swinging gate openings, and any other openings allowing for access to the
6 site by persons or vehicles;
- 7
- 8 2. at the entrances to any building or structure under construction or demolition;
- 9
- 10 3. on each floor at stairway, elevator and hoistway access points of any building undergoing
11 alteration, construction or demolition; [and]
- 12
- 13 4. at any indoor or outdoor areas on the construction site at which persons congregate[.];
14 and
- 15
- 16 5. at such other locations as are necessary to provide notice to a person entering upon or
17 working at the site of the prohibition against smoking.
- 18

19 **[1404.2] 3304.2 Waste disposal.** Combustible waste, including rubbish and construction and
20 demolition material, shall not be allowed to accumulate within buildings and shall be removed
21 from a building at least once a day. Accumulations of combustible waste not stored in containers
22 in accordance with FC304.3 and in a manner that obstructs movement on the floor, or containing
23 flammable or combustible liquid residues, shall be removed from a building at the end of each
24 work shift. Combustible waste, including rubbish and construction and demolition material, shall
25 be removed from the premises or stored in noncombustible containers.

26

27 **[1404.3] 3304.3 Open fires.** It shall be unlawful to ignite or maintain an open fire at a construction
28 site, except for the use of coke-fueled salamanders in accordance with FC 307.1 and 307.6, and
29 the rules.

30

31 **[1404.4] 3304.4 Spontaneous ignition.** Materials susceptible to spontaneous ignition, such as oily
32 rags, shall be stored in a container listed for such use.

33

34 **[1404.5] 3304.5 Fire watch.** The commissioner may require, at a demolition site, and at other
35 construction sites that are unusually hazardous in nature, that a fire watch be maintained by fire
36 guards. The fire guards conducting such fire watch shall have the duties and responsibilities set
37 forth in FC901.7.2.1.

38

39 **[1404.6] 3304.6 Cutting and welding.** Operations involving the use of cutting and welding shall
40 be performed in accordance with FC Chapter [26] 35.

41

42 **[1404.7] 3304.7 Electrical.** Temporary wiring for electrical power and lighting installations at
43 construction sites shall comply with the requirements of the Electrical Code.

44

45 **[1404.8] 3304.8 Fire-resistance-rated construction.** Fire walls, fire barriers, and spray-on fire
46 protection of structural members required by the Building Code for the completed building, shall
47 be given construction priority. Required fire doors, with automatic closing devices, shall be

1 installed on openings as soon as practicable. Required fire walls, fire barriers and fire doors shall
2 be left in place in buildings undergoing alteration or demolition until construction operations
3 necessitate their removal.

4
5 **SECTION FC [1405] 3305**
6 **FLAMMABLE AND COMBUSTIBLE LIQUIDS**
7

8 **[1405.1] 3305.1 Storage, handling and use of flammable and combustible liquids.** Storage,
9 handling and use of flammable and combustible liquids shall be in accordance with FC [3406.2]
10 5706.2 and such other provisions of FC Chapter [34] 57 as may be applicable to the specific
11 construction site material or operation.

12
13 **[1405.2] 3305.2 Ventilation.** Adequate ventilation shall be provided for operations involving the
14 application of materials containing flammable solvents.

15
16 **[1405.3] 3305.3 Housekeeping.** Flammable and combustible liquid storage areas shall be
17 maintained clear of vegetation and combustible waste. Such storage areas shall not be used for the
18 storage of combustible materials.

19
20 **[1405.4] 3305.4 Precautions against fire.** Sources of ignition and smoking shall be prohibited in
21 flammable and combustible liquid storage areas. “No Smoking” signs in compliance with the
22 requirements of FC310 shall be conspicuously posted.

23
24 **[1405.5] 3305.5 Handling at point of final use.** Class I and II liquids shall be stored in approved
25 safety containers.

26
27 **[1405.6] 3305.6 Leakage and spills.** Leaking containers shall be immediately repaired or taken
28 out of service. Spills shall be cleaned up immediately and all liquid and waste material disposed
29 of lawfully.

30
31 **SECTION FC [1406] 3306**
32 **FLAMMABLE GASES AND OXYGEN**
33

34 **[1406.1] 3306.1 Flammable gases.** The storage, handling and use of flammable gases shall
35 comply with the requirements of FC Chapters [26] 35, [35] 58, and [38] 61, as applicable.

36
37 **3306.1.1 Cleaning and purging of flammable gas piping systems.** The cleaning and
38 purging of flammable gas piping systems, including the cleaning and purging of such systems
39 prior to placing them in service or removing them from service, shall be conducted in accordance
40 with NFPA 56.

41
42 **Exceptions:**

43
44 1. Compressed gas piping systems subject to the requirements of Chapter 53, other
45 than fuel gas piping systems.

46 2. Piping systems regulated by the Fuel Gas Code.

1
2 3. LPG systems subject to the requirements of Chapter 61.

3
4 **3306.1.1.1 Prohibition.** It shall be unlawful to use a flammable gas to remove debris
5 from or otherwise clean piping open to the atmosphere.
6

7 **[1406.2] 3306.2 Oxygen.** The storage, handling and use of oxygen shall comply with the
8 requirements of FC [1406.2.1] 3306.2.1 through [1406.2.3] 3306.2.3, and FC Chapters [26] 35 and
9 [30] 53, as applicable.

10
11 **[1406.2.1] 3306.2.1 Portable liquid oxygen containers.** The storage, handling and use of
12 portable liquid oxygen containers shall be in accordance with FC [1406.2.1.1] 3306.2.1.1
13 through [1406.2.1.9] 3306.2.1.9.

14
15 **[1406.2.1.1] 3306.2.1.1 Design and installation documents.** A sketch showing the
16 following information shall be submitted to the department for approval in connection with
17 an application for a permit for oxygen storage:
18

- 19 1. Number and size of containers.
- 20 2. Enclosure, manifold and service piping construction.
- 21 3. Location of risers and outlets.
- 22 4. Location of all equipment and devices including vaporizers, valves and safety relief
23 devices.
24

25
26 **[1406.2.1.2] 3306.2.1.2 Indoor storage restrictions.** Not more than one liquid oxygen
27 container having a maximum water capacity of 6.2 cubic feet (0.176 m³) may be stored
28 indoors. Such container shall be connected for use with a flammable gas. Storage in excess
29 of one liquid oxygen container shall be located outdoors.
30
31

32
33 **[1406.2.1.3] 3306.2.1.3 Ventilation.** The room used for the storage, handling and use of a
34 liquid oxygen container shall be equipped with ventilation direct to the outdoors, and shall
35 not contain any combustible material or flammable gas.
36

37 **[1406.2.1.4] 3306.2.1.4 Manifolds and vaporizers.** Manifolds and vaporizers shall be
38 constructed of materials suitable for oxygen service at a pressure of 250 psig (1724 kPa).
39 Such manifolds and vaporizers shall have a minimum bursting pressure of 1,000 psig (6895
40 kPa) and shall be protected with safety relief devices which will relieve at or below 500
41 psig (3448 kPa).
42

43 **[1406.2.1.4.1] 3306.2.1.4.1 Test.** The assembled vaporizer and manifold shall be
44 pressure tested at 500 psig (3448 kPa) with an oil-free and nonflammable material as
45 the testing medium.
46

1 [1406.2.1.5] **3306.2.1.5 Service piping from the oxygen manifold.** Service piping from
2 the oxygen manifold shall be copper tubing, stainless steel, wrought iron or steel, and shall
3 run vertically outdoors to the floor or floors being serviced, where outlets may be provided
4 for hose connections to approved torches. The service piping shall be properly secured,
5 protected from damage from mechanical injury and properly labeled. Any connection
6 between service piping and the manifold shall be made using not more than 5 feet (1524
7 mm) of hose capable of withstanding pressure up to at least 1,000 psig (6895 kPa).
8

9 [1406.2.1.5.1] **3306.2.1.5.1 Service pressure.** Service piping shall be suitable for 250
10 psig (1724 kPa) service unless an intervening pressure regulator is provided at the
11 manifold, and shall withstand a test of two times the maximum operating pressure,
12 using an oil-free and nonflammable material as the testing medium.
13

14 [1406.2.1.6] **3306.2.1.6 Hose and connectors.** Hose and connectors capable of
15 withstanding pressure up to at least 1,000 psig (6895 kPa) and of a design suitable for
16 oxygen service at a pressure of 250 psig (1724 kPa) shall be used to connect the outlets on
17 the service piping to the blowpipes. Hose shall be rejected for use if it shows excessive
18 wear, loose connections, leaks or burns; hose subjected to a flash back in use shall be tested
19 to twice the service pressure, but not less than 200 psig (1379 kPa), before being returned
20 to service.
21

22 [1406.2.1.7] **3306.2.1.7 Signs.** Signs shall be posted in the vicinity of liquid oxygen
23 container storage and use, reading: DANGER-LIQUID OXYGEN-NO SMOKING-NO
24 OPEN FLAMES.
25

26 [1406.2.1.8] **3306.2.1.8 Operating instructions.** Legible operating instructions shall be
27 posted near any liquid oxygen manifold.
28

29 [1406.2.1.9] **3306.2.1.9 Affidavit.** An affidavit shall be provided by the installer and/or
30 contractor to certify that the vaporizer, valves, piping, hose and safety devices are of an
31 approved type, that they meet the specifications for bursting test and design service
32 pressure, and that they have been satisfactorily tested in accordance with this section.
33

34 [1406.2.2] **3306.2.2 Oxygen trailers.** The storage and use of oxygen trailers shall be in
35 accordance with FC [1406.2.2.1] 3306.2.2.1 through [1406.2.2.5] 3306.2.2.5.
36

37 [1406.2.2.1] **3306.2.2.1 Design, construction, testing and maintenance.** Oxygen trailer
38 containers shall be designed, constructed, tested and maintained in accordance with the
39 United States Department of Transportation specifications and regulations.
40

41 [1406.2.2.2] **3306.2.2.2 Instructions.** Legible operating instructions shall be posted in the
42 trailer and on or near any oxygen manifold used indoors.
43

44 [1406.2.2.3] **3306.2.2.3 License plates.** Oxygen trailers shall at all times have affixed to
45 them a motor vehicle license plate as issued in accordance with New York State or other
46 applicable motor vehicle license plate laws, rules or regulations.
47

1 [1406.2.2.4] **3306.2.2.4 Notification.** The owner or operator of an oxygen trailer shall
2 notify the department, in writing, of the delivery of the trailer to a construction site, at least
3 48 hours in advance of such delivery. Such notification shall include:

- 4 1. Contractor's name, address and telephone number.
- 5 2. Location of the construction site.
- 6 3. Quantity and frequency of oxygen delivery to the construction site.
- 7 4. Expected duration of oxygen storage and use at the construction site.

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12
13 [1406.2.2.5] **3306.2.2.5 Oxygen trailers having a capacity exceeding 20,000 SCF (566**
14 **m³).** The distance between oxygen trailers having a total aggregate capacity exceeding
15 20,000 SCF (566 m³) and exposures shall be in accordance with NFPA 55.

16
17 [1406.2.3] **3306.2.3 Supervision.** The handling and use of portable liquid oxygen containers
18 and oxygen trailers shall be under the personal supervision of a certificate of fitness holder.
19 The storage of liquid oxygen containers and oxygen trailers shall be under the general
20 supervision of a certificate of fitness holder.

21
22 [1406.3] **3306.3 Discontinued torch operations.** When [oxygen and acetylene torch operations
23 are] hot work equipment is not in use, including when [such] torch operations are discontinued
24 for the workday, the oxygen and [acetylene] flammable gas containers shall be removed from the
25 work area and moved to an approved storage area or removed from the premises.

26
27 **Exception:** Brief interruptions in work of not more than 2 hours, including lunch breaks and
28 coffee breaks.

29
30 [1406.3.1] **3306.3.1 Torch operation container floor storage.** Oxygen and [acetylene]
31 flammable gas containers used for torch operations may be stored on the floors on which the
32 torch work is being conducted only in an unoccupied building and only in an approved storage
33 area. Oxygen or [acetylene] flammable gas containers, other than those necessary for the day's
34 torch operations, shall be considered as reserve storage, and shall not be stored on such floors.

35
36 [1406.3.1.1] **3306.3.1.1 Storage location.** Oxygen and [acetylene] flammable gas storage
37 areas on the floors on which the torch work is being conducted shall comply with the
38 distance to exposure requirements of [FC3504.1.3] FC5804.1.3.

39
40 [1406.3.1.2] **3306.3.1.2 Maximum storage quantities.** The maximum quantity of
41 acetylene containers stored on any floor shall not exceed 3,500 SCF ([99.12] 99.11 m³).

42
43 [1406.3.1.3] **3306.3.1.3 Storage cabinet.** Oxygen and [acetylene] flammable gas
44 containers shall be located within a compressed gas storage cabinet designed and secured
45 to prevent unauthorized entry. The storage cabinet shall be conspicuously marked with a
46 hazard identification sign as set forth in [FC2703.5] FC5003.5.

1 **[1406.4] 3306.4 Reserve oxygen and [acetylene] flammable gas containers.** The storage of
2 reserve oxygen and [acetylene] flammable gas containers at a construction site shall comply with
3 the requirements of FC [1406.4.1] 3306.4.1 through [1406.4.4] 3306.4.4, and [FC1406.5]
4 FC3306.5.

5
6 **[1406.4.1] 3306.4.1 Storage location.** Oxygen and [acetylene] flammable gas container
7 storage areas shall comply with the distance to exposure requirements of [FC3504.2.1]
8 FC5804.2.1.

9
10 **[1406.4.2] 3306.4.2 Storage cabinet.** Oxygen and [acetylene] flammable gas containers
11 shall be located within a compressed gas storage cabinet designed and secured to prevent
12 unauthorized entry. The storage cabinet shall be conspicuously marked with a hazard
13 identification sign as set forth in [FC2703.5] FC5003.5.

14
15 **[1406.4.3] 3306.4.3 Indoor acetylene storage.** Indoor reserve storage of acetylene
16 containers shall be allowed only when outdoor storage is unavailable on the premises, the
17 building is unoccupied, the containers are stored on the ground floor of the building, and
18 the total quantities stored do not exceed 3,500 SCF ([99.12] 99.11 m³).

19
20 **[1406.4.4] 3306.4.4 Outdoor acetylene storage.** Outdoor reserve acetylene container
21 storage areas shall not exceed 3,500 SCF ([99.12] 99.11 m³). More than one outdoor
22 storage area may be authorized on the premises provided the distance from each outdoor
23 storage area to each exposure identified in FC Chapter [35] 58 complies with the
24 requirements of FC Chapter [35] 58.

25
26 **[1406.5] 3306.5 Maximum aggregate indoor acetylene storage quantities.** The aggregate
27 of the indoor storage of acetylene authorized by FC [1406.3.1.2] 3306.3.1.2 and [1406.4.3]
28 3306.4.3 shall not exceed 15,000 SCF (424.8 m³).

29
30 **SECTION FC [1407] 3307**
31 **EXPLOSIVE MATERIALS**

32
33 **[1407.1] 3307.1 Storage and handling.** Explosive materials shall be stored, handled and used in
34 accordance with [FC1418] FC3318 and FC Chapter [33] 56.

35
36 **[1407.2] 3307.2 Blasting operations.** Blasting operations shall be conducted in accordance with
37 FC Chapter [33] 56.

38
39 **[1407.3] 3307.3 Demolition using explosives.** Fire hoses and nozzles for use by demolition
40 personnel, connected to an approved water supply under pressure, shall be provided and
41 maintained at the demolition site whenever explosives are used for demolition. Such fire hoses,
42 nozzles and water supply shall be available prior to explosives arriving at the site. Such fire hoses
43 and nozzles shall be capable of a continuous flow of 180 gallons (681 L) per minute with a
44 minimum reach of 35 feet (10 668 mm) from the nozzle and be capable of being brought to bear
45 anywhere on the construction site. Hose shall be pressure tested to withstand at least 600 pounds
46 per square inch gauge (psig)(2413 kPa).

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SECTION FC [1408] 3308
CONSTRUCTION SITE FIRE SAFETY MANAGER

[1408.1] 3308.1 Fire safety manager. Where a site safety manager or site safety coordinator is required by the Building Code, the owner shall designate a person to be the fire safety manager for the construction site. Such person shall hold a certificate of fitness as a construction site fire safety manager. The fire safety manager may be the site safety manager or site safety coordinator required by the Building Code, except that a separate fire safety manager shall be designated for a building under construction when such building reaches a height of twenty stories or more than 250 feet (76 200 mm), has a lot coverage of 200,000 square feet (1860 m²) or greater, or as otherwise prescribed by rule. For purposes of this section, below grade stories shall be used to determine number of stories and building height.

Exception: Construction sites at which an existing building is undergoing alteration, the alteration work is limited to the façade, and no hot work is being performed.

[1408.1.1] 3308.1.1 Fire safety manager duties. The fire safety manager shall be responsible for ensuring compliance with the requirements of this code, including this chapter, and the rules. The fire safety manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. Where fire watch service is provided, the fire safety manager shall be responsible for the general supervision of the fire guards.

[1408.2] 3308.2 Pre-fire plans. The fire safety manager shall develop and maintain at the construction site an approved pre-fire plan, and make it available for examination by any representative of the department. The department shall be notified of any changes in site conditions materially affecting the procedures set forth in such plan.

[1408.3] 3308.3 Training. The fire safety manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

[1408.4] 3308.4 Fire protection devices. The fire safety manager shall ensure that all fire protection equipment and systems are readily available and periodically inspected and tested, and maintained in accordance with this code, the rules and the Building Code.

[1408.5] 3308.5 Hot work operations. The fire safety manager shall be responsible for supervising the issuance of authorizations for hot work operations in accordance with FC Chapter [26] 35.

[1408.6] 3308.6 Impairment of fire protection systems. The fire safety manager or impairment coordinator shall comply with the requirements of FC901 in the event of impairment of any fire protection system.

[1408.7] 3308.7 Temporary covering of fire protection devices. Coverings placed on or over fire protection devices to protect them from damage during construction processes shall comply

1 with the requirements of FC Chapter 9 and shall be immediately removed upon the completion of
2 the construction processes in the room or area in which the devices are installed.

3
4 **SECTION FC [1409] 3309**
5 **FIRE ALARM REPORTING**
6

7 **[1409.1] 3309.1 Emergency telephone.** A telephone not requiring a coin to operate, or another
8 approved, clearly identified means to notify the department, shall be provided on site in an
9 approved location. The street address of the construction site and the emergency telephone number
10 of the fire department shall be posted adjacent to the telephone or other approved device.

11
12 **SECTION FC [1410] 3310**
13 **ACCESS FOR FIREFIGHTING**
14

15 **[1410.1] 3310.1 Required access.** Approved vehicle access for fire apparatus shall be provided to
16 all construction sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of
17 temporary or permanent fire department connections. Vehicle access shall be provided by either
18 temporary or permanent roads, capable of supporting vehicle loading under all weather conditions.
19 Vehicle access shall be maintained until permanent fire apparatus access roads are available.

20
21 **[1410.2] 3310.2 Key boxes.** Key boxes shall be provided as required by FC Chapter 5 and the
22 Building Code.

23
24 **SECTION FC [1411] 3311**
25 **MEANS OF EGRESS AND ELEVATORS**
26

27 **[1411.1] 3311.1 Stairways.** Stairways at construction sites shall be provided, maintained, and
28 made available for department use in accordance with the construction codes, including the
29 Building Code. Stairways providing egress from the building or structure under construction or
30 alteration, and other components of the means of egress, shall be given construction priority.

31
32 **[1411.2] 3311.2 Maintenance.** Required means of egress shall be maintained during construction,
33 alteration and demolition in accordance with this code and the Building Code.

34
35 **[1411.3] 3311.3 Elevators.** Elevators at construction sites shall be provided, maintained, and made
36 available for department use in accordance with the construction codes, including the Building
37 Code.

38
39 **SECTION FC [1412] 3312**
40 **WATER SUPPLY FOR FIRE PROTECTION**
41

42 **[1412.1] 3312.1 Water supply.** An approved water supply for fire protection, either temporary or
43 permanent, shall be made available prior to hazardous materials or combustible material arriving
44 at the site. Any water source intended for firefighting operations, including standpipe outlets, street
45 hydrants and yard hydrants, shall not be used for construction, alteration or demolition purposes,
46 unless approved.

- 1 4. Cranes fueled by liquid motor fuel or flammable gas shall be provided with a portable fire
2 extinguisher with a minimum 10-B:C rating located either in the crane's cab or in its
3 immediate vicinity.
4

5
6 **SECTION FC [1416] 3316**
7 **INTERNAL-COMBUSTION-POWERED EQUIPMENT**
8

9 **[1416.1] 3316.1 Conditions of use.** Internal-combustion-powered construction equipment shall
10 be used in accordance with the following requirements:

- 11 1. Equipment shall be located so that exhausts do not discharge against combustible material.
12
13 2. Exhausts shall be piped to the outdoors.
14
15 3. Equipment shall not be refueled while in operation.
16
17 4. Fuel for equipment shall be stored in an approved area[, and shall be moved in approved
18 containers not to exceed 5 gallons (19 L)].
19
20 5. Fuel for equipment shall be handled and used in approved containers with a capacity not
21 greater than 5 gallons (19 L).
22
23

24 **SECTION FC [1417] 3317**
25 **SAFEGUARDING ROOFING OPERATIONS**
26

27 **[1417.1] 3317.1 General.** Roofing operations utilizing heat-producing systems or other ignition
28 sources shall be performed by a competent person. Roofing operations involving hot work shall
29 comply with the requirements of FC Chapters [26] 35, [35] 58, and [38] 61, as applicable.
30

31 **[1417.2] 3317.2 Tar kettles.** Tar kettles shall be handled and used in accordance with FC303.
32

33 **[1417.3] 3317.3 Portable fire extinguishers for roofing operations.** Portable fire extinguishers
34 shall be provided in accordance with FC906. There shall be not less than one multi-purpose
35 portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.
36

37 **[1417.4] 3317.4 Prohibited operations.** It shall be unlawful to install any roofing material using
38 a torch on a roof of combustible construction, or otherwise engage in roofing operations on roofs
39 of combustible construction using hot work equipment.
40

41 **SECTION FC [1418] 3318**
42 **POWDER-ACTUATED TOOL LOADS**
43

44 **[1418.1] 3318.1 Storage, handling and use.** Small arms ammunition shall be stored, handled and
45 used for powder-actuated tool loads at a construction site[, as follows:] in accordance with
46 FC5606.8.
47

- 1 [1. The main store of powder-actuated tool loads shall be kept in an approved locked metal
2 box.
- 3
- 4 2. The powder-actuated tool load storage box shall be kept away from heat and shall not be
5 stored in the same storage area or storage facility containing compressed gases or flammable
6 liquids.
- 7
- 8 3. The storage area or storage facility in which the locked metal powder-actuated tool load box
9 is stored shall bear a permanent sign bearing the words "DANGER-AMMUNITION" in 2-
10 inch (51-mm) white letters on a red background.
- 11
- 12 4. Powder-actuated tools shall not be used in an explosive atmosphere.
- 13
- 14 5. The certificate of fitness holder shall establish a safe zone behind a work area in which
15 powder-actuated tools are to be used by evacuating the area or placing a barrier constructed
16 of ½ inch (12.7 mm) steel plate.
- 17
- 18 6. At least one portable fire extinguisher having a minimum 2-A rating shall be provided in the
19 area where powder-actuated tool loads are stored.
- 20
- 21 7. Storage of powder-actuated tool loads shall comply with the requirements of NFPA 495.
22 Storage shall be limited to not more than seven hundred fifty thousand powder-actuated tool
23 loads per premises unless larger quantities are authorized by the department.
- 24

25 **1418.1.1] 3318.1.1 Supervision.** Powder-actuated tools shall be used only by a certificate of
26 fitness holder. Powder-actuated tools shall be handled only by a certificate of fitness holder.
27 Storage of powder-actual tools shall be under the general supervision of a certificate of fitness
28 holder.

29
30 **SECTION FC [1419] 3319**
31 **FIRST RESPONDER BOX**
32

33 **[1419.1] 3319.1 First responder box.** [The department may require that a] An approved lock box
34 shall be provided [at a construction site] for first responder use [that contains keys as set forth in
35 FC506.2.2,]. Such box shall contain all keys required to obtain access to the construction site and
36 operate the hoist; the pre-fire plan[,]; permits[,]; logbooks; and such other documents required by
37 this code or the rules to be maintained on the premises. Such box shall be in an approved location
38 and[, if locked,] shall be openable by use of a citywide standard key.
39

40
41 **CHAPTER 34**
42 **TIRE REBUILDING AND TIRE STORAGE**
43

44 **SECTION FC [2501] 3401**
45 **GENERAL**
46

1 [2501.1] **3401.1 Scope.** This chapter shall govern the design, operation and maintenance of tire
2 rebuilding plants, tire storage and tire byproduct facilities.

3
4 [2501.2] **3401.2 Permits.** Permits shall be required as set forth in FC105.6.

5
6 [2501.3] **3401.3 General.** Tire rebuilding plants, tire storage and tire byproduct facilities shall be
7 designed, operated and maintained in accordance with this chapter, NFPA 13, as modified by FC
8 Appendix B, and if applicable, FC Chapter [23] 32.

9
10 **SECTION FC [2502] 3402**
11 **DEFINITIONS**

12
13 [2502.1] **3402.1 Terms defined in FC Chapter 2.** Terms used in this chapter and defined in
14 [FC Chapter 2] FC202 shall have the meanings [defined] set forth therein.

15
16 **SECTION FC [2503] 3403**
17 **TIRE REBUILDING**

18
19 [2503.1] **3403.1 Construction.** Tire rebuilding plants shall comply with the requirements of the
20 construction codes, including the Building Code.

21
22 [2503.2] **3403.2 Location.** Buffing operations shall be conducted in a room separated from the
23 remainder of the building housing the tire rebuilding or tire recapping operations by a 1-hour fire
24 barrier.

25
26 **Exception:** Buffing operations are not required to be separated where the following
27 requirements are complied with:

- 28
29 1. Buffing operations are protected throughout by a continuous water-spray fire protection
30 system directed at the point of cutting action.
31
32 2. Buffing machines are connected to particle-collecting systems providing a minimum air
33 movement of 1,500 cubic feet per minute (cfm) (0.71m³/s) in volume and 4,500 feet per
34 minute (fpm) (23 m/s) in-line velocity.
35
36 3. The collecting system shall discharge the rubber particles to an approved outdoor
37 noncombustible or noncombustible container, which is emptied at frequent intervals to
38 prevent overflow.
39

40 [2503.3] **3403.3 Cleaning.** The buffing area shall be cleaned and combustible waste regularly
41 removed and disposed of to prevent the accumulation of rubber particles.

42
43 [2503.4] **3403.4 Spray rooms and booths.** Spray rooms or spray booths wherein flammable or
44 combustible solvents are applied shall comply with the requirements of FC Chapter [15] 24.

45
46 **SECTION FC [2504] 3404**
47 **PRECAUTIONS AGAINST FIRE**

1
2 **[2504.1] 3404.1 Open fires and flames prohibited.** It shall be unlawful in a tire storage yard to
3 ignite or maintain an open fire or open flame.

4
5 **[2504.2] 3404.2 Hot work prohibited.** It shall be unlawful in a tire storage yard to conduct hot
6 work operations.

7
8 **[2504.3] 3404.3 Smoking prohibited.** It shall be unlawful in a tire storage yard to smoke.

9
10 **[2504.4] 3404.4 Power lines.** Tire storage piles shall not be located beneath electrical power lines
11 having a voltage in excess of 750 volts or near lines supplying power to fire emergency systems
12 where a fire in such storage piles would damage such lines.

13
14 **[2504.5] 3404.5 Reserved.**

15
16 **[2504.6] 3404.6 Emergency telephone.** A telephone not requiring a coin to operate, or another
17 approved, clearly identified means to notify the department, shall be provided at the facility in an
18 approved location. A sign shall be conspicuously posted at or near the telephone indicating that all
19 fires shall be immediately reported to the department, and setting forth the facility's address with
20 cross-street reference and the fire department telephone number.

21
22 **SECTION FC [2505] 3405**
23 **OUTDOOR STORAGE**

24
25 **[2505.1] 3405.1 Individual piles.** Tire storage shall be restricted to individual piles not exceeding
26 5,000 square feet (464.5 m²) of continuous area. Piles shall not exceed 50,000 cubic feet (1416 m³)
27 in volume or 10 feet (3048 mm) in height.

28
29 **[2505.2] 3405.2 Separation of piles.** Individual tire storage piles shall be separated from other
30 piles by a clear space of at least 40 feet (12 192 mm).

31
32 **[2505.3] 3405.3 Distance between piles of other stored products.** Tire storage piles shall be
33 separated by a clear space of at least 40 feet (12 192 mm) from piles of other stored product.

34
35 **[2505.4] 3405.4 Distance from lot lines and buildings.** Tire storage piles shall be located at least
36 50 feet (15 240 mm) from lot lines and buildings unless the commissioner approves a lesser
37 separation distance of tire storage piles in accordance with the criteria set forth in NFPA 13.

38
39 **[2505.5] 3405.5 Fire breaks.** Storage yards shall be maintained free from combustible grass and
40 weeds for a distance of 40 feet (12 192 mm) from the stored tires; and for a distance of 100 feet
41 (30 480 mm) from the stored tires to brush and forested areas.

42
43 **[2505.6] 3405.6 Volume more than 150,000 cubic feet.** Where the bulk volume of stored material
44 is more than 150,000 cubic feet (4248 m³), fire breaks shall be provided around the perimeter of
45 each group of storage piles in accordance with the following:

1 1. Individual storage piles shall be arranged so that there are not more than 16 individual
2 storage piles per group.

3
4 2. Fire breaks shall at least be 75 feet (22 860 mm) wide.

5
6 **[2505.7] 3405.7 Location.** Outdoor tire storage shall not be located under bridges, elevated
7 trestles, elevated roadways or elevated railroads.

8
9 **SECTION FC [2506] 3406**
10 **FIRE DEPARTMENT ACCESS**

11
12 **[2506.1] 3406.1 Required access.** New and existing tire storage yards shall be provided with fire
13 apparatus access roads in accordance with FC503 and this section.

14
15 **[2506.2] 3406.2 Location.** Fire apparatus access roads shall be located within all pile clearances
16 identified in [FC2505.4] FC3405.4 and within all fire breaks required in FC [2505.5] 3405.5 and
17 [2505.6] 3405.6. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage
18 yard where storage piles are located, at least 20 feet (6096 mm) from any storage pile.

19
20 **SECTION FC [2507] 3407**
21 **FENCING**

22
23 **[2507.1] 3407.1 Where required.** Where the bulk volume of stored material is more than 20,000
24 cubic feet (566 m³), a firmly anchored fence or other approved method of security that controls
25 unauthorized access to the storage yard shall surround the storage yard.

26
27 **[2507.2] 3407.2 Construction.** The fence shall be constructed of approved materials and shall be
28 at least 6 feet (1829 mm) high and provided with gates at least 20 feet (6096 mm) wide. Where
29 gates are constructed, they shall comply with the vertical clearance requirements of [FC503.6]
30 FC503.

31
32 **[2507.3] 3407.3 Security.** All gates to the storage yard shall be locked when the storage yard is
33 not staffed.

34
35 **SECTION FC [2508] 3408**
36 **FIRE PROTECTION**

37
38 **[2508.1] 3408.1 Water supply.** A public or private fire protection water supply shall be provided
39 in accordance with [FC508] FC507. The water supply shall be arranged such that any part of the
40 storage yard can be reached by using not more than 300 feet (91 m) of hose.

41
42 **[2508.2] 3408.2 Portable fire extinguishers.** Buildings or structures shall be provided with
43 portable fire extinguishers in accordance with FC906. Fuel-fired vehicles operating in the storage
44 yard shall be equipped with a minimum 2-A:20-B:C rated portable fire extinguisher.

45
46 **SECTION FC [2509] 3409**
47 **INDOOR STORAGE ARRANGEMENT**

1
2 **[2509.1] 3409.1 Pile dimensions.** Where tires are stored on-tread, the dimension of the pile in the
3 direction of the wheel hole shall not be more than 50 feet (15 240 mm). Tires stored adjacent to or
4 along one wall shall not extend more than 25 feet (7620 mm) from that wall. Other piles shall not
5 be more than 50 feet (15 240 mm) in width.
6

7
8 **CHAPTER 35**
9 **WELDING AND OTHER HOT WORK**

10
11 **SECTION FC [2601] 3501**
12 **GENERAL**

13
14 **[2601.1] 3501.1 Scope.** This chapter shall govern welding, cutting and other torch and hot work
15 operations and equipment.
16

17 **[2601.2] 3501.2 Permits.** Permits shall be required as set forth in FC105.6.
18

19 **[2601.3] 3501.3 Approved locations.** Hot work shall be conducted only in the areas set forth in
20 this section or approved by the commissioner.
21

22 **[2601.3.1] 3501.3.1 Authorized areas.** Hot work may be conducted in the following areas:
23

- 24 1. Areas designed for hot work operations.
- 25
- 26 2. Areas authorized for that purpose by the responsible person at the premises when
27 precautions have been taken in compliance with the requirements of this chapter.
28

29 **[2601.3.2] 3501.3.2 Restricted areas.** Hot work shall not be conducted in the following areas
30 unless approval has been obtained from the commissioner:
31

- 32 1. Areas where the sprinkler system is impaired.
- 33
- 34 2. Areas where there exists the potential of an explosive atmosphere, such as locations
35 where flammable gases, liquids or vapors are present.
- 36
- 37 3. Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur,
38 baled paper, cotton, lint, dust or loose combustible materials.
- 39
- 40 4. On board marine vessels or watercraft at dock under construction or repair.
41

42 **[2601.4] 3501.4 Containers.** Compressed gas containers shall be designed, installed, operated and
43 maintained in accordance with this chapter and FC Chapter [30] 53.
44

45 **[2601.5] 3501.5 Design and installation of oxygen-fuel gas systems.** An oxygen-fuel gas system
46 shall be designed and installed in accordance with NFPA 51.
47

1 [2601.5.1] **3501.5.1 Oxygen at construction sites.** The storage and use of oxygen at a
2 construction site shall additionally comply with the requirements of FC Chapter [14] 33.

3
4 [2601.6] **3501.6 Torches.** Torches and tips that utilize a flammable gas for hot work operations
5 shall be listed.

6
7 [2601.7] **3501.7 Certificate of approval.** Devices used to increase the pressure of piped natural
8 gas in accordance with [FC2609.8] FC3509.8 shall be of a type for which a certificate of approval
9 has been issued.

10
11 **SECTION FC [2602] 3502**
12 **DEFINITIONS**

13
14 [2602.1] **3502.1 Definitions.** The following terms shall, for the purposes of this chapter and as
15 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

16
17 **COMBUSTIBLE GAS DETECTOR.**

18
19 **HOT TAPPING.**

20
21 **HOT WORK.** [Cutting, welding, thermit welding, brazing, soldering, grinding, thermal spraying,
22 thawing pipe, cadwelding, installation of torch-applied roof systems or any other similar operation
23 or activity.]

24
25 **HOT WORK AREA.** [The area exposed to sparks, hot slag, radiant heat, or convective heat as a
26 result of hot work.]

27
28 **HOT WORK EQUIPMENT.** [Electric or gas welding or cutting equipment used for hot work.]

29
30 **HOT WORK PROGRAM.** [A program, implemented by a responsible person designated by the
31 owner of a building or structure in or on which hot work is being performed, to oversee and issue
32 authorizations for such hot work for the purpose of preventing fire and fire spread.]

33
34 **HOT WORK PROGRAM AUTHORIZATIONS.** [Authorizations issued by the responsible
35 person under a hot work program allowing welding or other hot work to be performed at the
36 premises.]

37
38 **RESPONSIBLE PERSON.** [A person trained in the fire safety hazards associated with hot work
39 and in the necessary and appropriate measures to minimize those hazards, who is designated by
40 the owner of a premises to authorize the performance of hot work at the premises.]

41
42 **TORCH-APPLIED ROOF SYSTEM.** [Bituminous roofing systems using membranes that are
43 adhered by heating with a torch and melting asphalt back coating instead of mopping hot asphalt
44 for adhesion.]

45
46 **SECTION FC [2603] 3503**
47 **GENERAL REQUIREMENTS**

1
2 **[2603.1] 3503.1 General.** Hot work operations, including temporary and fixed hot work areas,
3 shall be conducted in accordance with this chapter.

4
5 **[2603.1.1] 3503.1.1 Torch operations using LPG.** The use of LPG for torch operations shall
6 additionally comply with the requirements of FC Chapter [38] 61.

7
8 **[2603.1.2] 3503.1.2 Torch operations using CNG.** The use of CNG for torch operations shall
9 additionally comply with the requirements of FC Chapter [35] 58.

10
11 **[2603.2] 3503.2 Hot work program.** Whenever hot work is performed in any building or
12 structure, on a building roof or on a building setback, the owner shall ensure that such work is
13 performed in accordance with this chapter and shall designate a responsible person to ensure
14 compliance.

15
16 **[2603.2.1] 3503.2.1 Hot work program responsible person.** The responsible person shall
17 ensure that a permit has been obtained from the department when one is required, and ensure
18 that the hot work is performed in compliance with the terms and conditions of the permit. The
19 responsible person shall inspect the hot work site prior to issuing a hot work program
20 authorization and periodically monitor the work as it is being performed to ensure there are no
21 fire safety hazards.

22
23 **[2603.2.2] 3503.2.2 Responsible person supervision.** Hot work operations shall be conducted
24 under the general supervision of the responsible person.

25
26 **[2603.3] 3503.3 Hot work program authorization.** A hot work program authorization bearing
27 the signature of the responsible person shall be obtained for any project conducted on a premises
28 involving hot work operations by the person in charge of such hot work operations. Hot work
29 authorizations, issued by the responsible person, shall be available for inspection by any
30 representative of the department during the performance of the work and for 48 hours after the
31 work is complete.

32
33 **[2603.4] 3503.4 Qualifications of operators.** An authorization for hot work operations shall not
34 be issued unless the individuals conducting such operations are capable of performing such
35 operations safely. Demonstration of a working knowledge of the provisions of this chapter shall
36 constitute acceptable evidence of compliance with this requirement.

37
38 **[2603.4.1] 3503.4.1 Torch operations [using oxygen and flammable gases].** [Torch
39 operations] Any torch operation, including torch operations using [oxygen and] a flammable
40 gas, with or without oxygen, and any torch operation for torch-applied roofing systems, shall
41 be [performed] personally conducted by a certificate of fitness holder.

42
43 **[Exception:] Exceptions:**

- 44
45 1. Torch operations using oxygen and piped natural gas for manufacturing jewelry or
46 in a dental laboratory may be [performed] conducted under the personal supervision

1 of a certificate of fitness holder, who shall be responsible to regulate the pressure and
2 flow of oxygen and natural gas to each torch.

3
4 2. Torch operation fueled by a LPG container with a capacity of 16.4 ounces (0.465 kg)
5 or less, except at a construction site.

6
7 3. Arc welding authorized by the Department of Buildings.
8

9 **[2603.4.2] 3503.4.2 Use of portable fire extinguishers.** All persons conducting hot work
10 operations shall be trained in the use of portable fire extinguishers, and shall be capable of
11 extinguishing fires when they are limited in size and spread such that they can readily be
12 extinguished using a portable fire extinguisher.

13
14 **[2603.5] 3503.5 Records.** The responsible person for the hot work area shall maintain [“prework
15 check] “pre-hot work check” reports in accordance with [FC2604.3.1] FC3504.3.1.

16
17 **[2603.6] 3503.6 Signage.** Visible hazard identification signs shall be provided where required by
18 FC Chapter [27] 50. Where the hot work area is accessible to persons other than the operator of
19 the hot work equipment, signs shall be posted in a conspicuous location to warn others before they
20 enter the hot work area. Such signs shall read as follows:

21
22 CAUTION
23 HOT WORK IN PROGRESS
24 STAY CLEAR.

25
26 **SECTION FC [2604] 3504**
27 **FIRE SAFETY REQUIREMENTS**
28

29 **[2604.1] 3504.1 Protection of combustibles.** Combustible material and combustible waste shall
30 be protected during hot work operations in accordance with FC [2604.1.1] 3504.1.1 through
31 [2604.1.9] 3504.1.9.

32
33 **[2604.1.1] 3504.1.1 Separation from combustibles.** Hot work operations involving cutting
34 or welding shall be conducted at least 35 feet (10 668 mm) from combustible materials and
35 combustible waste or shall be provided with appropriate shielding to prevent sparks, slag or
36 heat from igniting exposed combustibles. All other hot work operations shall be conducted at
37 least 25 feet (7620 mm) from combustible materials and combustible waste or shall be
38 provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed
39 combustibles.

40
41 **[2604.1.2] 3504.1.2 Openings.** Openings or cracks in walls, floors, ducts or shafts within
42 35 feet (10 668 mm) of the hot work area shall be tightly covered to prevent the passage of
43 sparks to adjacent combustible areas, or shielded by metal fire-resistant guards, or provided
44 with curtains to prevent passage of sparks or slag.
45

1 [2604.1.3] **3504.1.3 Housekeeping.** Combustible waste shall not be allowed to accumulate on
2 floors and other surfaces within the hot work area. Hot work areas shall be regularly cleaned
3 and combustible waste removed and disposed of lawfully.
4

5 [2604.1.4] **3504.1.4 Conveyor systems.** Conveyor systems that are capable of carrying sparks
6 to distant combustibles shall be shielded or shut down.
7

8 [2604.1.5] **3504.1.5 Partitions.** Partitions segregating hot work areas from other areas of the
9 building shall be of noncombustible construction. In fixed hot work areas, the partitions shall
10 be securely connected to the floor such that no gap exists between the floor and the partition.
11 Partitions shall prevent the passage of sparks, slag, and heat from the hot work area.
12

13 [2604.1.5.1] **3504.1.5.1 Motor-fuel dispensing facilities.** The use of a torch within a repair
14 garage located on a property upon which a motor-fuel dispensing facility is situated shall
15 be conducted within a fire-rated enclosure. All doors of such enclosure shall be fireproof
16 and self-closing.
17

18 [2604.1.5.2] **3504.1.5.2 Repair garages.** In a repair garage with a capacity for more than
19 one vehicle, hot work shall be conducted within a fire-rated enclosure in compliance with
20 [FC2604.1.5.1] FC3504.1.5.1 or behind a noncombustible screen that is positioned and of
21 sufficient size to prevent the passage of sparks, slag and heat from the hot work area.
22

23 [2604.1.6] **3504.1.6 Floors.** Areas designed for hot work operations shall have floors with
24 noncombustible surfaces.
25

26 [2604.1.7] **3504.1.7 Precautions in hot work.** [Hot] Except as otherwise provided in
27 FC3510.4, hot work shall not be performed on a container or equipment that contains or has
28 contained a flammable solid, flammable or combustible liquid or flammable gas until the
29 container or equipment has been thoroughly cleaned, inerted or purged[; except that “hot
30 tapping” shall be allowed at bulk plants and terminals on tanks and piping when such work is
31 conducted by competent personnel]. Hot work on flammable and combustible liquid storage
32 tanks shall be conducted in accordance with FC3510. Hot work involving [cutting, welding or
33 heating of] any flammable solid in any form shall be conducted only with the approval of the
34 [commissioner] department.
35

36 [2604.1.8] **3504.1.8 Sprinkler protection.** Sprinkler system protection shall not be shut off or
37 impaired while hot work is performed unless approved by the commissioner. Where hot work
38 is performed close to sprinklers, noncombustible barriers or damp cloth guards shall shield the
39 individual sprinkler heads and shall be removed when the work is completed. If the work
40 extends over several days, the shields shall be removed at the end of each workday.
41

42 [2604.1.9] **3504.1.9 Fire detection systems.** Approved precautionary measures shall be taken
43 to avoid accidental operation of automatic fire detection systems.
44

45 [2604.2] **3504.2 Fire watch.** A fire watch shall be maintained and fire guards provided in
46 accordance with FC [2604.2.1] 3504.2.1 through [2604.2.7.1] 3504.2.7.1.
47

1 [2604.2.1] **3504.2.1 When required.** A fire watch shall be maintained during hot work
2 operations. The fire watch shall continue for a minimum of 30 minutes after the conclusion of
3 the work. The commissioner, or the responsible person implementing a hot work program, may
4 extend the duration of the fire watch based on the hazards or work being performed.
5

6 [2604.2.2] **3504.2.2 Location.** The fire watch shall observe the entire hot work area. Hot work
7 conducted in areas with vertical or horizontal fire exposures that are not observable by a single
8 individual shall have additional personnel assigned to ensure that exposed areas are monitored,
9 including compliance with [FC2604.2.7.1] FC3504.2.7.1.
10

11 [2604.2.3] **3504.2.3 Duties.** Persons conducting a fire watch shall have the duties and
12 responsibilities set forth in FC901.7.2.1 with respect to the areas being monitored in connection
13 with hot work operations.
14

15 [2604.2.4] **3504.2.4 Reserved.**
16

17 [2604.2.5] **3504.2.5 Fire hoses.** Where hose lines are required, they shall be connected,
18 charged and ready for operation.
19

20 [2604.2.6] **3504.2.6 Portable fire extinguishers.** A minimum of one portable fire extinguisher
21 complying with the requirements of FC906 and with a minimum 2-A:20-B:C rating shall be
22 provided and readily accessible within a 30 feet (9144 mm) travel distance of the location
23 where hot work is performed and where the fire guards are positioned.
24

25 [2604.2.7] **3504.2.7 Fire guards for torch operations.** The fire watch for torch operations
26 conducted at the following locations shall be conducted by fire guards:
27

- 28 1. Construction sites.
- 29
- 30 2. On any rooftop, or in connection with any torch-applied roofing system operation.
- 31
- 32 3. In any building or structure, when the torch operation is conducted by a person holding
33 a citywide permit for torch operations.
34

35 [2604.2.7.1] **3504.2.7.1 Construction sites and torch-applied roofing systems.** A fire
36 watch shall be maintained for each torch operation at a construction site and torch-applied
37 roofing system operations in compliance with the requirements of FC [2604.2.7.1.1]
38 3504.2.7.1.1 and [2604.2.7.1.2] 3504.2.7.1.2.
39

40 [2604.2.7.1.1] **3504.2.7.1.1 Fire watch coverage.** A fire guard shall be provided for
41 each torch in operation, except that a single fire guard may be designated to conduct a
42 fire watch for more than one torch operation on the same floor or level if each torch
43 operation is not more than 50 feet (15 240 mm) from the fire guard, as measured by the
44 actual path of travel, and the field of view of such fire guard encompasses all of the
45 horizontal fire exposures of such torch operations.
46

1 **[2604.2.7.1.2] 3504.2.7.1.2 Fire watch on floors below.** In addition to the fire guard
2 required by [FC2604.2.7.1.1] FC3504.2.7.1.1, if the torch operation is being conducted
3 at or near the edge of an unenclosed floor of a building, or near a floor opening, or other
4 location where sparks and slag may travel to one or more lower floors or levels, a fire
5 guard shall conduct a fire watch on each lower floor or level containing combustible
6 surfaces or materials within 35 feet (10 668 mm) of the area of such floor or level that
7 potentially would be exposed to such sparks or slag. Prior to commencement of the
8 torch operation, the fire safety manager or responsible person shall inspect the lower
9 floors or levels and take all necessary and appropriate precautions to protect any
10 combustible surfaces and materials that potentially would be exposed to sparks and
11 slag from the torch operation. A certification to that effect shall be made on the hot
12 work authorization.

13
14 **[Exception:] Exceptions:**

- 15
16 1. A fire watch is not required on the floors or levels below a torch operation
17 on a construction site when:
- 18 1.1. the torch operation is not being conducted at or near the edge of an
19 unenclosed floor of a building;
 - 20 1.2. the floor upon which the torch operation is being conducted is of
21 noncombustible construction;
 - 22 1.3. there are no floor or exterior building openings within 35 feet (10 668
23 mm) of the torch operation; and
 - 24 1.4. prior to commencement of the torch operation, the fire safety manager
25 or responsible person conducts an inspection and takes the precautions
26 required pursuant to [FC2604.2.7.1.2] FC3504.2.7.1.2.
- 27
28 2. Notwithstanding the foregoing exception, if sparks or slag generated by the
29 torch operation are observed to extend beyond 35 feet (10 668mm), thereby
30 potentially exposing lower floors or levels, the torch operation shall be
31 immediately discontinued, and the floors or levels below shall be inspected
32 for any fire condition. If there is any potential exposure to combustible
33 surfaces or materials on the floors below from such sparks and slag,
34 noncombustible barriers shall be provided and any other necessary or
35 appropriate precautions shall be taken. If such barriers and precautions fail
36 to block the passage of sparks and slag, a fire watch shall be established on
37 the floors or levels below.
38
39
40
41
42

43 **[2604.3] 3504.3 Area reviews.** Before hot work is authorized and at least once per day while the
44 authorization is in effect, the hot work area shall be inspected by the responsible person to ensure
45 that it is a fire safe area.
46

1 **[2604.3.1] 3504.3.1 Pre-hot work check.** A pre-hot work check shall be conducted by the
2 responsible person prior to work to ensure that all equipment is safe and hazards are recognized
3 and protected. A report of the check shall be kept at the work site during the work and for a
4 minimum of 48 hours after work is completed, and made available for inspection by any
5 representative of the department. The pre-hot work check shall be conducted at least once per
6 day and shall verify the following:

- 7
- 8 1. The hot work equipment is in good working order.
- 9
- 10 2. The hot work area is clear of combustibles and flammable solids or that such materials
11 present in the area are protected in accordance with [FC2604.1.1] FC3504.1.1.
- 12
- 13 3. Exposed construction is of noncombustible materials or, if combustible, is protected.
- 14
- 15 4. Openings are protected.
- 16
- 17 5. Hot work area floors are clear of combustible waste accumulation.
- 18
- 19 6. Reserved.
- 20
- 21 7. Fire watch personnel, where required, are assigned.
- 22
- 23 8. Approved actions have been taken to prevent accidental activation of fire extinguishing
24 systems and detection equipment in accordance with FC [2604.1.8] 3504.1.8 and
25 [2604.1.9] 3504.1.9.
- 26
- 27 9. Portable fire extinguishers and fire hoses (where provided) are operable and available.
- 28
- 29 10. All persons performing hot work possess certificates of fitness, where such certificates
30 are required.
- 31
- 32 11. All persons performing hot work requiring a permit possess a site-specific permit or
33 citywide permit, authorizing such work.
- 34

35 **SECTION FC [2605] 3505**
36 **GAS WELDING AND CUTTING**

37

38 **[2605.1] 3505.1 General.** Devices or attachments mixing air or oxygen with flammable gases prior
39 to consumption, except at the burner or in a standard torch or blow pipe, shall not be allowed unless
40 approved.

41

42 **[2605.2] 3505.2 Container storage, handling and use.** Storage, handling and use of compressed
43 gas containers shall be in accordance with this section and FC Chapter [30] 53.

44

45 **[2605.2.1] 3505.2.1 Containers connected for use.** A single container of oxygen and a
46 single container of flammable gas may be installed on a cart without the separation of
47 containers required by [FC3504.1.3] FC5804.1.3 provided that the containers are connected

1 to regulators, equipped with apparatus designed for cutting, welding or other hot work
2 operation, and are otherwise ready for use, and are stored, handled and used in compliance
3 with the following requirements:
4

- 5 1. Carts shall be designed and used in accordance with [FC2703.10.3] FC5003.10.3.
- 6
- 7 2. Container valves shall have a fixed hand wheel, or other approved means by which the
8 flow of gas may be immediately shut down during hot work operations.
9
- 10 3. Container valves shall be closed at the end of each workday and whenever work is
11 discontinued or the cart moved.
12
- 13 4. Container valve outlet connections shall conform to the requirements of CGA V-1.
14
- 15 5. Separation of the cart from the hot work operation shall be maintained in accordance
16 with [FC2605.5] FC3505.5, or fire-resistant shields shall be provided.
17
- 18 6. A separation distance of 20 feet (6096 mm) shall be maintained between such carts.
19

20 **[2605.3] 3505.3 Precautions.** Oxygen containers and oxygen container valves, regulators, hose
21 and other apparatus and fittings shall be kept free of oil or grease. Oxygen containers, apparatus
22 and fittings shall not be handled with oily hands, oily gloves, or greasy tools or equipment.
23

24 **[2605.4] 3505.4 Acetylene gas.** Acetylene gas shall not be piped except in approved container
25 manifolds and container manifold connections, or piped or utilized at a pressure exceeding 15
26 pounds per square inch gauge (psig) (103 kPa). Acetylene gas stored in containers shall be
27 dissolved in a suitable solvent. Acetylene gas shall not be brought in contact with unalloyed
28 copper, except in a torch.
29

30 **[2605.5] 3505.5 Remote locations.** Oxygen and fuel gas containers shall be located at a distance
31 from the hot work area sufficient to protect such containers from heat, sparks, slag, or misdirection
32 of the torch flame.
33

34 **[2605.6] 3505.6 Container shutoff.** The torch valve shall be closed and the gas supply to the torch
35 completely shut off when hot work operations are discontinued for a period of 1 hour or more.
36

37 **[2605.6.1] 3505.6.1 Emergency shutoff.** Oxygen and fuel gas container valves shall be
38 accessible to the torch operator or fire guard for immediate shutoff of the gas supply in the
39 event of an emergency.
40

41 **[2605.7] 3505.7 Prohibited operations.** It shall be unlawful to conduct the following hot work
42 operations:
43

- 44 1. Welding or cutting operations supported by or resting on compressed gas containers.
- 45
- 46 2. Torch-applied roof system operations on roofs constructed of combustible materials.
47

1 3. Use of an acetylene generator for hot work operations.

2
3 **[2605.8] 3505.8 Tests.** It shall be unlawful to test piping equipment or systems for leaks using a
4 flame. Tests for suspected leaks in piping equipment and systems shall be made using soapy water.

5
6 **SECTION FC [2606] 3506**
7 **ELECTRIC ARC HOT WORK**
8

9 **[2606.1] 3506.1 General.** The frame or case of electric hot work machines, except internal-
10 combustion-engine-driven machines, shall be grounded. Ground connections shall be
11 mechanically strong and electrically adequate for the required current.

12
13 **[2606.2] 3506.2 Return circuits.** Welding current return circuits from the work to the machine
14 shall have proper electrical contact at joints. The electrical contact shall be periodically inspected.

15
16 **[2606.3] 3506.3 Disconnecting.** Electrodes shall be removed from the holders when electric arc
17 welding or cutting is discontinued for any period of 1 hour or more. The holders shall be located
18 to prevent accidental contact and the machines shall be disconnected from the power source.

19
20 **[2606.4] 3506.4 Emergency disconnect.** A switch or circuit breaker shall be provided so that fixed
21 electric welders and control equipment can be disconnected from the supply circuit. The
22 disconnect shall be installed in accordance with the Electrical Code.

23
24 **[2606.5] 3506.5 Damaged cable.** Damaged cable shall be removed from service until properly
25 repaired or replaced.

26
27 **SECTION FC [2607] 3507**
28 **RESERVED**

29
30 **SECTION FC [2608] 3508**
31 **RESERVED**

32
33 **SECTION FC [2609] 3509**
34 **PIPING MANIFOLDS AND HOSE SYSTEMS FOR FUEL GASES AND OXYGEN**
35

36 **[2609.1] 3509.1 General.** The use of piping manifolds, protective equipment and hose systems in
37 oxygen-fuel gas systems, including natural gas supplied from a utility for use in an oxygen-fuel
38 gas system, shall be designed, installed, operated and maintained in accordance with [FC2609]
39 FC3509, FC Chapter [30] 53 and NFPA 51.

40
41 **[2609.2] 3509.2 Protection.** Piping shall be protected against physical damage.

42
43 **[2609.3] 3509.3 Signage.** Signage shall be provided for piping and hose systems as follows:

- 44
45 1. Aboveground piping systems shall be marked in accordance with ASME A13.1.
46
47 2. Station outlets shall be marked to indicate their intended usage.

1
2 3. Signs shall be posted, indicating clearly the location and identity of section shutoff valves.
3

4 **[2609.4] 3509.4 Manifolding of containers.** Oxygen manifolds shall be located at least 20 feet
5 (6096 mm) away from combustible waste and combustible material, including oil and grease, and
6 gas containers containing flammable gases, unless the gas containers are separated from each other
7 by a fire partition.
8

9 **[2609.5] 3509.5 Identification of manifolds.** Signs shall be posted for oxygen manifolds with
10 service pressures not exceeding 250 psig (1379 kPa). Such signs shall read as follows:
11

12 **LOW-PRESSURE MANIFOLD**
13 **DO NOT CONNECT HIGH-PRESSURE CONTAINERS**
14 **MAXIMUM PRESSURE 250 PSIG**
15

16 **[2609.6] 3509.6 Clamps.** Hose connections shall be clamped or otherwise securely fastened.
17

18 **[2609.7] 3509.7 Inspection.** Hoses shall be inspected frequently for leaks, burns, wear, loose
19 connections or other defects.
20

21 **[2609.8] 3509.8 Piped natural gas precautions.** When piped natural gas is used with oxygen in
22 any hot work operation, a listed protective device that serves as a combination flashback arrester
23 and backflow check valve shall be provided at an approved location on both the natural gas and
24 oxygen supply lines so as to ensure the safe operation of all devices, equipment and systems,
25 including the utility gas meter. Where pressure of the piped natural gas supply is insufficient to
26 ensure such safe operation, approved equipment shall be provided between the gas meter and the
27 fuel-consuming appliance that increases such pressure to the level required for such safe operation.
28 Notwithstanding any section of this code to the contrary, such flashback arresters and check valves,
29 pressure-increasing equipment, shall be installed as components of both new and existing
30 installations. Installations involving the use of piped natural gas with oxygen in any hot work
31 operation shall additionally comply with the rules.
32

33 **SECTION FC 3510**
34 **HOT WORK ON FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE TANKS**
35

36 **3510.1 General.** Hot work performed on the interior or exterior of tanks that hold or have held
37 flammable or combustible liquids, when approved, shall be conducted in accordance with this
38 section and NFPA 326.
39

40 **3510.2 Department approval.** Approval shall be obtained from the department prior to
41 conducting hot work on a tank that holds or has held flammable or combustible liquids. The
42 application shall justify the need to conduct such hot work and identify the potential hazards and
43 methods of controlling such hazards.
44

45 **3510.3 Hazard prevention.** A pre-hot work check shall be performed in accordance with
46 FC3504.3.1. A fire watch shall be maintained with a combustible gas detector, to continuously
47 monitor the work area and any other affected areas.

1
2 **3510.4 Hot tapping.** Hot tapping may be conducted at bulk plants and terminals on tanks and
3 pipng only when approved by the department. Such work shall be conducted by persons with
4 approved qualifications.
5
6

7 **CHAPTER 36**
8 **MARINAS**

9
10 **SECTION FC 3601**
11 **GENERAL**
12

13 **3601.1 Scope.** This section shall govern the design, installation, operation and maintenance of
14 marinas mooring or storing more than five marine vessels or watercraft 65 feet (19 812 mm) or less
15 in length.
16

17 **3601.2 General.** Marinas shall be designed, installed, operated and maintained in
18 accordance with the requirements of NFPA 303 and this section.
19

20 **SECTION FC 3602**
21 **DEFINITIONS**
22

23 **3602.1 Definitions.** The following terms shall, for the purposes of this chapter and as used
24 elsewhere in this code, have the meanings set forth in FC202.
25

26 **FLOAT.**
27

28 **MARINA.**
29

30 **PIER.**
31

32 **VESSEL.**
33

34 **WHARF.**
35

36 **SECTION FC 3603**
37 **GENERAL PRECAUTIONS**
38

39 **3603.1 Fire safety precautions.** Marinas shall comply with the fire safety precautions set
40 forth in NFPA 303 and this section.
41

42 **3603.2 Combustible waste.** Marinas shall be kept free of accumulations of combustible waste
43 in accordance with FC304. Rubbish and other combustible waste shall not be allowed to accumulate
44 beneath marina structures, piers or wharves.
45

46 **3603.3 Sources of ignition.** Open flames and open-flame devices shall not be used within 3 feet
47 (914 mm) of combustible material. Open flames, open-flame devices and other sources of ignition

1 shall not be stored or used in the areas in which smoking is prohibited pursuant to FC3603.3.1.
2 Portable electric lights approved for use in a hazardous location shall be used where flammable
3 vapors may be present, and shall be equipped with safety devices designed to prevent physical
4 damage to the bulbs.

5
6 **3603.3.1 Smoking.** It shall be unlawful to smoke in the following areas of a marina, and any
7 other areas as the commissioner may prescribe by rule:

- 8
9 1. Where fuels are stored or dispensed.
- 10
11 2. Where flammable or combustible liquids are stored, handled or used.
- 12
13 3. Battery storage and battery charging areas.
- 14
15 4. Covered or enclosed boat storage areas.

16
17 **3603.4 Lumber and other combustible material storage.** Lumber and other combustible
18 materials shall be stored in accordance with FC Chapter 28, at a location separate from the area in
19 which marine vessel construction or repair, marine vessel or watercraft fueling, or other work
20 involving the handling or use of flammable or combustible liquids or open flames is conducted.

21
22 **SECTION FC 3604**
23 **MARINA OPERATIONS**

24
25 **3604.1 General.** Marinas shall be operated in accordance with NFPA 303 and this section.

26
27 **3604.2 Storage.** Marine vessels and watercraft shall be stored in accordance with Chapter 7 of
28 NFPA 303 and this section.

29
30 **3604.2.1 Clearances.** No vessel or watercraft shall be stored closer than 3 feet (914 mm) to
31 any lot line, or closer than 3 feet (914 mm) horizontally from another vessel, unless access for
32 firefighting operations is provided in another approved manner.

33
34 **3604.2.2 Combustible waste and cargo.** All combustible waste and cargo shall be removed
35 from vessels and watercraft in storage.

36
37 **3604.2.3 Batteries and fuel.** Where practicable, batteries and all fuel shall be removed from
38 the vessel. Where removal of batteries is impracticable, precautions during charging of
39 batteries shall be taken in accordance with FC3603. Where removal of fuel is impracticable,
40 all tank stop valves shall be closed and the tank inspected to ensure that there are no leaks.
41 Adequate ventilation shall be provided for hull and bilge areas.

42
43 **3604.2.4 Covers.** Shrink-wrapped plastic or other material used to cover vessels in storage
44 shall be flame-resistant in accordance with FC Chapter 8 and the rules.

45
46 **3604.3 Hot work operations.** Hot work operations and other use of open flames shall comply with
47 the requirements of FC Chapter 35 and this section. All flammable liquid, combustible liquid or

1 flammable gas, except the fuel in stationary storage tanks of vessels, shall be removed from the
2 vessel before any hot work is performed on the vessel. In addition, before hot work is performed
3 batteries and battery terminals shall be protected against accidental shorting or sparking, or the
4 batteries shall be removed. If hot work is to be conducted on a vessel's stationary fuel tank or fuel
5 piping, both the tank and the piping shall first be emptied and purged. All areas of the vessel,
6 including the bilge, shall be ventilated to eliminate any flammable and combustible vapors before
7 any hot work is commenced.
8

9 **3604.4 Engine test stand fuel supply.** Engine test stands shall be supplied by a fuel storage system
10 complying with the requirements of FC Chapter 57. The fuel tank supplying the engine test stand
11 shall be installed outdoors, and the fuel tank and piping located a safe distance from engine
12 exhaust. The fuel piping shall be of steel construction and provided with an automatic shutoff valve
13 designed to shut off the fuel supply in the event of a fire.
14

15 **3604.5 Flammable and combustible liquids and flammable gases.** The storage, handling and
16 use of flammable and combustible liquids and flammable gases shall be in accordance with
17 FC Chapters 57, 58 and 61 and this section.
18

19 **3604.5.1 Marine liquid fuel dispensing.** Marine liquid motor fuel-dispensing facilities
20 shall be designed, installed, operated and maintained in accordance with FC Chapter 23.
21

22 **3604.5.2 Use for cleaning.** Use of flammable and combustible liquids for cleaning purposes
23 shall be in accordance with FC5705.3.6.1.
24

25 **3604.5.3 Storage arrangements.** Except when displayed for sale in sealed containers,
26 flammable and combustible liquids shall be stored in liquid storage cabinets, liquid storage
27 rooms or in approved underground storage systems. Such installations shall comply with the
28 requirements of FC Chapters 23 and 57.
29

30 **3604.5.4 Quantity limitations when stored for sale.** Flammable and combustible liquids
31 displayed for sale in sealed containers shall comply with the requirements of FC Chapters 23
32 and 57, as applicable, except in no case shall the quantities displayed exceed 200 gallons
33 (757 L).
34

35 **3604.5.5 Flammable gases.** LPG on vessels used for residential purposes shall be stored,
36 handled and used in compliance with the requirements of FC Chapter 61 and the rules. CNG
37 on vessels used for residential purposes shall be stored, handled and used in compliance with
38 the requirements of FC Chapter 58 and the rules.
39

40 **SECTION FC 3605**
41 **FIRE PROTECTION, EQUIPMENT AND ACCESS**
42

43 **3605.1 General.** Marinas requiring fire protection and fire department access shall comply with
44 this section. Marine liquid motor fuel-dispensing facilities shall additionally comply with
45 FC2310.
46

1 **3605.2 Fire protection systems and equipment.** Marinas shall be equipped with fire protection
2 systems and equipment in accordance with this section.

3
4 **3605.2.1 Standpipes.** If the furthest point of any pier or float exceeds 250 feet (76 200 mm)
5 from a fire apparatus-accessible location, the pier or float shall be equipped throughout with a
6 standpipe system in accordance with NFPA 303. Systems shall be provided with hose
7 connections located such that no point on the marina pier or float system exceeds 150 feet
8 (45 720 mm) from a standpipe hose connection. Such system shall have a design capacity
9 of 250 gallons per minute (946 L/min) and shall be provided with one or more fire
10 department connections at an approved location, and when required by the commissioner,
11 to an approved water supply. Standpipe hose connection locations shall be clearly identified
12 by a flag or other approved means designed to be readily visible from the pier accessing the
13 float system.

14
15 **3605.2.2 Yard hydrant system.** Fire apparatus-accessible locations as required by
16 FC3605.3.1 shall be within 250 feet (76 200 mm) of a fire hydrant or other approved water
17 supply, and shall be situated such that a hose stream from 250 feet (76 200 mm) of hose line
18 stretched from such location will reach all portions of the premises.

19
20 **3605.2.3 Portable fire extinguishers.** One non-freezing type portable fire extinguisher of the
21 ordinary (moderate) hazard type shall be provided at each required standpipe hose
22 connection. Where there is no standpipe connection, one non-freezing type portable fire
23 extinguisher with at least a 2-A rating shall be provided for every 2,500 square feet (232 m²),
24 or part thereof. Additional portable fire extinguishers, suitable for the hazards involved, shall
25 be provided and maintained in accordance with FC906.

26
27 **3605.3 Fire department access.** Fire apparatus access shall be provided as set forth in Chapters
28 4 and 7 of NFPA 303, and FC 3605.3.1 through 3605.3.5.

29
30 **3605.3.1 Access road.** A road capable of supporting a department firefighting apparatus, with
31 a width of not less than 20 feet (6096 mm) or a width as required by FC503, where applicable,
32 shall be provided from a public street to one or more fire apparatus-accessible locations on the
33 premises.

34
35 **3605.3.2 Aisles.** Any outdoor area of the marina shall be accessible by fire apparatus on all
36 four sides, with a distance between the fire apparatus-accessible aisles of not more than 75 feet
37 (22 860 mm). Such access aisles shall be kept unobstructed.

38
39 **3605.3.3 Parking.** Motor vehicles shall not be parked on fire apparatus access roads or aisles,
40 unless approved.

41
42 **3605.3.4 Slip identification.** Slips and other mooring spaces shall be individually identified by
43 a number and/or letter, which shall be conspicuously marked or posted. The direction to
44 each slip and mooring space shall be conspicuously marked or posted at the base of each
45 pier, finger pier, float and finger float.

1 **3605.3.5 Fire department staging areas.** Staging areas for fire department access and
2 firefighting operations shall be provided on all floats. An area at least 4 feet wide by 10 feet
3 long (1219 mm by 3048 mm), exclusive of walkways, with a curb or barrier having a
4 minimum height of 4 inches (102 mm) shall be provided and maintained unobstructed at
5 each standpipe hose connection for this purpose. Each staging area shall be identified by a
6 durable sign reading “FIRE DEPARTMENT STAGING AREA—KEEP CLEAR.”

7
8 **3605.4 Emergency communications and preparedness.** Emergency communications and
9 emergency preparedness shall be in accordance with FC 3605.4.1 and 3605.4.2.

10
11 **3605.4.1 Communications.** The marina shall be provided with a public address system or
12 other approved means of notifying occupants of a fire on the premises. A telephone not requiring
13 a coin to operate or another approved, clearly identified means to notify the department, shall
14 be provided on the premises in an approved location.

15
16 **3605.4.2 Emergency preparedness.** Marina owners shall designate and train a fire brigade in
17 fire emergency procedures, including the sounding of an alarm, notification to the department,
18 and operation of fire protection systems and portable fire extinguishers. A chart designating
19 the members of the fire brigade and indicating each person’s responsibilities shall be posted
20 on the premises in a conspicuous approved location.

21
22
23 **CHAPTER 37**
24 **COMBUSTIBLE FIBERS**

25
26 **SECTION FC [2901] 3701**
27 **GENERAL**

28
29 **[2901.1] 3701.1 Scope.** This chapter shall govern the storage and handling of combustible fibers.

30
31 **[2901.2] 3701.2 General.** Combustible fibers shall be stored and handled in accordance with this
32 chapter.

33
34 **[2901.3] 3701.3 Permits.** Permits shall be required as set forth in FC105.6.

35
36 **[2901.4] 3701.4 Approved facility or location.** Combustible fibers in quantities requiring a permit
37 shall be stored in an approved facility or other approved location.

38
39 **[2901.5] 3701.5 Prohibition.** It shall be unlawful to store combustible fibers in a quantity that
40 covers more than two-thirds of the floor area of any floor or in a quantity that is to a height greater
41 than two-thirds of the distance from the floor to the ceiling.

42
43 **SECTION FC [2902] 3702**
44 **DEFINITIONS**

1 **[2902.1] 3702.1 [Definition] Definitions.** The following [term] terms shall, for the purposes of
2 this chapter and as used elsewhere in this code, have the [meaning shown herein] meanings set
3 forth in FC202.

4
5 **BALED COTTON.** [A natural seed fiber wrapped in and secured with industry-accepted
6 materials, typically consisting of burlap, woven polypropylene, polyethylene or cotton or sheet
7 polyethylene, secured with wire or bands. The term baled cotton includes lint removed from the
8 cottonseed (linters) and residual materials from the ginning process (motes).]

9
10 **BALED COTTON, DENSELY PACKED.** [Baled cotton with a packing density of at least
11 22 pounds per cubic foot (360 kg/m³). A bale of densely-packed baled cotton typically measures
12 55 inches (1397 mm) in length, 21 inches (533 mm) in width, and 27.6 to 35.4 inches (701 to
13 899 mm) in height.]

14
15 **COMBUSTIBLE FIBERS.** [Readily ignitable and free-burning materials in a fibrous or shredded
16 form, such as cocoa fiber, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, sisal,
17 Spanish moss, straw, tow, wastepaper, or other natural or synthetic fibers that possess similar
18 qualities, but excluding densely packed baled cotton.]

19
20 **SEED COTTON.** [Cotton in its raw, unprocessed (unginned) form, an agricultural commodity
21 consisting of cotton fiber (lint) attached to the seed of the cotton plant.]

22
23 **SECTION FC [2903] 3703**
24 **GENERAL REQUIREMENTS**

25
26 **[2903.1] 3703.1 Combustible waste.** Ashes, rubbish or other combustible waste shall not be
27 placed in wooden or other combustible containers and shall be removed daily from the facility.

28
29 **[2903.2] 3703.2 Vegetation.** Grass, vines, weeds, brush or other combustible vegetation shall not
30 be allowed to accumulate within 15 feet (4570 mm) of any combustible fiber storage location.

31
32 **[2903.3] 3703.3 Clearances.** A minimum clearance of 3 feet (914 mm) shall be maintained
33 between sprinkler heads and the top of piles.

34
35 **[2903.4] 3703.4 Agricultural products.** Hay, straw, seed cotton or similar agricultural products
36 shall not be stored in an area adjoining any combustible fiber storage location unless a clear
37 horizontal distance equal to the height of a pile is maintained between such agricultural products
38 and such storage location. Storage shall be limited to stacks of 100 tons (91 metric tons) each.
39 Stacks shall be separated by a minimum of 20 feet (6096 mm) of clear space.

40
41 **[2903.5] 3703.5 Dust collection.** Where located within a building, devices, equipment and systems
42 that generate or emit combustible fibers shall be provided with an approved dust-collecting and
43 exhaust system. Such system shall comply with the requirements of FC Chapter [13] 22 and the
44 construction codes, including the Mechanical Code.

1 **[2903.6] 3703.6 Portable fire extinguishers.** Portable fire extinguishers shall be provided in
2 accordance with FC906 governing extra-hazard occupancy protection, as set forth in
3 FC Table 906.3.1.

4
5 **SECTION FC [2904] 3704**
6 **LOOSE FIBER STORAGE**
7

8 **[2904.1] 3704.1** Reserved.
9

10 **[2904.2] 3704.2 Storage of 100 cubic feet or less.** Loose combustible fibers in quantities of not
11 more than 100 cubic feet (3 m³) located in a building or structure shall be stored in a metal or
12 metal-lined bin equipped with a self-closing cover.

13
14 **[2904.3] 3704.3 Storage of more than 100 cubic feet to 500 cubic feet.** Loose combustible fibers
15 in quantities exceeding 100 cubic feet (3 m³) but not exceeding 500 cubic feet (14 m³) shall be
16 stored in rooms enclosed with 1-hour fire-resistance-rated fire barriers, with openings protected
17 by an approved opening protective assembly having a fire protection rating of ¾-hour, constructed
18 in accordance with the construction codes, including the Building Code.

19
20 **[2904.4] 3704.4 Storage of more than 500 cubic feet to 1,000 cubic feet.** Loose combustible
21 fibers in quantities exceeding 500 cubic feet (14 m³) but not exceeding 1,000 cubic feet (28 m³)
22 shall be stored in rooms enclosed with 2-hour fire-resistance-rated fire barriers, with openings
23 protected by an approved opening protective assembly having a fire protection rating of 1½-hours,
24 and constructed in accordance with the construction codes, including the Building Code.

25
26 **[2904.5] 3704.5 Storage of more than 1,000 cubic feet to 2,500 cubic feet.** Loose combustible
27 fibers in quantities exceeding 1,000 cubic feet (28 m³) but not exceeding 2,500 cubic feet (70 m³)
28 shall be stored in rooms enclosed with 2-hour fire-resistance-rated fire barriers, with openings
29 protected by an approved opening protective assembly having a fire protection rating of 1½-hours,
30 and constructed in accordance with the construction codes, including the Building Code. The
31 storage room shall be protected throughout by a sprinkler system.

32
33 **[2904.6] 3704.6 Storage of more than 2,500 cubic feet; detached storage structure.** Loose
34 combustible fibers in quantities exceeding 2,500 cubic feet (70 m³) but not exceeding 10,000 cubic
35 feet (280 m³) shall be stored in a detached structure suitably located, with openings protected
36 against entrance of sparks. The structure shall not be occupied for any other purpose. Loose
37 combustible fibers in quantities exceeding 10,000 cubic feet (280 m³) may be stored only with the
38 approval of the commissioner.

39
40 **[2904.7] 3704.7 Separation from hazardous materials.** No hazardous material shall be stored in
41 any room or detached structure containing loose combustible fibers.
42

43 **SECTION FC [2905] 3705**
44 **BALED STORAGE**
45

46 **[2905.1] 3705.1 Bale size and separation.** Baled combustible fibers shall be limited to single
47 blocks or piles not more than 25,000 cubic feet (700 m³) in volume, not including aisles or

1 clearances. Blocks or piles of baled fiber shall be separated from adjacent storage by aisles not less
2 than 5 feet (1524 mm) wide, or by flash-fire barriers constructed of continuous sheets of
3 noncombustible material extending from the floor to a minimum height of 1 foot (305 mm) above
4 the highest point of the piles and projecting not less than 1 foot (305 mm) beyond the sides of the
5 piles.

6
7 **[2905.2] 3705.2 Special baling conditions.** Sisal and other fibers in bales bound with combustible
8 tie ropes, jute and other fibers that swell when wet, shall be stored to allow for expansion in any
9 direction without affecting building walls, ceilings or columns. A minimum clearance of 3 feet
10 (914 mm) shall be required between walls and sides of piles, except that where the storage
11 compartment is not more than 30 feet (9144 mm) wide, the minimum clearance at side walls shall
12 be 1 foot (305 mm), provided that a center aisle not less than 5 feet (1524 mm) wide is maintained.

13
14 **SECTION FC [2906] 3706**
15 **STORAGE OF COMBUSTIBLE FIBERS ON WATERFRONT STRUCTURES**
16

17 **[2906.1] 3706.1 Scope.** This section shall govern the storage and handling of combustible fibers
18 on waterfront structures, including piers, wharfs and bulkheads except when combustible fibers
19 are stored and handled exclusively in sealed metal shipping containers.

20
21 **[2906.2] 3706.2 General.** Combustible fiber shall be stored and handled on waterfront structures
22 in accordance with this section.

23
24 **[2906.3] 3706.3 Prohibitions.** It shall be unlawful to:

- 25
26 1. Unload and store loose combustible fibers on a waterfront structure.
27
28 2. Conduct hot work operations on a waterfront structure where combustible fibers are in
29 storage or being handled.
30

31 **[2906.4] 3706.4 Supervision of standpipe and sprinkler systems.** A person holding a certificate
32 of fitness for a standpipe system and a certificate of fitness for sprinkler system maintenance shall
33 inspect the standpipe and sprinkler systems not more than 24 hours prior to the delivery of the
34 combustible fibers. Combustible fibers shall not be unloaded if the standpipe or sprinkler system
35 is out of service. While combustible fibers are present on the waterfront structure, the certificate
36 of fitness holder shall inspect the standpipe and sprinkler systems, and portable fire extinguishers
37 at least once each day. A record of all inspections shall be maintained on the premises and made
38 available for inspection by any representative of the department.

39
40 **[2906.5] 3706.5 Notification.** Before combustible fibers are unloaded to a waterfront structure
41 from any marine vessel, watercraft or motor vehicle, advance notice of at least 48 hours shall be
42 given to the department by the owner of the waterfront structure.

43
44 **[2906.6] 3706.6 Fire protection.** Waterfront structures where combustible fibers are stored or
45 handled shall be provided with fire protection in accordance with FC [2906.6.1] 3706.6.1 through
46 [2906.6.4] 3706.6.4.
47

1 **[2906.6.1] 3706.6.1 Superstructure.** The superstructure of the waterfront structure shall be
2 protected throughout by a sprinkler system.

3
4 **[2906.6.2] 3706.6.2 Substructure.** The substructure of the waterfront structure shall be
5 protected by one of the following methods:

- 6
7 1. Fire stops at intervals of 150 feet (45 720 mm); and
8
9 1.1. A sprinkler system arranged for discharge of water to the entire substructure area;
10 or
11
12 1.2. Protected openings through decking for revolving nozzles or other water discharge
13 equipment, so arranged as to permit water discharge onto the entire substructure
14 area. Such openings shall be a minimum of 6½ inches (165 mm) in diameter and
15 spaced at 25 feet (7620 mm) intervals longitudinally and transversely. No cargo
16 shall be stored on deck openings adjacent to the substructure fire stops and those in
17 the main and fire hose aisles.
18
- 19 2. A system of water spray nozzles arranged to permit water discharge onto the entire
20 substructure area and installed in accordance with the Building Code.
21
- 22 3. A system of trenches across the waterfront structure every 100 feet (30 480 mm). Such
23 trenches shall not exceed 12 inches (305 mm) in width, shall be of substantial
24 construction that conforms to the rest of the waterfront structure, shall extend to within
25 5 feet (1524 mm) of the sides of the waterfront structure, and shall have openings
26 protected in sections not to exceed 25 feet (7620 mm) for access or removal in the event
27 of fire. No cargo shall be placed directly above these openings, and durable signs shall
28 be conspicuously posted on the waterfront structure to indicate the location of these
29 openings.
30
- 31 4. A system of deck openings and under-deck sprinkler protection approved by the
32 commissioner. Openings shall be spaced at 25 feet (7620 mm) intervals longitudinally
33 and transversely. No cargo shall be placed directly above these openings, and durable
34 signs shall be conspicuously posted on the waterfront structure to indicate the location of
35 these openings.
36

37 **[2906.6.3] 3706.6.3 LPG or gasoline-fueled equipment.** Any LPG or gasoline-fueled
38 devices, equipment or systems used to handle combustible fibers, or operated in the immediate
39 area of combustible fiber storage or handling, shall be equipped with exhaust spark arresters
40 and carburetor traps.

41
42 **[2906.6.4] 3706.6.4 Portable fire extinguishers.** The combustible fiber storage area shall be
43 provided with portable fire extinguishers in accordance with FC906 governing extra-high
44 hazards (Class A fires).

45
46 **[2906.7] 3706.7 Storage and handling.** Bales of combustible fibers facing aisles shall be covered
47 on top and sides with tarpaulins or other suitable covering. Whenever possible, the combustible

1 fibers shall be stacked on one side of the waterfront structure only, preferably at the water end of
2 waterfront structure. Combustible fibers shall be tiered no higher than 12 feet (3658 mm) and a
3 clearance of not less than 18 inches (457 mm) between the sprinkler head and the upper level of
4 the top tier shall be maintained. An aisle space of not less than 5 feet (1524 mm) extending to the
5 side of the waterfront structure shall be provided at right angles to the main aisle at intervals not
6 exceeding 75 feet (22 860 mm) in the combustible fiber storage area.

7
8 **[2906.8] 3706.8 Operation and maintenance.** Waterfront structures upon which combustible
9 fibers are stored or handled shall be operated and maintained in compliance with the requirements
10 of FC [2906.8.1] 3706.8.1 through [2906.8.3] 3706.8.3.

11
12 **[2906.8.1] 3706.8.1 Fire guard.** A fire guard shall be required and positioned approximately
13 every 200 feet (60 960 mm) throughout the length of the combustible fiber storage area.
14 Persons conducting a fire watch shall have the duties and responsibilities set forth in
15 FC901.7.2.1 with respect to the areas being monitored in connection with combustible fiber
16 storage, and shall be familiar with the location of fire alarm manual pull stations, and standpipe
17 system hose and hose connections in the area.

18
19 **[2906.8.2] 3706.8.2 Access.** Access to combustible fibers and the aisles between the stored
20 combustible fibers shall be restricted to personnel handling the combustible fibers, fire guards
21 and representatives of the department.

22
23 **[2906.8.3] 3706.8.3 Loading and unloading.** When loading and unloading combustible fibers,
24 two persons shall be assigned to each loading or unloading operation to stand by with the
25 standpipe hose. These persons shall be instructed as to the location and use of the standpipe
26 system valves and hoses.

27
28
29 **CHAPTERS 38 AND 39**
30 **RESERVED**

31
32
33 **CHAPTER 40**
34 **DISTILLERIES**

35
36 **SECTION FC 4001**
37 **GENERAL**

38
39 **4001.1 Scope.** This chapter governs the design, installation, operation and maintenance of
40 distilleries, including the manufacturing, storage, handling and use of distilled spirits in such
41 facilities. Storage of distilled spirits in a warehouse or a liquid storage warehouse that is not a
42 distillery is governed by FC5704.3. Any occupancy with ancillary distillery operations is a
43 distillery regulated by this section.

44
45 Exceptions:
46

1 1. Storage of distilled spirits in a warehouse, liquid storage warehouse or other storage facility
2 that is not a distillery is governed by FC5704.3.

3
4 2. Bottling and related processing of distilled spirits, including blending, filtering, and other
5 handling of distilled spirits, but excluding distilling, in a warehouse, liquid storage warehouse
6 or other storage facility that is not a distillery, shall be conducted in accordance with FC5705
7 or as otherwise provided in the rules.

8
9 **4001.2 Permits.** Permits shall be required as set forth in FC105.6.

10
11 **4001.3 General.** The design, installation, operation and maintenance of distilleries, including the
12 manufacturing, storage, handling and use of distilled spirits, shall be in accordance with this
13 chapter. Nothing contained in this chapter shall authorize operations or facilities in contravention
14 of Federal, State and City laws, rules and regulations governing distilled spirits, including the
15 regulations of the Tax and Trade Bureau of the United States Treasury Department and the New
16 York State Liquor Authority.

17
18 **4001.3.1 Special approval for distilleries with widely-separated operations.** The
19 department, in its discretion, may approve alternative design, installation, operational and
20 maintenance standards, including alcohol storage in excess of 20,000 gallons (75 700 L), on
21 a case-by-case-basis, for any distillery housed in a detached building exclusively occupied
22 for such purpose, which, by reason of its size (floor area and ceiling height) is able to mitigate
23 the hazards associated with the distilling process by maintaining substantial separation
24 between its stills and other distillery equipment and between its distilled spirits processing
25 area and other distillery operations. The department may apply distilled spirits industry
26 design standards for such distilleries, in whole or in part, in light of the distillery's design,
27 construction and location.

28
29 **4001.3.2 Special approval for distilleries based on performance standards.** The
30 department, in its discretion, may approve alternative design, installation, operation and
31 maintenance requirements, including distilled spirits industry design standards, where the
32 applicant demonstrates that the design of the still, alcohol storage and handling equipment,
33 grain handling equipment and/or other equipment mitigate the hazards associated with
34 distillery operations.

35
36 **4001.3.3 Special approval for existing distilleries.** The department, in its discretion, may
37 approve by rule and/or individual modification alternative design and installation
38 requirements for distilleries existing prior to the effective date of this section.

39
40 **4001.4 Acceptance testing.** Prior to commencement of distillery operations:

41
42 1. The still and all piping associated with alcohol processing equipment shall be inspected and
43 tested by, or in the presence of, a certificate of fitness holder at the time of installation to
44 ensure that the equipment is in good working order; and

45
46 2. Electrical wiring, equipment and installations shall be installed in accordance with the
47 construction codes, including the Building Code and the Electrical Code.

1
2 **4001.5 Prohibitions.** It shall be unlawful to:

- 3
4 1. Store more than 20,000 gallons (75 700 L) of alcohol in any distillery, except as may be
5 authorized by the department pursuant to FC4001.3.1
6
7 2. Conduct distilling, alcohol processing or bottling above the second floor of any building, or
8 in any basement, cellar or other below grade location, except as authorized by the department.
9
10 3. Establish or operate a distillery in any building housing a Group E, R-2 or I occupancy, or
11 in which Group A occupancy is the dominant occupancy, except as authorized by the
12 department.

13
14 **4001.6 Supervision.** Distilleries and distillery operations shall be under the supervision of a
15 certificate of fitness holder, as follows:

- 16
17 1. Still operation, and periodic testing of stills, shall be personally conducted by a certificate
18 of fitness holder.
19
20 2. Distillery equipment other than stills shall be operated under the personal supervision of a
21 certificate of fitness holder.
22
23 3. All other distillery operations, including the storage of raw alcohol and distilled spirits, shall
24 be under the general supervision of a certificate of fitness holder.
25
26 4. The installation, alteration, repair or servicing of stills and other distillery equipment shall
27 be conducted under the personal supervision of a still installation certificate of fitness holder
28 or other person with approved qualifications.

29
30 **4001.7 Other alcohol products.** Manufacturing, storage, handling and use in a distillery of alcohol
31 products that are not raw alcohol or distilled spirits shall comply with the requirements of FC4007.

32
33 **4001.8 Very low flammability.** Any distillery that exclusively manufactures, stores, handles and
34 uses beverage alcohol that is a Class I liquid with an alcohol content by volume of 20 percent or
35 less (including raw alcohol, process alcohol and finished products) may apply to the Department
36 to be exempted from design and installation requirements of this chapter.

37
38 **4001.9 Combustible dust.** Any distillery that generates combustible dust shall comply with the
39 requirements for combustible dust-producing operations set forth in FC Chapter 22 and this
40 chapter.

41
42 **4001.10 Emergency response plan.** Each distillery shall prepare and maintain an emergency
43 response plan to address fires; spills, vapor releases and other accidental discharges; and distillery
44 equipment alarms. Distilleries may utilize emergency plans developed in compliance with OSHA
45 or New York State Department of Labor regulations, provided that they address all matters
46 required by this chapter. The certificate of fitness holder shall train all distillery staff to implement

1 such emergency response plan, including appropriate mitigating and reporting actions necessitated
2 by fire, leak or spill.

3
4 **SECTION FC 4002**
5 **DEFINITIONS**
6

7 **4002.1 Definitions.** The following terms shall, for the purposes of this chapter and used elsewhere
8 in this code, have the meanings set forth in FC202.

9
10 **ALCOHOL STORAGE AREA.**

11
12 **BEVERAGE ALCOHOL.**

13
14 **Distilled Spirits.**

15
16 **Finished Goods.**

17
18 **Process Alcohol.**

19
20 **Raw Alcohol.**

21
22 **CHEMICAL STORAGE BUILDING.**

23
24 **DISTILLED SPIRITS PROCESSING AREA.**

25
26 **DISTILLERY.**

27
28 **Small Distillery.**

29
30 **Medium Distillery.**

31
32 **Large Distillery.**

33
34 **DISTILLERY EQUIPMENT.**

35
36 **Alcohol Process Tank.**

37
38 **Closed Alcohol Process Tank.**

39
40 **Open Alcohol Process Tank.**

41
42 **Alcohol Storage Equipment.**

43
44 **Barrel.**

45
46 **Intermediate Bulk Container.**
47

1 Alcohol Storage Tank.

2
3 Still.

4
5 DISTILLERY OPERATIONS.

6
7 Alcohol Processing.

8
9 Bottling.

10
11 Distilling.

12
13 DISTILLERY SERVING AREA.

14
15 DISTILLERY WASTE PRODUCTS.

16
17 **SECTION FC 4003**
18 **DESIGN AND INSTALLATION REQUIREMENTS**
19 **FOR DISTILLERY FACILITIES**
20

21 **4003.1 General.** The building housing a distillery shall be designed and installed in accordance
22 with this section. Design and installation documents shall be submitted for department review and
23 approval.

24
25 **4003.2 Occupancy type.** Distilleries shall be housed in buildings and occupancies with the
26 following occupancy classifications:

- 27
28 1. A small distillery shall be located in a building or space designed as an F-1 factory
29 occupancy as set forth in FC4003.4.1. Such factory occupancy may be located in a
30 mixed-occupancy building, except as otherwise provided in FC4001.5(3).
31
32 2. A medium distillery shall be located in a high-hazard occupancy, as set forth in FC4003.4.1,
33 in a building in which Group F occupancy is the dominant occupancy
34
35 3. A large distillery shall be located in a separate building or in a detached building, which is
36 classified as a high-hazard occupancy.
37

38 **4003.3 Maximum still capacity and maximum allowable quantity.** Maximum still capacities
39 shall be based upon distillery size, as set forth in FC Table 4003.3. The maximum allowable
40 quantity of alcohol, of any type, shall not exceed the amounts set forth in FC Table 4003.3 and
41 FC4003.3.1 through 4003.3.3, except as authorized by the department.
42

43 **FC TABLE 4003.3**
44 **MAXIMUM STILL CAPACITIES AND MAXIMUM ALLOWABLE QUANTITIES**

<u>Distillery</u> <u>Size</u>	<u>Maximum</u> <u>Individual</u> <u>Still Capacity</u>	<u>Aggregate</u> <u>Maximum</u> <u>Still</u> <u>Capacity</u>	<u>Maximum</u> <u>Allowable</u> <u>Quantity per</u> <u>Control Area</u> ^a	<u>Aggregate</u> <u>Maximum</u> <u>Allowable</u> <u>Quantity</u> ^b	<u>Additional Storage</u> <u>Allowance per</u> <u>Control Area for</u> <u>Beverage Alcohol</u>	<u>Maximum</u> <u>Aggregate</u> <u>Allowable Quantity</u> <u>of Beverage</u>
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					<u>and Precursors <20% ABV^c</u>	<u>Alcohol and Precursors <20% ABV^d</u>
<u>Small distillery</u>	<u>125 gallons (473 L)</u>	<u>250 gallons (946 L)</u>	<u>750 gallons (2839 L)</u>	<u>1,500 gallons (5678 L)</u>	<u>750 gallons (2839 L)</u>	<u>1,500 gallons (5678 L)</u>
<u>Medium distillery</u>	<u>750 gallons (2839 L)</u>	<u>1,500 gallons (5678 L)</u>	<u>2,000 gallons (7570 L)</u>	<u>6,000 gallons (22 710 L)</u>	<u>4,000 gallons (15 140 L)</u>	<u>8,000 gallons (30 280 L)</u>
<u>Large distillery</u>	<u>2,000 gallons (7570 L)</u>	<u>8,000 gallons (30 280 L)</u>	<u>4,000 gallons (15 140 L)</u>	<u>20,000 gallons (75 700 L)</u>	<u>8,000 gallons (30 280 L)</u>	<u>16,000 gallons (60 560 L)</u>

- 1 a. The maximum allowable quantity per control area comprises all raw alcohol and distilled spirits stored on the premises, excluding the amounts of finished goods allowed by FC4005.2.5.
- 2
- 3 b. The aggregate maximum allowable quantity comprises all raw alcohol and distilled spirits stored on the premises, excluding the amounts of finished goods allowed by FC4005.2.5. These amounts are reduced in a combined fire area pursuant to FC4003.4.2 to 1,000 gallons (small distillery); 2,000 gallons (medium distillery); and 4,000 gallons (large distillery).
- 4
- 5 c. Additional allowance per control area applies to beverage alcohol and flammable beverage alcohol precursors, up to a maximum of 20% alcohol content by volume (ABV), clearly labelled as such in accordance with Federal or other applicable regulations.
- 6
- 7
- 8 d. Maximum aggregate allowable quantity stored on the premises of beverage alcohol and flammable beverage alcohol precursors, up to a maximum 20% alcohol content by volume (ABV), clearly labelled as such in accordance with Federal or other applicable regulations. These amounts are reduced in a combined fire area pursuant to FC4003.4.2 to 1,000 gallons (small distillery); 4,000 gallons (medium distillery); and 8,000 gallons (large distillery).
- 9
- 10
- 11
- 12
- 13

14 **4003.3.1 Small distillery.** The maximum allowable quantity in a small distillery shall be 750 gallons (2839 L) per control area. An additional 750 gallons (2839 L) of beverage alcohol and flammable beverage alcohol precursors, with an alcohol content by volume of 20 percent or less, may be stored, handled or used per control area.

15

16

17

18

19 **4003.3.2 Medium distillery.** The maximum allowable quantity in a medium distillery shall be 2,000 gallons (7570 L) per control area. An additional 4,000 gallons (15 140 L) of beverage alcohol and flammable beverage alcohol precursors, with an alcohol content by volume of 20 percent or less, may be stored, handled or used per control area.

20

21

22

23

24 **4003.3.3 Large distillery.** The maximum allowable quantity in a large distillery shall be 4,000 gallons (15 140 L) per control area. An additional 8,000 gallons (30 280 L) of beverage alcohol and flammable beverage alcohol precursors, with an alcohol content by volume of 20 percent or less, may be stored, handled or used per control area.

25

26

27

28

29 **4003.4 Fire separations.** Except as otherwise provided in FC 4003.4.1 and 4003.4.2, a minimum of 1-hour fire barriers or horizontal assemblies, or both, constructed in accordance with the Building Code, including self-closing doors, shall be installed to separate the following distillery operations from each other:

30

31

32

33

34 1. Distilled spirits processing areas.

35

36 2. Alcohol storage areas, except barrel storage.

37

38 3. Barrel storage areas.

39

40 4. Distillery serving area.

41

42 5. General business operations area and/or finished goods storage in excess of 250 gallons (946 L).

43

1
2 6. Other alcohol production areas.

3
4 **4003.4.1 Factory and high-hazard areas.** The distilled spirits processing areas, alcohol
5 storage areas and barrel storage areas shall be constructed, in small distilleries, with the fire
6 barriers and horizontal assemblies required for a factory occupancy, and, in medium
7 distilleries, with the fire barriers and horizontal assemblies required for a high-hazard
8 occupancy.

9
10 **4003.4.2 Combined fire areas.** The distilled spirits processing areas, alcohol storage areas,
11 barrel storage areas and other alcohol production areas may be located in a single fire area
12 subject to the following requirements:

13
14 1. The total quantity of alcohol stored, handled or used in the fire area is limited as follows:
15 1,000 gallons (3785 L) in a small distillery; 2,000 gallons (7570 L) in a medium
16 distillery; 4,000 gallons (15 140 L) in a large distillery, and a maximum allowable
17 quantity of twice that amount for beverage alcohol and flammable beverage alcohol
18 precursors, with an alcohol content by volume of 20 percent or less, for medium and
19 large distilleries, and, in a small distillery, a maximum quantity of 1000 gallons
20 (3785 L).

21
22 2. Barrel storage shall be in accordance with FC4005.3. The barrel storage area shall be
23 separated by a wall, bollards or other approved separation designed to minimize the risk
24 from rolling barrels.

25
26 3. The entire fire area shall be provided with emergency alarm detection and exhaust
27 ventilation systems in accordance with FC4003.5.3 and 4003.7.

28
29 4. The entire fire area shall be provided with electrical wiring and equipment in
30 accordance with FC4003.8.

31
32 5. Grain mashing and fermenting may be conducted in such combined fire area. All grain
33 conveyance shall be in enclosed containers or systems. A combustible dust collection
34 system shall be provided for any unenclosed grain handling. No grain milling shall be
35 conducted in such combined fire area.

36
37 6. Additional quantities of alcohol shall be stored in a listed and approved chemical
38 storage building within the space, at an approved location, or in a separate fire area.

39
40 **4003.5 Fire protection systems.** Fire protection systems shall be provided in accordance with
41 FC 4003.5.1 through 4003.5.3.

42
43 **4003.5.1 Sprinkler system.** Distilleries shall be protected throughout by a sprinkler system
44 designed in accordance with the Building Code. The sprinkler system in a small distillery shall
45 be designed to be of an extra hazard type. The sprinkler system in a medium or large distillery
46 shall be designed for a high-hazard occupancy. Sprinkler systems for high-piled barrel storage
47 shall comply with the sprinkler requirements for such storage systems in accordance with

1 FC3206.4. Sprinkler systems for distilleries producing combustible dust shall comply with the
2 sprinkler requirements of NFPA 652.

3
4 **4003.5.2 Fire alarm system.** Distilleries shall be provided with a manual and automatic fire
5 alarm system. If the fire alarm system is part of a building system that provides protection to
6 other occupancies, a separate sprinkler water flow device shall be provided for the distillery
7 occupancy, except in a small distillery equipped with a smoke detection system. Such fire
8 alarm system shall activate alarm notification devices throughout the distillery and be
9 monitored by a central station.

10
11 **4003.5.3 Emergency alarm system.** Distilleries shall be provided with a gas detection system
12 designed to detect flammable vapors in accordance with FC908 in the distilled spirits
13 processing area and alcohol storage areas, and in any area of the distillery in which flammable
14 vapors in more than de minimis quantities may be released or accumulate. Such emergency
15 alarm system shall activate alarm notification devices throughout the distillery.

16
17 **4003.6 Explosion control.** Medium and large distilleries shall be provided with explosion control
18 designed in accordance with FC911 to mitigate the impact of an explosion.

19
20 **4003.7 Exhaust ventilation.** Exhaust ventilation shall be provided in accordance with Section
21 502.8 of the Mechanical Code in the distilled spirits processing area and alcohol storage areas, and
22 in any area of the distillery in which flammable vapors in more than de minimis quantities may be
23 released or accumulate.

24
25 **4003.8 Electrical wiring and equipment.** Electrical wiring and equipment shall be installed in
26 accordance with the Electrical Code. Class 1, Division 1 electrical wiring and equipment shall be
27 provided in the distilled spirits processing areas and alcohol storage areas, except that where a
28 closed system as defined in FC202 is being utilized in a distilled spirits processing area or alcohol
29 storage area, electrical wiring and equipment shall be provided as follows:

- 30
31 1. Class 1, Division 1 and Class I, Division 2 electrical wiring and equipment in accordance
32 with FC Table 5703.1.1 (for indoor equipment where flammable vapor/air mixtures could
33 exist under normal operations); and
34
35 2. Class 1, Division 1 electrical wiring and equipment in pits and behind containment barriers
36 where flammable vapor cannot dissipate horizontally; and
37
38 3. Class 2, Division 1 electrical wiring and equipment in any other area where combustible dust
39 may be present.

40
41 **4003.8.1 Lighting.** Distilled spirits processing areas, excluding barrel storage areas, shall be
42 well lighted to facilitate safe operation of distillery equipment and visibility of signage.

43
44 **4003.9 Mechanical equipment.** All stationary and portable electrically-powered and/or
45 heat-producing devices, equipment and systems, including space heating and cooling systems;
46 mechanical refrigerating systems; and conveyers, installed or used in a distilled spirits processing
47 area or alcohol storage area shall be suitable for a classified location in accordance with the

1 Electrical Code, the Mechanical Code and NFPA 30, as applicable, except where all alcohol
2 handling is in a closed system or where an explosion mitigation analysis indicates that the
3 equipment is outside of the classified area. No mechanical equipment with burners, or using other
4 flames or exposed electrical elements, shall be installed or used in distilled spirits processing areas
5 and alcohol storage areas. Air-driven power tools shall be used whenever practicable instead of
6 electrical tools; when electrical tools must be used, no distilling, alcohol processing or bottling
7 operations shall be conducted and the control area shall be clear of any flammable vapors.

8
9 **4003.10 Environmental control.** Stills shall be operated within the ambient temperature range
10 recommended by the still manufacturer and in accordance with distilled spirits industry standards.

11
12 **4003.11 Emergency power.** Gas detection systems and any exhaust ventilation system designed
13 to maintain flammable vapor concentration below the lower explosive limit shall be provided
14 with an emergency power system in accordance with the Building Code.

15
16 **4003.12 Spill control.** Drainage or containment systems to restrict and control spills, including
17 noncombustible and liquid-tight floors, shall be provided in distilled spirits processing areas and
18 alcohol storage areas in accordance with FC5004.2. A hose suitable for a classified environment
19 connected to a water supply shall be provided to facilitate dilution of any spills.

20
21 **4003.13 Storage areas.** Storage areas shall be designed and installed in accordance with
22 FC4005.

23
24 **4003.14 Impact protection.** Distillery equipment used to manufacture, store, handle or use
25 beverage alcohol, including storage tanks, shall be protected from accidental impact from powered
26 industrial trucks and other mechanical handling equipment in accordance with NFPA 505 and
27 distilled spirits industry standards.

28
29 **4003.15 Lightning protection.** Medium and large distilleries that occupy a separate building
30 shall be provided with lightning protection in accordance with the Electrical Code and
31 NFPA 780.

32
33 **SECTION FC 4004**
34 **DESIGN AND INSTALLATION REQUIREMENTS**
35 **FOR DISTILLERY EQUIPMENT**
36

37 **4004.1 General.** Distillery equipment shall be designed and installed in accordance with this
38 section and distilled spirits industry standards.

39
40 **4004.2 Listed or labeled.** Distillery equipment used to manufacture, store, handle or use beverage
41 alcohol shall be listed or labeled for the intended use, if listing and labeling exists for such
42 equipment. The department may accept international or other approved certifications for
43 components which are not listed and labeled by a nationally recognized testing laboratory.

44
45 **4004.3 Electrical wiring and equipment.** Distillery equipment used to manufacture, store, handle
46 or use beverage alcohol shall be bonded and grounded to protect against electrical discharge in
47 accordance with the Electrical Code.

1
2 **4004.4 Piping systems.** Piping systems for conveying Class I liquids, including piping, tubing,
3 valves, pumps, and fittings shall be designed, installed and maintained in accordance with
4 FC5703.6 and ASME B31.3, except that acceptance testing shall be conducted in accordance with
5 FC4001.4.
6

7 **4004.5 Stills.** Stills shall be designed and installed in accordance with FC 4004.5.1 through
8 4004.5.4.
9

10 **4004.5.1 Certificate of approval.** Stills shall be of a type for which a certificate of approval
11 has been issued in accordance with FC112 and the rules. On an interim basis, the department
12 may grant a site-specific approval of a still for which a manufacturer has not obtained a
13 certificate of approval upon a satisfactory showing by the permit applicant as to the still
14 manufacturer's design and installation specifications and operational and maintenance
15 requirements.
16

17 **4004.5.2 Installation.** Stills shall be stationary, by securing them in an approved manner.
18

19 **4004.5.3 Heat source.** Heating shall be by indirect means, using steam, hot water or other
20 approved method. Mechanical equipment with burners, or using other flames or exposed
21 electrical elements, shall not be installed. An emergency shutoff switch for the heat source
22 shall be provided at the entrance to the processing area.
23

24 **4004.5.4 Ingredients.** All liquid and solid ingredients shall be suitable for use in the still for
25 which a certificate of approval is sought.
26

27 **4004.6 Tanks and containers.** Alcohol handled and used during distilling and alcohol processing
28 shall be stored in alcohol process tanks in accordance with FC4005.
29

30 **4004.7 Barrels.** Barrels and barrel storage shall be designed in accordance with FC4005.3 and
31 distilled spirits industry standards.
32

33 **4004.8 Powered industrial trucks and other mechanical handling equipment.** Powered
34 industrial trucks shall be stored and used in accordance NFA 505 and distilled spirits industry
35 standards. Other mechanical handling equipment shall be stored and used in accordance with
36 distilled spirits industry standards.
37

38 **SECTION FC 4005**
39 **STORAGE OF ALCOHOL IN DISTILLERIES**
40

41 **4005.1 Alcohol storage tanks and containers.** In a distillery, raw alcohol and distilled spirits
42 shall be stored in tanks and containers designed and installed in accordance with FC Chapter 32
43 and NFA 30, as applicable, except as otherwise provided in Sections 4005.1.1 through
44 4005.1.5.
45

46 **4005.1.1 Aboveground storage.** Notwithstanding the provisions of FC 5701.7(3) and
47 5704.1.1, in a distillery raw alcohol, distilled spirits and other alcohol that is a Class II or III

1 liquid, shall be stored in an aboveground storage tank or aboveground intermediate bulk
2 container.

3
4 **4005.1.2 Tank and container construction.** All tanks and containers in which alcohol is
5 stored and handled, except barrel storage, shall be constructed of stainless steel and designed
6 in accordance with FC 5704, 5705.2 and 5705.3. Raw alcohol delivered to a distillery in a
7 plastic intermediate bulk container shall be expeditiously (but not later than the end of the
8 workday) transferred into a stainless steel storage tank or stainless steel intermediate bulk
9 container in accordance with FC4005.

10
11 **4005.1.3 Tank and container installation.** All tanks and containers in the distilled spirits
12 processing area and all tanks and containers which transfer their contents by piping or which
13 are otherwise part of a stationary installation, shall be securely affixed to the floor, to prevent
14 movement.

15
16 **4005.1.4 Portable tanks and containers.** Portable tanks and containers not required to be
17 affixed to the ground shall be placed in a location and manner in which they will remain stable.
18 Portable tanks and portable containers shall not be stacked unless such tanks and containers
19 are designed and listed for that purpose, and, if so, shall not be stacked more than two tiers
20 or 12 feet (3658 mm) above the floor. Powered industrial trucks or other suitable devices,
21 equipment or systems shall be used to lift and lower the portable tanks and portable
22 containers.

23
24 **4005.1.5 Open tanks and containers.** Any open alcohol process tank or alcohol storage
25 equipment shall have a vapor-tight lid or other similar form of closure. Such lid or closure shall
26 be kept closed at all times when the tank or container contains alcohol or alcohol residues,
27 except as necessary during handling and processing operations.

28
29 **4005.1.6 Separation and aisles.** Separation and aisles between storage tanks and containers
30 shall be in accordance with FC5704.3.7.2.2.

31
32 **4005.2 Distillery storage locations.** In a distillery, raw alcohol and distilled spirits shall be stored
33 in the locations specified in Sections 4005.2.1 through 4005.2.6, except as otherwise provided
34 in FC4003.4.2.

35
36 **4005.2.1 Storage of raw alcohol.** Raw alcohol shall be stored in an alcohol storage area. Raw
37 alcohol shall not be stored in distilled spirits processing areas, but shall be transferred from
38 the alcohol storage area to the still.

39
40 **4005.2.2 Storage of process alcohol.** Process alcohol shall be stored in the distilled spirits
41 processing area in alcohol process tanks, except for alcohol temporarily stored in portable
42 containers during processing, and barrel storage. Process alcohol undergoing aging in barrels
43 shall be stored in a separate fire area as set forth in FC4003.4.

44
45 **4005.2.3 Storage of distilled spirits ready for bottling.** Distilled spirits ready for bottling or
46 other packaging as finished goods shall be stored in distilled spirits process area in alcohol
47 process tanks or alcohol storage area.

1
2 **4005.2.4 Distillery waste products.** Any methanol, stillage or other residue that is susceptible
3 to spontaneous ignition or otherwise presents an imminent hazard shall be stored in an alcohol
4 storage area or other approved location. Any other distillery waste product, such as materials
5 contaminated with alcohol, shall be stored in a noncombustible container in the business
6 operations area and disposed of in accordance with FC304.

7
8 **4005.2.5 Finished goods.** Finished goods may be stored in the general business operations
9 area, distillery serving area, alcohol storage room and barrel storage room. Finished goods
10 shall not be counted toward the maximum allowable quantity of alcohol allowed in that fire
11 area.

12
13 **4005.3 Barrel storage.** Alcohol shall be stored in barrels in accordance with FC 4005.3.1 through
14 4005.3.2.

15
16 **4005.3.1 Barrel storage.** Barrels shall be stored on the floor, in a secure rack of substantial
17 construction in accordance with distilled spirits industry standards, or on pallets (with barrels
18 stored on their flat ends). Barrel storage shall be limited such that the top of the stored barrels
19 shall not exceed a height of 12 feet (3658 mm) above the floor, except as may be otherwise
20 approved by the department based on the location and manner of such high-piled storage and
21 a determination that barrel handling (including the dropping of a barrel or pallet of barrels)
22 does not present an undue hazard to other distillery operations. Barrels stored above floor level
23 shall be on approved shelves or racks designed and/or listed for such purpose. Barrel storage
24 more than 6 feet (1829 mm) above the floor shall be in compliance with Building Code
25 requirements, the high-piled combustible storage requirements of FC Chapter 32, and distilled
26 spirits industry standards.

27
28 **4005.3.2 Used barrels.** Barrels previously filled with distilled spirits shall be handled and
29 stored as if full unless cleaned and purged of vapors in accordance with distilled spirits industry
30 standards.

31
32 **SECTION FC 4006**
33 **OPERATIONAL AND MAINTENANCE REQUIREMENTS**
34 **FOR DISTILLERIES**
35

36 **4006.1 General.** Distilleries shall be operated and maintained in accordance with this section and
37 distilled spirits industry standards.

38
39 **4006.2 Operation of distillery serving area in distilleries.** Tasting rooms or other distillery
40 serving areas may be housed or operated in a distillery provided that such tasting rooms and
41 distillery serving areas are protected by a fire separation in accordance with FC4003.4. Any
42 commercial kitchen shall be operated in a fire area separated from distilled spirits processing areas
43 and alcohol storage areas in accordance with the Building Code.

44
45 **4006.3 Business operations area.** To the maximum extent practicable, the distilled spirits
46 processing areas and alcohol processing areas in a distillery shall be used solely for distilling and
47 alcohol processing. All other business operations, storage of other business equipment, deliveries

1 (including deliveries of raw alcohol and other raw materials) and shipments (including shipment
2 of finished goods), shall be conducted in a separate business operations area. Whenever
3 practicable, deliveries of raw alcohol and other raw materials shall not be made through the
4 distillery serving area or other area accessible to the public, or shall be made when those areas are
5 closed to the public.

6
7 **4006.4 Alcohol handling.** All transfers of alcohol into and between distillery equipment shall be
8 in accordance with FC5705.2.4, or other approved means.

9
10 **4006.5 Barrel filling and emptying.** Barrel filling and emptying, including the blending of
11 distilled spirits from barrel storage, shall be conducted in the alcohol processing area or bottling
12 area, except as otherwise provided in FC4003.4.2.

13
14 **4006.6 Staffing of facility.** A certificate of fitness holder shall be present on the premises at all
15 times when distilling and alcohol processing is being conducted, shall personally conduct any
16 distilling, and shall tend to the still at all times when in operation in accordance with distilled
17 spirits industry standards. The certificate of fitness holder shall also be present on the premises
18 during the transfer of raw alcohol from a shipping container into distillery equipment. At least one
19 other trained and knowledgeable person shall be present on the premises when the quantity of
20 alcohol undergoing distillation or alcohol processing exceeds 5 gallons (19 L).

21
22 **4006.7 Spill mitigation and reporting.** Leaks, spills or other uncontrolled discharges of raw
23 alcohol or distilled spirits shall be mitigated and reported in accordance with FC 4006.7.1,
24 4006.7.2, and 5003.3.

25
26 **4006.7.1 Spill mitigation.** Spills of raw alcohol or distilled spirits shall be contained and, if
27 practicable, promptly diluted by water. Spills shall be mitigated using a spill kit suitable for
28 flammable alcohol and the flammable or combustible waste disposed of in accordance with
29 applicable laws, rules and regulations. Floor drains shall only be used for collection and/or
30 disposal of spills when approved by the department. The distillery's spill mitigation and
31 reporting procedures shall be set forth in the distillery's emergency response plan.

32
33 **4006.7.2 Cessation of distillery operations.** In the event of a leak, spill or uncontrolled
34 discharge, distillery operations unrelated to the mitigation of the release shall immediately
35 cease. Distillery operations shall resume only when the hazard has been mitigated and the
36 spilled material has been removed.

37
38 **4006.8 Combustible materials.** Packaging materials and other combustible materials shall not
39 be stored in the distilled spirits processing area or barrel storage areas except as needed for
40 immediate use. Additional (bulk) storage of such materials shall be located in the business
41 operations area of the distillery. Idle pallets of wood and other combustible materials shall be
42 stored in the business operations area of the distillery in accordance with FC Chapter 32.

43
44 **4006.9 Distillery waste products.** Any methanol, stillage or other distillery waste product shall
45 be collected and disposed of in accordance with FC304. Such waste shall be removed from the
46 distilled spirits processing areas and alcohol processing areas immediately upon completion of the

1 distilling or alcohol processing operation from which it was generated, and stored in accordance
2 with FC4005.2.4.

3
4 **4006.10 Public access and tours.** Persons not conducting necessary distillery operations shall not
5 be allowed in the distilled spirits processing areas and alcohol storage areas during distilling or
6 alcohol processing operations, except distillery tours may be conducted in designated locations
7 within such areas, as authorized by the department, and supervised by a certificate of fitness holder.
8 Non-distillery staff shall be restricted to the distillery serving area and general business operations
9 area.

10
11 **4006.11 Maintenance of equipment.** All distillery equipment shall be periodically inspected,
12 tested and otherwise maintained in accordance with the original equipment manufacturer's
13 instructions, distilled spirits industry standards, and all applicable laws, rules and regulations. The
14 original equipment manufacturer's manuals for the installation, operation and maintenance of all
15 distillery equipment shall be maintained on the premises and made available for inspection by any
16 representative of the department.

17
18 **4006.12 Sources of ignition.** Safety precautions shall be taken to prevent ignition of flammable
19 liquids or vapors from any potential ignition source, including any heat, friction or electrical
20 current generated in connection with cleaning, maintenance and repair work.

21
22 **4006.12.1 Smoking.** It shall be unlawful to smoke in a distillery. "No Smoking" signs shall be
23 posted in accordance with FC310.

24
25 **4006.12.2 Open flames.** Open flames, including barrel charring operations, are prohibited in
26 the distilled spirits processing area and other alcohol production areas, except as authorized by
27 the department.

28
29 **4006.12.3 Environmental control.** The ambient room temperature and other environmental
30 factors in the distilled spirits processing area and storage areas shall be kept within limits
31 suitable for safe distilling and alcohol processing operations and alcohol storage, as applicable.

32
33 **4006.13 Signage and markings.** NFPA 704 signage shall be posted at the entrance to the distilled
34 spirits processing areas, and storage and barrel storage areas, in accordance with FC5003.5. The
35 pipng shall be marked in accordance with FC5703.5.

36
37 **4006.14 Portable fire extinguishers.** Portable fire extinguishers shall be provided in accordance
38 with FC906.

39
40 **4006.15 Safety data sheets.** Safety data sheets shall be maintained on the premises in accordance
41 with FC5003.4.

42
43 **SECTION FC 4007**
44 **OTHER ALCOHOL PRODUCTION**
45

1 **4007.1 Scope.** This section governs the materials and processes used to produce alcohol for
2 distilling, including grain storage, handling and milling, mashing and fermenting, and any
3 byproducts generated from those processes.
4

5 **4007.2 General.** All materials and processes governed by this section shall be designed, installed,
6 operated and maintained in accordance with this section and distilled spirits industry standards.
7

8 **4007.3 Grain storage, handling and milling.** Distilleries shall be designed, installed operated
9 and maintained to safely store, handle and use any grain or other raw material used in milling,
10 mashing and fermenting operations that generates combustible dust, as defined in FC2202.1. A
11 hazard analysis shall be conducted based on the quantity and processing of the grain or other
12 combustible dust-producing raw material in accordance with NFPA 652. The distillery shall be
13 designed and/or equipped as required by NFPA 652 based on the type and amount of combustible
14 dust that could be generated, including the following safety measures, as applicable:
15

16 1. Except as otherwise provided in FC4003.2(1), the storage, handling and milling of grain
17 or other combustible dust-producing raw material shall be conducted in a space that is
18 constructed as a high hazard occupancy in accordance with the Building Code; and/or
19

20 2. Except as otherwise provided in FC4003.4.2, the storage, handling and milling of grain or
21 other combustible dust-producing raw material shall be conducted in a space separated by
22 fire separations from the distilled spirits processing areas and alcohol processing areas and
23 alcohol storage areas; and/or
24

25 3. A mechanical ventilation system shall be provided to prevent the concentration of
26 combustible dust from reaching explosive levels in accordance with FC Table 2204.1; and/or
27

28 4. Specialized dust collection systems and devices shall be provided to reduce the amount of
29 atmospheric combustible dust; and/or
30

31 5. Grain or other combustible dust-producing raw material shall be stored in suitable
32 containers; and/or
33

34 6. Limitations shall be established on the quantity of grain or other combustible-dust producing
35 raw material that can be stored, handled and milled at the distillery at one time.
36

37 **4007.4 Design of facility.** The space used for grain storage, handling and milling, mashing and
38 fermenting, and/or related operations shall meet the requirements of FC 4007.4.1 through
39 4007.4.3.
40

41 **4007.4.1 Separation from distilled spirits and alcohol processing areas.** Such space shall
42 be separated by fire separations from the distilled spirits processing areas and alcohol
43 processing areas and alcohol storage areas, or shall meet the requirements for such areas as
44 set forth in FC4003.
45

1 **4007.4.2 Fire protection systems.** Such space shall be equipped with fire protection systems
2 in accordance with FC4003.5, notwithstanding the provision of fire separation pursuant to
3 FC4007.4.1.

4
5 **4007.4.3 Mechanical equipment.** No mechanical equipment with burners or using other
6 flames or exposed electrical elements, may be installed or used, notwithstanding the provision
7 of fire separation pursuant to FC4007.4.1.

8
9 **4007.5 Other alcohol production waste.** Any byproduct or residue generated by grain storage,
10 handling and milling, mashing and fermenting and/or related operations, including combustible
11 liquids, combustible waste and carbon dioxide, shall be handled or mitigated in a manner
12 appropriate for the level of hazard that it presents. Where the carbon dioxide generated by other
13 alcohol production may exceed United States Occupational Safety and Health Administration
14 safety limits, an oxygen sensor or other approved or listed device shall be installed.

15
16
17 **CHAPTERS 41 THROUGH 49**
18 **RESERVED**

19
20
21 **CHAPTER 50**
22 **HAZARDOUS MATERIALS—GENERAL PROVISIONS**

23
24 **SECTION FC [2701] 5001**
25 **GENERAL**

26
27 **[2701.1] 5001.1 Scope.** This chapter shall govern the storage, handling, use and transportation of
28 hazardous materials. Hazardous material storage, handling and use shall additionally comply with
29 the requirements of the New York State Department of Environmental Conservation regulations,
30 as set forth in 6 NYCRR Parts [595] 596 through [614] 613.

31
32 **Exceptions:**

- 33
34 1. The storage, handling and use in retail or wholesale [sales] mercantile occupancies of
35 alcoholic beverages, medicines, foodstuffs, cosmetics, and consumer products containing
36 not more than 50 percent by volume of water-miscible liquids and with the remainder of
37 the solutions not being flammable, when packaged in individual containers not exceeding
38 1.3 gallons (5 L) in volume.
39
40 2. Storage, handling and use of hazardous materials for agricultural purposes as a pesticide,
41 fertilizer or similar application, when approved for such use by the regulatory agency
42 having jurisdiction and when such storage, handling and use is in accordance with the
43 manufacturer's instructions.
44
45 3. Reserved.
46
47 4. Reserved.

- 1
- 2 5. Refrigerating systems when designed, installed, operated and maintained in accordance
- 3 with the Mechanical Code and FC606.
- 4
- 5 6. Stationary energy storage [battery] systems when designed, installed, operated and
- 6 maintained in accordance with FC608 and the rules.
- 7
- 8 7. The storage, handling and use, including storage for sale, of fireworks, in accordance
- 9 with FC Chapter [33] 56.
- 10
- 11 8. The storage, handling and use of corrosives in Group M occupancies, including storage
- 12 for sale, of personal and household products, when in the manufacturer's original
- 13 consumer packaging.
- 14
- 15 9. The storage of [distilled spirits and] wines in wooden barrels and casks.
- 16
- 17 10. The manufacturing, storage, handling and use of distilled spirits in distilleries in
- 18 accordance with FC Chapter 40.
- 19
- 20 11. The use of [wall-mounted] dispensers containing alcohol-based hand rubs classified as
- 21 Class I or Class II liquids, when stored, handled and used in accordance with
- 22 [FC3405.5] FC5705.5.
- 23

24 **[2701.1.1] 5001.1.1 Relationship with other chapters.** This chapter shall apply to all
25 hazardous materials, including those materials regulated elsewhere in this code, except that
26 when specific requirements inconsistent with the provisions of this chapter are set forth
27 elsewhere in this code, those specific requirements shall apply to the extent that they are
28 inconsistent. Where a material is in multiple hazard categories, compliance with each hazard
29 category shall be required. Where a material is both a physical hazard and a health hazard,
30 compliance with the requirements for each hazard category shall be required.

31
32 **[2701.2] 5001.2 Material classification.** Hazardous materials shall be classified by physical
33 hazard, health hazard and/or other hazards associated with the properties of the material, or if the
34 hazardous material is a mixture, with the hazards associated with the mixture as a whole. The
35 commissioner may determine the appropriate hazard classification of a hazardous material, or may
36 accept the classification set forth in nationally recognized standards, [material] safety data sheets,
37 or other approved standard or method.

38
39 **[2701.2.1] 5001.2.1** Reserved.

40
41 **[2701.2.2 Reserved.] 5001.2.2 Hazard categories.** Hazardous materials shall be classified
42 according to hazard categories. The categories include materials regulated by this chapter and
43 materials regulated elsewhere in this code.

44
45 **[2701.2.2.1] 5001.2.2.1 Physical hazards.** The material categories listed in this section are
46 classified primarily as physical hazards.

- 1 1. Explosives and blasting agents.
- 2
- 3 2. Combustible liquids.
- 4
- 5 3. Flammable solids, liquid and gases.
- 6
- 7 4. Organic peroxide solids or liquids.
- 8
- 9 5. Oxidizing solids or liquids.
- 10
- 11 6. Oxidizing gases.
- 12
- 13 7. Pyrophoric solids or liquids.
- 14
- 15 8. Unstable (reactive) solids, liquids or gases.
- 16
- 17 9. Water-reactive solids and liquids.
- 18
- 19 10. Cryogenic fluids.

20
21 **[2701.2.2.2] 5001.2.2.2 Health hazards.** The material categories listed in this section are
22 classified primarily as health hazards.

- 23
- 24 1. Highly toxic and toxic materials.
- 25
- 26 2. Corrosive materials.
- 27

28 **[2701.3] 5001.3** Reserved.

29
30 **[2701.4] 5001.4 Retail and wholesale storage and display.** For retail and wholesale storage and
31 display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials
32 in Group M occupancies and storage in Group S occupancies, see [FC2703.11] FC5003.11.

33
34 **[2701.5] 5001.5 Permits.** Permits shall be required as set forth in FC105.6.

35
36 **[2701.5.1] 5001.5.1 Hazardous Materials Management Plan.** The commissioner may
37 require an application for a permit to include a Hazardous Materials Management Plan
38 (HMMP). Such plan shall be drawn approximately to scale. The HMMP shall contain the
39 following:

- 40
- 41 1. Access to each area where hazardous materials are stored, handled or used.
- 42
- 43 2. Location of emergency equipment.
- 44
- 45 3. Location where liaison required by [FC2703.9.1.1] FC5003.9.1.1 will meet emergency
46 responders.
- 47

- 1 4. Facility evacuation meeting point locations.
- 2
- 3 5. The predominant use and/or occupancy of areas within the building where hazardous
- 4 materials are not stored or used.
- 5
- 6 6. Location of all aboveground and underground hazardous material storage tanks and their
- 7 appurtenances including, but not limited to, sumps, vaults, below-grade treatment
- 8 systems and piping.
- 9
- 10 7. The hazard classes of hazardous materials stored or used in each area.
- 11
- 12 8. Locations of all control areas and Group H occupancies.
- 13
- 14 9. Locations of exits.
- 15
- 16 10. Such other information and documentation as the commissioner may prescribe.
- 17

18 **[2701.5.2] 5001.5.2 Hazardous materials reporting.** The storage of hazardous materials shall
19 be reported as required by the New York State General Municipal Law Section 209-u. The
20 commissioner may require an application for a permit pursuant to this code to include a copy
21 of the current filing pursuant to such New York State General Municipal Law for the facility
22 or premises for which a permit is sought. The commissioner may also require an application
23 for a permit to include a Hazardous Materials Inventory Statement (HMIS), such as a statement
24 prepared for purposes of the Superfund Amendments and Reauthorization Act of 1986 (SARA)
25 Title III, Tier II Report, or other approved statement. The HMIS shall include the following
26 information:

- 27
- 28 1. Product name.
- 29
- 30 2. Chemical composition.
- 31
- 32 3. Chemical Abstract Service (CAS) number.
- 33
- 34 4. Location where stored or used.
- 35
- 36 5. Container size.
- 37
- 38 6. Hazard classification.
- 39
- 40 7. Quantity in storage.
- 41
- 42 8. Quantity in use-closed systems.
- 43
- 44 9. Quantity in use-open systems.
- 45

46 **[2701.6] 5001.6 Facility closure.** Facilities shall be placed permanently out of service in
47 accordance with FC [2701.6.2] 5001.6.2 and [2701.6.3] 5001.6.3 and, as applicable, with the New

1 York State Department of Environmental Conservation regulations as set forth in 6 NYCRR
2 Sections 598.10 and [613.9] 613.

3
4 **[2701.6.1] 5001.6.1** Reserved.

5
6 **[2701.6.2] 5001.6.2 Permanently out-of-service facilities.** Facilities that are not operated for
7 a period of more than 1 year or for which a permit has lapsed for more than 1 year shall be
8 deemed to be permanently out of service and shall be closed in an approved manner.

9
10 **[2701.6.3] 5001.6.3 Facility closure plan.** The commissioner may require permittees to apply
11 for approval to permanently close a facility that manufactures, stores, handles or uses
12 hazardous materials. Such application shall be submitted at least 30 calendar days prior to the
13 planned closure of the facility. Such plan and/or such other requirements as the commissioner
14 may prescribe shall demonstrate that hazardous materials that are manufactured, stored,
15 handled or used in the facility will be lawfully disposed of in a manner that eliminates the need
16 for further maintenance and any threat to public health and safety.

17
18 **SECTION FC [2702] 5002**
19 **DEFINITIONS**
20

21 **[2702.1] 5002.1 Definitions.** The following terms shall, for the purposes of this chapter, FC
22 Chapters [28] 51 through [44] 67, and as used elsewhere in this code, have the meanings [shown
23 herein] set forth in FC202.

24
25 **BOILING POINT.** [The temperature at which the vapor pressure of a liquid equals the
26 atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury.
27 Where a boiling point is unavailable for the material in question, or for mixtures which do not have
28 a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of
29 a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the
30 liquid.]

31
32 **CARGO TANK.** [A vehicle other than a railroad tank car, marine vessel, or watercraft with a tank
33 mounted thereon or built as an integral part thereof, used for the transportation of flammable or
34 combustible liquids, LPG or other hazardous materials, including self-propelled vehicles and full
35 trailers and semi-trailers, with or without motive power, and carrying part or all of the load.]

36
37 **CEILING LIMIT.** [The maximum concentration of an airborne contaminant to which one may
38 be exposed shall be as established by the regulations of the United States Department of Labor, as
39 set forth in 29 CFR Part 1910.1000, or if not listed therein, the ceiling Recommended Exposure
40 Limit (REL-C) concentrations published by the U.S. National Institute for Occupational Safety
41 and Health (NIOSH), the Threshold Limit Value — Ceiling (TLV-C) concentrations published by
42 the American Conference of Governmental Industrial Hygienists (ACGIH), the ceiling Workplace
43 Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial
44 Hygiene Association (AIHA), or other approved standard.]

45
46 **CHEMICAL.** [An element, chemical compound or mixture of elements or compounds or both.]
47

1 **CHEMICAL NAME.** [The scientific designation of a chemical in accordance with the
2 nomenclature system developed by the International Union of Pure and Applied Chemistry, the
3 Chemical Abstracts Service rules of nomenclature, or a name that will clearly identify a chemical
4 for the purpose of conducting an evaluation.]
5

6 **CLOSED CONTAINER.** [A container sealed by means of a lid or other device capable of
7 preventing the escape of liquid, vapor or dusts in the ordinary course of storage, handling or use.]
8

9 **CONTAINER.** [For solid and liquid hazardous materials, a vessel of 60 gallons (227 L) or less in
10 capacity used for storage or transportation. For compressed gases, a cylinder, pressure vessel or
11 tank designed for pressures greater than one atmosphere at 68°F (20°C). Pipes, piping systems,
12 engines and engine fuel tanks associated with solid or liquid hazardous materials or compressed
13 gases, shall not be deemed to be containers if in active use.]
14

15 **CONTROL AREA.** [Spaces within a building wherein quantities of hazardous materials not
16 exceeding the maximum allowable quantities per control area are stored, handled or used,
17 including any dispensing.]
18

19 **DEFLAGRATION.** [An exothermic reaction, such as the extremely rapid oxidation of a
20 flammable dust or vapor in air, in which the reaction progresses through the unburned material at
21 a rate less than the velocity of sound. A deflagration can have an explosive effect.]
22

23 **DESIGN PRESSURE.** [The maximum gauge pressure that a pressure vessel, device, component
24 or system is designed to withstand safely under the temperature and conditions of use.]
25

26 **DETACHED BUILDING.** [A separate single-story building, without a basement or crawl space,
27 used for the storage, handling or use of hazardous materials and located an approved distance from
28 other buildings or structures.]
29

30 **DISPENSING.** [The pouring or transferring by other means of any material from a container, tank
31 or similar vessel, which would release dusts, fumes, mists, vapors or gases to the atmosphere,
32 unless such release is prevented by a device, equipment or system designed for that purpose.]
33

34 **EXCESS FLOW CONTROL.** [A fail-safe system or other approved device, equipment or system
35 designed to shut off flow caused by a rupture in a pressurized piping system.]
36

37 **EXHAUSTED ENCLOSURE.** [A device, typically consisting of a hood equipped with a fan that
38 serves to capture and exhaust fumes, mist, vapors and gases generated at a workstation or other
39 local environment. An exhausted enclosure does not include a room provided with general
40 ventilation.]
41

42 **EXPLOSION.** [An effect produced by the sudden violent expansion of gases, whether or not
43 accompanied by a shock wave or disruption, of enclosing materials, including the effects of the
44 following sources of explosion:
45

- 46 1. Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of
47 molecules and runaway polymerization (usually detonations).

1
2 2. Physical changes such as pressure tank ruptures.

3
4 3. Atomic changes (nuclear fission or fusion).]

5
6 **FLAMMABLE VAPORS OR FUMES.** [The concentration of flammable constituents in air that
7 exceeds 25 percent of their lower flammable limit (LFL).]

8
9 **GAS CABINET.** [A fully enclosed, noncombustible enclosure used to provide an isolated
10 environment for compressed gas containers in storage or use, including any doors and access ports
11 for exchanging containers and accessing pressure-regulating controls.]

12
13 **GAS ROOM.** [A separately ventilated, fully enclosed room in which only compressed gases and
14 associated equipment and supplies are stored or used.]

15
16 **HANDLING.** [The movement of a material in its container, the removal of the material from its
17 container, or any other action or process that may affect the material, other than its storage or use.

18
19 **HAZARDOUS MATERIALS.** [Those chemicals or substances that are physical hazards or
20 health hazards as defined and classified in this chapter, whether the materials are in usable or waste
21 condition.]

22
23 **HEALTH HAZARD.** [A classification of a chemical for which there is statistically significant
24 evidence that acute or chronic health effects are capable of occurring in exposed persons. The term
25 “health hazard” includes chemicals that are toxic, highly toxic and corrosive.]

26
27 **IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).** [The concentration of
28 air-borne contaminants that poses a threat of death, immediate or delayed permanent adverse
29 health effects, or effects that could prevent escape from such an environment, as established by the
30 National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and
31 flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per
32 cubic meter (mg/m³). If adequate data do not exist for precise establishment of IDLH
33 concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate
34 regulatory agency or other source approved by the commissioner shall make such determination.]

35
36 **INCOMPATIBLE MATERIALS.** [Materials that, if mixed or combined, could explode,
37 generate heat, gases or other byproducts, or react in a way hazardous to life or property.]

38
39 **LABORATORY CHEMICAL.** [A material with a health, flammability and/or instability hazard
40 ranking of 2, 3 or 4 as defined in NFPA 704.]

41
42 **LABORATORY UNIT.** [An enclosed space of a minimum one-hour fire-rated construction,
43 designed or used as a non-production laboratory. Laboratory units may include one or more
44 separate laboratory work areas, and accessory storage rooms or spaces within or contiguous with
45 the laboratory unit, such as offices and lavatories.]

1 **LIQUID.** [A material having a melting point that is equal to or less than 68°F (20°C) and a boiling
2 point that is greater than 68°F (20°C) at 14.7 psia (101 kPa). When not otherwise identified, the
3 term “liquid” includes both flammable and combustible liquids.]
4

5 **LOWER EXPLOSIVE LIMIT (LEL).** [See “Lower flammable limit.”]
6

7 **LOWER FLAMMABLE LIMIT (LFL).** [The minimum concentration of vapor in air at which
8 propagation of flame will occur in the presence of an ignition source. The LFL is sometimes
9 referred to as LEL or lower explosive limit.]
10

11 **[MATERIAL SAFETY DATA SHEET (MSDS).** A document prepared in accordance with the
12 regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a
13 federally approved state OSHA plan which sets forth information concerning a hazardous
14 material.]
15

16 **MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA.** [The maximum amount
17 of a hazardous material allowed to be stored or used within an indoor or an outdoor control area.]
18

19 **NON-PRODUCTION LABORATORY.** [A building or portion thereof wherein chemicals or
20 gases are stored, handled or used on a non-production basis for testing, research, experimental,
21 instructional or educational purposes.]
22

23 **NORMAL TEMPERATURE AND PRESSURE (NTP).** [A temperature of 70°F (21°C) and a
24 pressure of 1 atmosphere (14.7 psia (101 kPa)).]
25

26 **OUTDOOR CONTROL AREA.** [An outdoor area that contains hazardous materials in amounts
27 not exceeding the maximum allowable quantities of FC Table 2703.1.1(3) or 2703.1.1(4).]
28

29 **PERMISSIBLE EXPOSURE LIMIT (PEL).** [The maximum allowed 8-hour time-weighted-
30 average concentration of an air-borne contaminant as established by the regulations of the United
31 States Department of Labor, as set forth in 29 CFR Part 1910.1000, the Recommended Exposure
32 Limit (REL) concentrations published by the U.S. National Institute for Occupational Safety and
33 Health (NIOSH), the Threshold Limit Value-Time Weighted Average (TLV-TWA) concentrations
34 published by the American Conference of Governmental Industrial Hygienists (ACGIH), the
35 Workplace Environmental Exposure Level (WEEL) Guides published by the American Industrial
36 Hygiene Association (AIHA), or other approved standard.]
37

38 **PESTICIDE.** [A substance or mixture of substances, including fungicides, but excluding any
39 product defined as a drug in the Federal Food, Drug and Cosmetic Act, intended for the purpose
40 of preventing, repelling or killing pests or pest infestations, or for use as a plant regulator, defoliant
41 or desiccant.]
42

43 **PRESSURE VESSEL.** [A closed vessel designed to operate at pressures above 15 psig (103
44 kPa).]
45

1 **SAFETY CAN.** [An approved container with a capacity of not more than 5-gallons (19 L) and
2 equipped with a spring-closing lid and spout cover designed to relieve internal pressure when
3 exposed to fire.]
4

5 **SAFETY DATA SHEET (SDS).**
6

7 **SECONDARY CONTAINMENT.** [A device, equipment or system designed to contain liquid or
8 solid, that is external to and separate from the primary containment device, equipment or system.]
9

10 **SOLID.** [A material that has a melting point and decomposes or sublimates at a temperature
11 greater than 68°F (20°C).]
12

13 **STANDARD CUBIC FEET (SCF).** [Cubic feet of gas at normal temperature and pressure
14 (NTP).]
15

16 **SYSTEM.** [An assembly of devices, equipment, containers, appurtenances, pumps, compressors
17 and connecting piping that is designed to perform a complex and/or complete function.]
18

19 **TANK, ATMOSPHERIC.** [A storage tank designed to operate at pressures from atmospheric
20 through 1.0 pound per square inch gauge (760 mm Hg through 812 mm Hg) measured at the top
21 of the tank.]
22

23 **TANK, PORTABLE.** [A container of more than 60-gallon (227 L) capacity, and designed to be
24 loaded into or on or temporarily attached to a transport vehicle, marine vessel, or watercraft and
25 equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical
26 means. It does not include any cargo tank or tank car.]
27

28 **TANK, STATIONARY.** [A container having not less than 1,000-pound (454 kg) water capacity,
29 designed primarily for stationary installations, and not intended to be moved in the course of
30 normal use.]
31

32 **VAPOR PRESSURE.** [The pressure exerted by a volatile fluid, as determined in accordance with
33 ASTM D 323.]
34

35 **SECTION FC [2703] 5003**
36 **GENERAL REQUIREMENTS**
37

38 **[2703.1] 5003.1 General.** Hazardous materials shall be manufactured, stored, handled, used and
39 transported in accordance with this chapter.
40

41 **[2703.1.1] 5003.1.1 Maximum allowable quantity per control area.** The maximum
42 allowable quantity per control area shall be as specified in FC Tables [2703.1.1(1)] 5003.1.1(1)
43 through [2703.1.1(4)] 5003.1.1(4), and for retail and wholesale storage and display in Group
44 M occupancies, and Group S storage, as specified in [FC2703.11] FC5003.11.
45

46 **Exceptions:** The maximum allowable quantity per control area requirements set forth in
47 FC Tables [2703.1.1(1)] 5003.1.1(1) through [2703.1.1(4)] 5003.1.1(4) shall not apply to:

- 1
2
3
4
5
6
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8
9
10
11
12
13
14
15
1. A construction site in an unoccupied building prior to issuance of a certificate of occupancy or temporary certificate of occupancy for such building. Maximum allowable quantity per control area requirements shall apply to a construction site in an occupied or partially occupied building, except as may be otherwise authorized by the department in writing.
 2. Liquid or gaseous fuel in fuel tanks on motor vehicles.
 3. Gaseous fuels in piping systems and fixed appliances regulated by the Fuel Gas Code.
 4. Liquid fuels in piping systems and fixed appliances regulated by the Mechanical Code.

16
17
18
19

[2703.1.2] 5003.1.2 Conversion. A conversion factor of 10 pounds per gallon (1.2 kg/L) shall be used to ascertain the weight per gallon of liquid when such weight is not provided or otherwise available to the commissioner.

20
21
22
23
24
25

[2703.1.3] 5003.1.3 Quantities not exceeding the maximum allowable quantity per control area. The storage, handling and use of hazardous materials in quantities not exceeding the maximum allowable quantity per control area indicated in FC Tables [2703.1.1(1)] 5003.1.1(1) through [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001 and [2703] 5003.

26
27
28
29
30
31

[2703.1.4] 5003.1.4 Quantities exceeding the maximum allowable quantity per control area. The storage, handling and use of hazardous materials in quantities exceeding the maximum allowable quantity per control area indicated in FC Tables [2703.1.1(1)] 5003.1.1(1) through [2703.1.1(4)] 5003.1.1(4) shall be in accordance with this chapter and, in a high-hazard occupancy, the requirements of the Building Code.

32
33
34
35

[2703.1.5] 5003.1.5 Additional specific requirements. The storage, handling and use of hazardous materials shall additionally comply with the specific requirements of FC Chapters [28] 51 through [44] 67, as applicable.

FC TABLE [2703.1.1(1)] 5003.1.1(1)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD^{a, i, m, n, q}

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED ^(q)	STORAGE ^b			USE-CLOSED SYSTEMS ^b			USE-OPEN SYSTEMS ^b	
			Solid [Pounds] pounds (cubic feet)	Liquid [Gallons] gallons (pounds)	Gas SCF	Solid [Pounds] pounds (cubic feet)	Liquid gallons (pounds)	Gas SCF	Solid [Pounds] pounds (cubic feet)	Liquid gallons (pounds)
[Combustible Liquid ^{c, i, r}]	[II] [IIIA] [IIIB]	[H-2 or H-3] [H-2 or H-3] [Not Applicable]	[Not Applicable]	[120 ^{d, e}] [330 ^{d, e}] [13,200 ^{e, f}]	[Not Applicable]	[Not Applicable]	[120 ^d] [330 ^d] [13,200 ^f]	[Not Applicable]	[Not Applicable]	[30 ^d] [80 ^d] [3,300 ^f]
<u>Combustible dust</u>	<u>Not Applicable</u>	<u>H-2</u>	<u>See Note q</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>See Note q</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>See Note q</u>	<u>Not Applicable</u>
Combustible fiber ^a	Loose Baled ^{(s), (z)}	H-3	(100) (1,000)	Not Applicable	Not Applicable	(100) (1,000)	Not Applicable	Not Applicable	(20) (200)	Not Applicable
<u>Combustible liquid^{c, i, r}</u>	<u>II</u> <u>IIIA</u> <u>IIIB</u>	<u>H-2 or H-3</u> <u>H-2 or H-3</u> <u>Not Applicable</u>	<u>Not Applicable</u>	<u>120^{d, e}</u> <u>330^{d, e}</u> <u>13,200^{e, f}</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>120^d</u> <u>330^d</u> <u>13,200^f</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>30^d</u> <u>80^d</u> <u>3,300^f</u>
Cryogenics [Flammable] <u>flammable</u>	Not Applicable	H-2	Not Applicable	45 ^d	Not Applicable	Not Applicable	45 ^d	Not Applicable	Not Applicable	10 ^d
<u>Cryogenics inert</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Limited</u>	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Limited</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
Cryogenics [Oxidizing] <u>oxidizing</u>	Not Applicable	H-3	Not Applicable	45 ^d	Not Applicable	Not Applicable	45 ^d	Not Applicable	Not Applicable	10 ^d
Explosives	Division 1.1	H-1	[1 ^{e, g}] 0	[(1) ^{e, g}] 0	Not Applicable	[0.25 ^g] 0	[(0.25) ^g] 0	Not Applicable	[0.25 ^g] 0	[(0.25) ^g] 0
	Division 1.2	H-1	1 ^{e, g}	(1) ^{e, g}		0.25 ^g	(0.25) ^g		0.25 ^g	(0.25) ^g
	Division 1.3	H-1 or H-2	5 ^{e, g}	(5) ^{e, g}		1 ^g	(1) ^g		1 ^g	(1) ^g
	Division 1.4	H-3	50 ^{e, g}	(50) ^{e, g}		50 ^g	(50) ^g		Not Applicable	Not Applicable
	Division 1.4G	H-3	125 ^{(d, j), (l)}	Not Applicable		Not Applicable	Not Applicable		Not Applicable	Not Applicable
	Division 1.5	H-1	1 ^{e, g}	(1) ^{e, g}		0.25 ^g	(0.25) ^g		0.25 ^g	(0.25) ^g
Division 1.6	H-1	1 ^{(d, j), (g)}	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable			
Flammable gas	Gaseous Liquefied	H-2	Not Applicable	Not Applicable (150) ^{d, e}	1,000 ^{d, e} Not Applicable	Not Applicable	Not Applicable (150) ^{d, e}	1,000 ^{d, e} Not Applicable	Not Applicable	Not Applicable
Flammable liquids ^{c, (k), (r)}	IA ^{(o), (z)}	H-2 or H-3	Not Applicable	30 ^{d, e}	Not Applicable	Not Applicable	30 ^d	Not Applicable	Not Applicable	10 ^d
	IB and IC	H-3	Not Applicable	120 ^{d, e}	Not Applicable	Not Applicable	120 ^d	Not Applicable	Not Applicable	30 ^d
[Combination] Flammable liquid, <u>combination</u> (IA ^{(o), (z)} , IB, IC)	Not Applicable	H-2 or H-3	Not Applicable	120 ^{d, e, h}	Not Applicable	Not Applicable	120 ^{d, h}	Not Applicable	Not Applicable	30 ^{d, h}
Flammable solid [Pigs, ingots, billets, heavy castings] [Light castings, light metallic products] [Scraps, shavings, powders, dusts] [All others]	Not Applicable	H-3	[1,000 ^{d, e}]	Not Applicable	Not Applicable	[1,000 ^d]	Not Applicable	Not Applicable	[1,000 ^d]	Not Applicable
			125 ^{d, e}			125 ^d			25 ^d	
			[1 ^{d, e}]			[1 ^d]			[1 ^d]	
			[125 ^{d, e}]			[125 ^d]			[25 ^d]	
Inert [Gas] <u>gas</u>	Gaseous Liquefied	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
	[Not Applicable]	[Not Applicable]	[Not Applicable]	[Not Applicable]	[Not Limited]	[Not Applicable]	[Not Applicable]	[Not Limited]	[Not Applicable]	[Not Applicable]
[Cryogenic Inert]	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

Organic peroxide ^p	Unclassified Detonable									
	I	H-1	1 ^{e, g}	(1) ^{e, g}	Not Applicable	0.25 ^g	(0.25) ^g	Not Applicable	0.25 ^g	(0.25) ^g
	II	H-2	5 ^{d, e}	(5) ^{d, e}		1 ^d	(1) ^d		1 ^d	(1) ^d
	III	H-3	50 ^{d, e}	(50) ^{d, e}		50 ^d	(50) ^d		10 ^d	(10) ^d
	IV	H-3	125 ^{d, e}	(125) ^{d, e}		125 ^d	(125) ^d		25 ^d	(25) ^d
V	Not Applicable	Not Limited	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	
Oxidizer	4	H-1	1 ^g	(1) ^{e, g}	Not Applicable	0.25 ^g	(0.25) ^g	Not Applicable	0.25 ^g	(0.25) ^g
	3 ^k	H-2	10 ^{d, e}	(10) ^{d, e}		2 ^d	(2) ^d		2 ^d	(2) ^d
	2	H-3	250 ^{d, e}	(250) ^{d, e}		250 ^d	(250) ^d		50 ^d	(50) ^d
	1	H-3	4,000 ^{e, f}	(4,000) ^{e, f}		4,000 ^f	(4,000) ^f		1,000 ^f	(1,000) ^f
Oxidizing gas ^a	Gaseous Liquefied	H-3	Not Applicable	Not Applicable (150) ^{d, e}	1,500 ^{d, e} Not Applicable	Not Applicable	Not Applicable (150) ^{d, e}	1,500 ^{d, e} Not Applicable	Not Applicable	Not Applicable
Pyrophoric material ^p detonable	Not Applicable	H-1	1 ^{e, g}	(1) ^{e, g}	10 ^{e, g}	0.25 ^g	(0.25) ^g	2 ^{e, g}	0	0
Pyrophoric material nondetonable	Not Applicable	H-2	4 ^{e, g}	(4) ^{e, g}	50 ^{e, g}	1 ^g	(1) ^g	10 ^{e, g}	0	0
Unstable (reactive) ^p detonable	4	H-1	1 ^{e, g}	(1) ^{e, g}	10 ^{e, g}	0.25 ^g	(0.25) ^g	2 ^{e, g}	0.25 ^g	(0.25) ^g
	3	H-1	1 ^{e, g}	(1) ^{e, g}	10 ^{e, g}	0.25 ^g	(0.25) ^g	2 ^{e, g}	0.25 ^g	(0.25) ^g
Unstable (reactive) nondetonable	4	H-1	1 ^{e, g}	(1) ^{e, g}	10 ^{e, g}	0.25 ^g	(0.25) ^g	2 ^{e, g}	0.25 ^g	(0.25) ^g
	3	H-1 or H-2	5 ^{d, e}	(5) ^{d, e}	50 ^{d, e}	1 ^d	(1) ^d	10 ^{d, e}	1 ^d	(1) ^d
	2	H-3	50 ^{d, e}	(50) ^{d, e}	250 ^{d, e}	50 ^d	(50) ^d	250 ^{d, e}	10 ^d	(10) ^d
	1	Not Applicable	Not Limited	Not Limited	750 ^{d, e}	Not Limited	Not Limited	[Not Limited] 750 ^{d, e}	Not Limited	Not Limited
Water-reactive detonable ^p	3	H-1	1 ^{e, g}	(1) ^{e, g}	Not Applicable	0.25 ^g	(0.25) ^g	Not Applicable	0.25 ^g	(0.25) ^g
	2	H-1	1 ^{e, g}	(1) ^{e, g}		0.25 ^g	(0.25) ^g		0.25 ^g	(0.25) ^g
Water-reactive nondetonable	3	H-2	5 ^{d, e}	(5) ^{d, e}	Not Applicable	5 ^d	(5) ^d	Not Applicable	1 ^d	(1) ^d
	2	H-3	50 ^{d, e}	(50) ^{d, e}		50 ^d	(50) ^d		10 ^d	(10) ^d
	1	Not Applicable	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited

For SI: 1 cubic foot = [0.023] 0.02832 m³, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. For use of control areas, see [FC2703.8.3] FC5003.8.3.

b. The aggregate quantity in storage, handling and use shall not exceed the quantity listed for storage.

c. The quantities of alcoholic beverages in retail and wholesale sales occupancies shall not be limited providing the liquids are packaged in individual containers not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstuffs, or consumer [or industrial] products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids with the remainder of the solutions not being flammable shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

d. Maximum allowable quantities, except for liquefied petroleum gas and flammable liquid motor fuel, may be increased 100 percent in buildings protected throughout by a sprinkler system. Where Note e applies, the quantities may be increased as set forth in both notes.

e. Maximum allowable quantities, except for liquefied petroleum gas and flammable liquid motor fuel, may be increased 100 percent when stored in approved storage cabinets, gas cabinets, gas rooms, exhausted enclosures or listed safety cans. Listed safety cans shall be in accordance with [FC2703.9.10] FC5003.9.10. Where Note d applies, the quantities may be increased as set forth in both notes.

f. Quantities shall not be limited in a building protected throughout by a sprinkler system.

g. Allowed only in buildings protected throughout by a sprinkler system.

h. Containing not more than the maximum allowable quantity per control area of Class IA, Class IB or Class IC flammable liquids.

i. Stationary fuel oil storage tanks shall comply with the requirements of the construction codes, including the Mechanical Code.

j. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.

k. A maximum quantity of 200 pounds of solid or 20 gallons of liquid Class 3 oxidizers is allowed when such materials are necessary for maintenance and operation of equipment when the storage containers and the manner of storage are approved.

l. Reserved.

m. For gallons of liquids, divide the amount in pounds by 10 in accordance with [FC2703.1.2] FC5003.1.2.

n. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with the requirements of [FC2703.11] FC5003.11, see FC Table [2703.11.1] 5003.11.1.

o. [For purposes of this table, gasoline and other flammable liquid motor fuels are classified as a Class IA flammable liquid.] Densely-packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.

p. Unclassified detonable organic peroxides (see FC Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable (reactive) materials (see FC Chapter [43] 66) and detonable water-reactive materials (see FC Chapter [44] 67) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter [33] 56).

- q. [The maximum allowable quantities shall be limited by FC2706 for non-production laboratories classified as Occupancy Group B.] Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with FC104.7.2.
- r. For storage of flammable and combustible liquids in Group M occupancy, see FC Chapter [34] 57. For storage of flammable and combustible liquids in distilleries, see FC Chapter 40. The maximum allowable quantities shall not apply to alcohol-based hand rubs classified as Class I or II liquids in dispensers that are installed or placed for use on a premises in accordance with FC 5705.5.1 and 5705.5.2.
- s. [Densely-packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.] For purposes of this table, gasoline and other flammable liquid motor fuels are classified as a Class IA flammable liquid.
- t. The maximum allowable quantities shall be limited by FC5006 for non-production laboratories classified as Occupancy Group B.
- u. Medical gas storage in hospitals and other medical facilities classified as Occupancy Group B and I shall be subject to the requirements as set forth in FC5306.

FC TABLE [2703.1.1(2)] 5003.1.1(2)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A HEALTH HAZARD^{a,[b],c,f,h,i,j}

MATERIAL	STORAGE ^{b,[d]}			USE-CLOSED SYSTEMS ^{b,[d]}			USE-OPEN SYSTEMS ^{b,[d]}	
	Solid [Pounds] ^{d, f, g} pounds ^{d, f, g}	Liquid [Gallons] ^{d, e, f, g} gallons (pounds) ^{d, e, f, g}	Gas SCF (pounds) ^{d, e}	Solid pounds ^{d, e}	Liquid gallons (pounds) ^{d, e}	Gas SCF (pounds) ^{d, e}	Solid pounds ^{d, e}	Liquid gallons (pounds) ^{d, e}
Corrosive	5,000	500	Gaseous 810 ^{e,[f]} Liquefied (150) ^[f, h]	5,000	500	Gaseous 810 ^{e,[f]} Liquefied (150) ^[f, h]	1,000	100
Highly toxic	10	(10) ^[h]	Gaseous 20 ^g Liquefied (4) ^{e,[f, h]}	10	(10) ^[h]	Gaseous 20 ^g Liquefied (4) ^{e,[f, h]}	3	(3) ^[h]
Toxic	500	(500) ^[h]	Gaseous 810 ^{e,[f]} Liquefied (150) ^{e,[f, h]}	500	(500) ^[h]	Gaseous 810 ^{e,[f]} Liquefied (150) ^{e,[f, h]}	125	(125) ^[h]

For SI: 1 cubic foot = 0.02832 m³, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

- a. For use of control areas, see [FC2703.8.3] FC5003.8.3.
- b. [In retail and wholesale sales occupancies, the quantities of medicines, foodstuffs consumer or industrial products, and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.] The aggregate quantity in storage, handling and use shall not exceed the quantity listed for storage.
- c. [For storage and display quantities in Group M and storage quantities in Group S occupancies complying with the requirements of FC2703.11, see FC Table 2703.11.1.] In retail and wholesale sales occupancies, the quantities of medicines, foodstuffs or consumer products, and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.
- d. [The aggregate quantity in storage, handling and use shall not exceed the quantity listed for storage.] Maximum allowable quantities may be increased 100 percent in buildings protected throughout by a sprinkler system. Where Note e applies, the quantities increased shall be as set forth in both notes.
- e. [Maximum allowable quantities may be increased 100 percent in buildings protected throughout by a sprinkler system. Where Note f applies, the quantities increased shall be as set forth in both notes.] Maximum allowable quantities may be increased 100 percent when stored in approved storage cabinets, gas cabinets, or exhausted enclosures. Where Note d applies, the quantities increased shall be as set forth in both notes.
- f. [Maximum allowable quantities may be increased 100 percent when stored in approved storage cabinets, gas cabinets, or exhausted enclosures. Where Note e applies, the quantities increased shall be as set forth in both notes.] For storage and display quantities in Group M and storage quantities in Group S occupancies complying with the requirements of FC5003.11, see FC Table 5003.11.1.
- g. Allowed only when stored in approved exhausted gas cabinets or exhausted enclosures.
- h. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.
- i. For gallons of liquids, divide the amount in pounds by 10 in accordance with [FC2703.1.2] FC5003.1.2.
- j. The maximum allowable quantities shall be limited by [FC2706] FC5006 for non-production laboratories classified as Occupancy Group B.

1
2

FC TABLE [2703.1.1(3)] 5003.1.1(3)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA^{a, [b.] c, d, f}

MATERIAL	CLASS	STORAGE ^b			USE-CLOSED SYSTEMS ^b			USE-OPEN SYSTEMS ^b	
		Solid [Pounds] pounds	Liquid gallons (pounds)	Gas SCF	Solid [Pounds] pounds	Liquid gallons (pounds)	Gas SCF	Solid [Pounds] pounds	Liquid gallons (pounds)
Flammable gas	Gaseous Liquefied	Not Applicable	Not Applicable (150)	1000 Not Applicable	Not Applicable	Not Applicable (150)	1000 Not Applicable	Not Applicable	Not Applicable
Flammable solid	Not Applicable	125	Not Applicable	Not Applicable	25	Not Applicable	Not Applicable	25	Not Applicable
Inert [Gas] gas Cryogenic [Inert] inert	Gaseous Liquefied Not Applicable	Not Applicable Not Applicable Not Applicable	Not Applicable Not Applicable Not Applicable	Not Limited Not Limited Not Limited	Not Applicable Not Applicable Not Applicable	Not Applicable Not Applicable Not Applicable	Not Limited Not Limited Not Limited	Not Applicable Not Applicable Not Applicable	Not Applicable Not Applicable Not Applicable
Organic peroxide ^e	Unclassified Detonable	1	(1)	Not Applicable	0.25	(0.25) ^[d]	Not Applicable	0.25	(0.25) ^[d]
Organic peroxide ^[e]	I	5	(5) ^[d]	Not Applicable	1	(1) ^[d]	Not Applicable	1	(1) ^[d]
	II	50	(50) ^[d]		50	(50) ^[d]		10	(10) ^[d]
	III	125	(125) ^[d]		125	(125) ^[d]		25	(25) ^[d]
	IV	500	(500) ^[d]		500	(500) ^[d]		100	(100) ^[d]
	V	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited
Oxidizer ^[c]	4	1	(1) ^[d]	Not Applicable	[1/4] 0.25	[(1/4) ^{a]} (0.25)	Not Applicable	0.25	(0.25) ^[d]
	3	10	(10) ^[d]		2	(2) ^[d]		2	(2) ^[d]
	2	250	(250) ^[d]		250	(250) ^[d]		50	(50) ^[d]
	1	4,000	(4,000)		4,000	(4,000)		1,000	(1,000)
Oxidizing gas	Gaseous Liquefied	Not Applicable	Not Applicable 15	1,500 Not Applicable	Not Applicable	Not Applicable 15	1,500 Not Applicable	Not Applicable	Not Applicable
Pyrophoric material ^e detonable	Not Applicable	1	(1) ^[d]	10	0.25	(0.25) ^[d]	2	[0.25] 0	[(0.25)] 0
Pyrophoric material ^[e] nondetonable	Not Applicable	4	(4) ^[d]	50	1	(1) ^[d]	10	0	0
Unstable (reactive) ^e detonable	4	1	(1) ^[d]	10	0.25	(0.25) ^[d]	2	0.25	(0.25) ^[d]
	3	1	(1) ^[d]	10	0.25	(0.25) ^[d]	2	0.25	(0.25) ^[d]
Unstable (reactive) ^[c] nondetonable	4	1	(1) ^[d]	10	0.25	(0.25) ^[d]	2	0.25	(0.25) ^[d]
	3	5	(5) ^[d]	50	1	(1) ^[d]	10	1	(1) ^[d]
	2	50	(50) ^[d]	250	50	(50) ^[d]	250	10	(10) ^[d]
	1	Not Limited	Not Limited	750	Not Limited	Not Limited	[Not Limited] 750	Not Limited	Not Limited
Water-reactive ^e detonable	3	1	(1) ^[d]	Not [applicable]	0.25	(0.25) ^[d]	[2]	0.25	(0.25) ^[d]
	2	1	(1) ^[d]	<u>Applicable</u>	0.25	(0.25) ^[d]	[2] <u>Not Applicable</u>	0.25	(0.25) ^[d]
Water-reactive ^[c] nondetonable	3	5	(5) ^[d]	Not [applicable]	5	(5) ^[d]	[10]	1	(1) ^[d]
	2	50	(50) ^[d]	<u>Applicable</u>	50	(50) ^[d]	[250]	10	(10) ^[d]
	1	Not Limited	Not Limited	<u>Applicable</u>	Not Limited	Not Limited	Not [Limited] <u>Applicable</u>	Not Limited	Not Limited

3

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m³.

- 1 a. For gallons of liquids, divide the amount in pounds by 10 in accordance with [FC2703.1.2] FC5003.1.2.
 2 b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.
 3 c. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used
 4 for retail or wholesale sales is allowed to exceed the maximum allowable quantity per control area when such storage is in accordance with [FC2703.11] FC5003.11.
 5 d. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.
 6 e. Unclassified detonable organic peroxides (see FC Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable (reactive) materials (see FC Chapter [43] 66) and
 7 detonable water-reactive materials (see FC Chapter [44] 67) shall be treated as explosives for purposes of storage (see FC Chapter [33] 56).
 8 f. In addition to these requirements, the outdoor storage and use of hazardous materials shall comply with applicable requirements of the Zoning Resolution.

9
 10 **FC TABLE [2703.1.1(4)] 5003.1.1(4)**
 11 **MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD IN AN OUTDOOR CONTROL AREA^{a, [b.] c, f, g}**

MATERIAL	STORAGE ^b			USE-CLOSED SYSTEMS ^b			USE-OPEN SYSTEMS ^b	
	Solid pounds	Liquid [Gallons] gallons (pounds)	Gas SCF (pounds)	Solid [Pounds] pounds	Liquid [Gallons] gallons (pounds)	Gas SCF (pounds)	Solid pounds	Liquid gallons (pounds)
Corrosives	5,000	500	Gaseous 810 Liquefied (150) [f]	5,000	500	Gaseous 810 Liquefied (150) [f]	1,000	100
Highly toxics	10	(10) ^[f]	Gaseous 20 ^d Liquefied (4) ^{d[f]}	10	(10) ^[f]	Gaseous 20 ^d Liquefied (4) ^{d[f]}	3	(3) ^[f]
Toxics	500	(500) ^{e, [f]}	Gaseous 810 Liquefied (150) [f]	500	50 ^e	Gaseous 810 Liquefied (150) [f]	25	(25) ^{e, [f]}

12 For SI: 1 cubic foot = 0.02832 m³, 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 pound per square inch absolute = 6.895 kPa, °C = (°F-32)/1.8.

- 13 a. For gallons of liquids, divide the amount in pounds by 10 in accordance with [FC2703.1.2] FC5003.1.2.
 14 b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.
 15 c. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage on a single property under the same ownership or control
 16 used for retail or wholesale sales is allowed to exceed the maximum allowable quantity per control area when such storage is in accordance with [FC2703.11] FC5003.11.
 17 d. Allowed only when used in approved exhausted gas cabinets, exhausted enclosures or under fume hoods.
 18 e. The maximum allowable quantity per control area for toxic liquids with vapor pressures in excess of 1 psia at 77°F shall be the maximum allowable quantity per control area listed for highly toxic
 19 liquids.
 20 f. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.
 21 g. In addition to these requirements, the outdoor storage and use of hazardous materials shall comply with the applicable requirements of the Zoning Resolution.
 22

1 **[2703.2] 5003.2 Devices, equipment, systems and processes.** Devices, equipment, systems and
2 processes utilized for storage, handling and use of hazardous materials shall be in accordance with
3 FC [2703.2.1] 5003.2.1 through [2703.2.8] 5003.2.8 and the regulations of the New York State
4 Department of Environmental Conservation as set forth in 6 NYCRR Parts 596, 598, 599, [612,]
5 613[and 614].
6

7 **[2703.2.1] 5003.2.1 Design and construction of containers and tanks.** Containers and tanks
8 shall be designed and constructed in accordance with approved standards. Containers, tanks
9 and other means used for containment of hazardous materials shall be of an approved type.
10

11 **[2703.2.2] 5003.2.2 Piping, tubing, valves and fittings.** Piping, tubing, valves and fittings
12 conveying hazardous materials, except piping for inlet connections to prevent backflow or
13 piping for pressure relief devices, shall be designed and installed in accordance with approved
14 standards and FC [2703.2.2.1] 5003.2.2.1 and [2703.2.2.2]5003.2.2.2.
15

16 **[2703.2.2.1] 5003.2.2.1 Design and construction.** Piping, tubing, valves, fittings and
17 ancillary equipment used for hazardous materials shall be in accordance with the following:
18

- 19 1. Piping, tubing, valves, fittings and ancillary equipment shall be designed and
20 fabricated from materials compatible with the material to be contained and shall be
21 of adequate strength and durability to withstand the pressure, structural and seismic
22 stress, and exposure to which they are subjected.
23
- 24 2. Piping and tubing shall be identified in accordance with ASME A13.1 to indicate the
25 material conveyed.
26
- 27 3. Readily accessible manual valves, or automatic remotely-activated fail-safe
28 emergency shutoff valves, shall be installed on supply piping and tubing at the point
29 of use and at the tank, container or other source of supply.
30
- 31 4. Emergency shutoff valves shall be clearly visible and readily accessible. A durable
32 sign shall be conspicuously posted immediately adjacent to such valves that identifies
33 their location.
34
- 35 5. Backflow prevention or check valves shall be provided when the backflow of
36 hazardous materials could create a hazardous condition or cause the unauthorized
37 discharge of hazardous materials.
38
- 39 6. Where gases or liquids having a hazard ranking of health hazard Class 3 or 4,
40 flammability Class 4, or instability Class 3 or 4 in accordance with NFPA 704 are
41 conveyed in pressurized piping above 15 pounds per square inch gauge (psig)
42 (103 kPa), an approved means of leak detection and emergency shutoff or excess
43 flow control shall be provided. Where the piping originates from within a hazardous
44 material storage room or area, the excess flow control shall be located within the
45 storage room or area. Where the piping originates from any other source of supply,
46 the excess flow control shall be located as close to the source of supply as practical.
47

1 **Exceptions:**
2

3 1. Piping for inlet connections designed to prevent backflow.
4

5 2. Piping for pressure relief devices.
6

7 **[2703.2.2.2] 5003.2.2.2 Additional regulations for supply piping for health-hazard**
8 **materials.** Supply piping and tubing for gases and liquids having a health-hazard ranking
9 of 3 or 4 in accordance with NFPA704 shall be in accordance with ASME B31.3 and the
10 following:
11

12 1. Piping and tubing utilized for the transmission of highly toxic, toxic or highly volatile
13 corrosive liquids and gases shall have welded, threaded or flanged connections
14 throughout, except where connections are located within a ventilated enclosure if the
15 material is a gas, or an approved method of drainage or containment is provided for
16 connections if the material is a liquid.
17

18 2. Piping and tubing shall not be located within corridors, within any portion of a means
19 of egress required to be enclosed in fire-resistance-rated construction or in concealed
20 spaces in areas not classified as Group H occupancies.
21

22 **Exception:** Piping and tubing within the space defined by the walls of corridors
23 and the floor or roof above or in concealed spaces above other occupancies when
24 installed in accordance with Section [415.9.6.3] 415 of the Building Code for Group
25 H-5 occupancies.
26

27 **[2703.2.3] 5003.2.3 Devices, equipment and systems.** Devices, equipment and systems,
28 including required detection and alarm systems, installed or used in conjunction with the
29 storage, handling and use of hazardous materials shall be listed or approved.
30

31 **[2703.2.4] 5003.2.4 Installation of tanks.** Installation of tanks shall be in accordance with FC
32 [2703.2.4.1] 5003.2.4.1 through [2703.2.4.3] 5003.2.4.3 and with the regulations of the New
33 York State Department of Environmental Conservation as set forth in 6 NYCRR Sections
34 [599.6, 614.7 and 614.13] 599 and 613.
35

36 **[2703.2.4.1] 5003.2.4.1 Underground tanks.** Underground tanks used for the storage of
37 liquid hazardous materials shall be provided with secondary containment.
38

39 **[2703.2.4.2] 5003.2.4.2 Aboveground tanks.** Aboveground stationary tanks used for the
40 storage of liquid hazardous materials shall be located and protected in compliance with the
41 requirements for outdoor storage of the particular material involved.
42

43 **[2703.2.4.2.1] 5003.2.4.2.1 Marking.** Aboveground stationary tanks shall be marked
44 as required by [FC2703.5] FC5003.5.
45

46 **[2703.2.4.3] 5003.2.4.3 Flood hazard.** Hazardous materials storage tanks located in areas
47 of special flood hazard or on the premises of Group I-2 occupancies that are hospitals

1 located in shaded X-Zones (as defined in Section G201.2 of the Building Code) shall
2 comply with Section G307.5 of Appendix G of the Building Code.
3

4 **[2703.2.5] 5003.2.5 Empty containers and tanks.** Empty containers and tanks previously
5 used for the storage of hazardous materials shall be free from residual material and vapor in
6 compliance with the requirements of DOTn, the Resource Conservation and Recovery Act
7 (RCRA) or other governmental agencies having jurisdiction, or shall be stored, handled and
8 used in compliance with the requirements of this code.
9

10 **[2703.2.6] 5003.2.6 Maintenance.** In addition to the requirements of [FC2703.2.3]
11 FC5003.2.3, all devices, equipment and systems used in conjunction with hazardous materials,
12 including tanks, and detection and alarm systems, shall be maintained in good working order.
13 Defective devices, equipment and systems shall be removed from service and repaired or
14 replaced, or disposed of lawfully.
15

16 **[2703.2.6.1] 5003.2.6.1 Tanks out of service for 30 days.** Stationary tanks not used for a
17 period of 30 calendar days or more shall be properly safeguarded or removed in an
18 approved manner. Such tanks shall have the fill line, gauge opening and pump connection
19 secured against tampering. Vent lines shall be properly maintained. Stationary tanks
20 containing flammable and combustible liquid out of service for a period of 30 calendar
21 days or more shall additionally comply with the requirements of [FC3404.2.13]
22 FC5704.2.13.
23

24 **[2703.2.6.1.1] 5003.2.6.1.1 Return to service.** Tanks that are returned to service shall
25 be tested in an approved manner prior to use.
26

27 **[2703.2.7] 5003.2.7 Liquid-level limit control.** Atmospheric tanks that contain hazardous
28 material liquids shall be equipped with a liquid-level limit control or other approved means to
29 prevent overfilling of the tank.
30

31 **Exception:** Tanks with a capacity not exceeding 500 gallons (1893 L) that are filled from
32 a source other than a cargo tank or tank car.
33

34 **[2703.2.8] 5003.2.8 Seismic protection.** Machinery and equipment utilizing hazardous
35 materials shall be braced and anchored in accordance with the seismic design requirements of
36 the Building Code for the seismic design category in which the machinery or equipment is
37 classified.
38

39 **[2703.2.9] 5003.2.9 Testing.** The following devices, equipment and systems shall be tested at
40 the time of installation and not less than annually thereafter, provided that testing shall be
41 conducted at least as often as is recommended by the manufacturer of such device, equipment
42 or system:
43

- 44 1. Gas detection systems, alarms and automatic emergency shutoff valves required
45 by [FC3704.2.2.10] FC6004.2.2.10 for highly toxic and toxic gases.
46

- 1 2. Limit control systems for liquid level, temperature and pressure required by FC
2 [2703.2.7] 5003.2.7, [2704.8] 5004.8 and [2705.1.4] 5005.1.4.
- 3
- 4 3. Emergency alarm systems required by FC [2704.9] 5004.9 and [2705.4.4]
5 5005.4.4.
- 6
- 7 4. Monitoring and supervisory systems required by FC [2704.10] 5004.10 and
8 [2705.1.6] 5005.1.6.
- 9
- 10 5. Manually activated shutdown controls required by [FC4103.1.1.1] FC6403.1.1.1 for
11 compressed gas systems conveying pyrophoric gases.
- 12

13 **[2703.3] 5003.3 Release and disposal of hazardous materials.** It shall be unlawful to release or
14 dispose of any amount of hazardous material, including pesticides and fertilizers used for domestic,
15 agricultural or horticultural purposes, into a sewer, storm drain, ditch, drainage canal, creek,
16 stream, river, lake or tidal waterway or on the ground, sidewalk, street, highway or into the
17 atmosphere, except when allowed by federal, state or local regulations or permits, including the
18 regulations of the New York State Department of Environmental Conservation, as set forth in
19 6 NYCRR Parts [595] 597 and 611.

20

21 **[2703.3.1] 5003.3.1 Reporting of discharges.** When hazardous materials are released in
22 quantities reportable under federal, state or local regulations, the commissioner shall be
23 notified and the following procedures required in accordance with FC [2703.3.1.1] 5003.3.1.1
24 through [2703.3.1.4] 5003.3.1.4.

25

26 **[2703.3.1.1] 5003.3.1.1 Records.** Accurate records shall be kept of the discharge of
27 hazardous materials.

28

29 **[2703.3.1.2] 5003.3.1.2 Preparation.** Provisions shall be made for controlling and
30 mitigating accidental discharges.

31

32 **[2703.3.1.3] 5003.3.1.3 Control.** When a discharge is caused by a container failure, the
33 container shall be repaired or removed from service.

34

35 **[2703.3.1.4] 5003.3.1.4 Responsibility for cleanup.** The owner of a facility or other
36 person responsible for an accidental discharge shall undertake all actions necessary to
37 remediate such discharge. When deemed necessary by the commissioner, cleanup may be
38 initiated by the department or other city agency. Costs associated with such cleanup shall
39 be borne by the owner or other person responsible for the discharge. The department shall
40 give such owner or other person written notice of such costs and an opportunity to be heard.
41 Payment of such costs shall be recoverable in any manner authorized by law, rule or
42 regulation. Failure to pay such costs shall cause a lien to be placed upon the premises
43 pursuant to the provisions of FC117.4, as applicable, or against vehicles or other personal
44 property in accordance with the provisions applicable thereto. Nothing in this section shall
45 be construed to preclude the implementation of response measures, or the recovery of the
46 costs of such measures, by any other city agency, either prior or subsequent to any response
47 measure implemented pursuant to this section.

1
2 **[2703.4 Material safety] 5003.4 Safety data sheets.** A [material] safety data sheet [(MSDS)]
3 (SDS) for each hazardous material stored, handled or used on a premises shall be maintained on
4 such premises at a location where the [MSDS] SDS is readily available for reference by persons
5 handling or using such hazardous materials or supervising such storage, handling or use, and by
6 any department representative.
7

8 **[2703.5] 5003.5 Hazard identification signs.** Unless otherwise exempted by the commissioner,
9 hazard identification signs as set forth in NFPA 704 for the specific material contained shall be
10 conspicuously affixed on stationary containers and aboveground tanks and at entrances to locations
11 where hazardous materials are stored, handled or used, including dispensing, in quantities
12 requiring a permit, including locations where such materials are dispensed, and at such other
13 locations as may be designated by the commissioner.
14

15 **[2703.5.1] 5003.5.1 Markings.** Individual containers, cartons or packages shall be
16 conspicuously marked or labeled in an approved manner. Signs reading “COMPRESSED
17 GAS” shall be conspicuously posted at the entrance to rooms or on cabinets containing
18 compressed gases.
19

20 **[2703.6] 5003.6 Signs.** Signs and markings required by FC [2703.5] 5003.5 and [2703.5.1]
21 5003.5.1 shall not be obscured or removed, shall be in English as a primary language or in symbols
22 allowed by this code, shall be durable, and the size, color and lettering shall be acceptable to the
23 commissioner.
24

25 **[2703.7] 5003.7 Sources of ignition.** Sources of ignition shall comply with the requirements of
26 FC [2703.7.1] 5003.7.1 through [2703.7.3] 5003.7.3.
27

28 **[2703.7.1] 5003.7.1 Smoking.** It shall be unlawful to smoke in the following locations, and
29 “No Smoking” signs in compliance with the requirements of FC310 shall be conspicuously
30 posted:
31

- 32 1. In rooms or areas where hazardous materials are stored or used in open systems in
33 amounts requiring a permit.
34
- 35 2. Within 25 feet (7620 mm) of outdoor hazardous material storage, handling and use
36 areas, including dispensing areas.
37
- 38 3. In rooms or areas where flammable or combustible hazardous materials are stored,
39 handled or used.
40

41 **[2703.7.2] 5003.7.2 Open flames.** Open flames and devices that generate or operate at a high
42 temperature shall be kept a safe distance from hazardous material in storage or use.
43

44 **[2703.7.3] 5003.7.3 Industrial trucks.** Powered industrial trucks used in areas designated as
45 hazardous (classified) locations in accordance with the Electrical Code shall be listed and
46 labeled in accordance with NFPA 505.
47

1 **[2703.8] 5003.8 Construction requirements.** Buildings, structures, control areas, enclosures and
 2 cabinets for hazardous materials shall be designed and constructed in accordance with FC
 3 [2703.8.1] 5003.8.1 through [2703.8.6.2] 5003.8.7.

4
 5 **[2703.8.1] 5003.8.1 Buildings.** Buildings, structures, or portions thereof, in which hazardous
 6 materials are stored, handled or used shall be constructed in accordance with the construction
 7 codes, including the Building Code.

8
 9 **[2703.8.2] 5003.8.2 Required detached buildings.** Group H occupancies containing
 10 quantities of hazardous materials in excess of those set forth in FC Table [2703.8.2] 5003.8.2
 11 shall be in detached buildings.

12 **FC TABLE [2703.8.2] 5003.8.2**
 13 **REQUIRED DETACHED STORAGE**
 14

DETACHED STORAGE IS REQUIRED WHEN THE QUANTITY OF MATERIAL EXCEEDS THAT LISTED HEREIN			
Material	Class	Solids and liquids (tons) ^{a, b}	Gases (SCF) ^{a, b}
Explosives ^a	Division 1.1	Maximum Allowable Quantity	Not Applicable
	Division 1.2	Maximum Allowable Quantity	
	Division 1.3	Maximum Allowable Quantity	
	Division 1.4	Maximum Allowable Quantity	
	Division 1.4 ^c	1	
	Division 1.5	Maximum Allowable Quantity	
Oxidizers	Division 1.6	Maximum Allowable Quantity	Maximum Allowable Quantity
	Class 4	Maximum Allowable Quantity	
Unstable (reactives) detonable	Class 3 or 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Water-reactives detonable	Class 2 or 3	Maximum Allowable Quantity	Not Applicable
Oxidizer, liquids and solids	Class 3	1,200	Not Applicable
	Class 2	2,000	
Organic peroxides	Unclassified Detonable	Maximum Allowable Quantity	Not Applicable
	Class I	Maximum Allowable Quantity	
	Class II	25	
	Class III	50	
Unstable (reactives) nondetonable	Class 4	Maximum Allowable Quantity	Maximum Allowable Quantity
	Class 3	1	2,000
	Class 2	25	10,000
Water-reactives nondetonable	Class 3	1	Not Applicable
	Class 2	25	
Pyrophoric material detonable	Not Applicable	Maximum Allowable Quantity	Maximum Allowable Quantity
Pyrophoric gases nondetonable	Not Applicable	Not Applicable	2,000

15 For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.02832 m³, 1 ton = 2,000 pounds = [908] 907.2 kg.

16 a. For materials that are detonable, the distance to other buildings or lot lines shall be as specified in the Building Code. For materials classified as
 17 explosives, the required separation distances shall be as specified in FC Chapter [33] 56. Unclassified detonable organic peroxides (see FC
 18 Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable (reactive) materials (see FC Chapter [43] 66) and
 19 detonable water-reactive materials (see FC Chapter [44] 67) shall be treated as explosives for purposes of storage, handling and use (see FC
 20 Chapter [33] 56).

21 b. "Maximum Allowable Quantity" means the maximum allowable quantity per control area set forth in FC Table [2703.1.1(1)] 5003.1.1(1).

22 c. Limited to Division 1.4 materials and articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of
 23 Alcohol, Tobacco, [and] Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a
 24 detonation or deflagration between articles, providing the net explosive weight of individual articles does not exceed 1 pound.

25
 26 **[2703.8.3] 5003.8.3 Control areas.** Control areas shall be in accordance with FC [2703.8.3.1]
 27 5003.8.3.1 through [2703.8.3.5] 5003.8.3.5.

28
 29 **[2703.8.3.1] 5003.8.3.1 Construction requirements.** Control areas shall be separated
 30 from each other by fire barriers constructed in accordance with Chapter 7 of the Building

Code or horizontal assemblies constructed in accordance with Chapter 7 of the Building Code, or both.

[2703.8.3.2] 5003.8.3.2 Percentage of maximum allowable quantities. The percentage of maximum allowable quantities of hazardous materials per control area allowed at each floor level within a building shall be in accordance with FC Table [2703.8.3.3] 5003.8.3.3.

[2703.8.3.3] 5003.8.3.3 Number. The maximum number of control areas per floor within a building or structure shall be in accordance with FC Table [2703.8.3.3] 5003.8.3.3.

[2703.8.3.4] 5003.8.3.4 Fire-resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with FC Table [2703.8.3.3] 5003.8.3.3. The floor assembly of the control area and the construction supporting the floor of the control area shall have a minimum 2-hour fire-resistance rating.

Exception: The floor assembly of the control area and the construction supporting the floor of the control area may be 1-hour fire-resistance rated in a building of Type IIA, IIIA and VA construction that is three stories or less in height and protected throughout by a sprinkler system.

**FC TABLE [2703.8.3.3] 5003.8.3.3
DESIGN AND NUMBER OF CONTROL AREAS**

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA ^a	NUMBER OF CONTROL AREAS PER FLOOR	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS ^b
Above grade plane	Higher than 9	5	1	2
	7-9	5	2	2
	6	12.5	2	2
	5	12.5	2	2
	4	12.5	2	2
	3	50	2	1
	2	75	3	1
	1	100	4	1
Below grade plane	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentages shall be of the maximum allowable quantity per control area shown in FC Tables [2703.1.1(1)] 5003.1.1(1) and [2703.1.1(2)] 5003.1.1(2), with all increases allowed in the footnotes to those tables.

b. Fire barriers shall include walls and floors as necessary to provide separation from other portions of the building.

[2703.8.3.5] 5003.8.3.5 Hazardous materials in Group M display and storage areas and in Group S storage areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single control area of a Group M display and storage area or a Group S storage area is allowed to exceed the maximum allowable quantities specified in FC Tables [2703.1.1(1)] 5003.1.1(1) and [2703.1.1(2)] 5003.1.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with [FC2703.11] FC5003.11.

[2703.8.4] 5003.8.4 Gas rooms. Where a gas room is provided to comply with the requirements of FC Chapter [37] 60, the gas room shall be in accordance with FC [2703.8.4.1] 5003.8.4.1 and [2703.8.4.2] 5003.8.4.2.

1
2 **[2703.8.4.1] 5003.8.4.1 Construction.** Gas rooms shall be protected throughout by a
3 sprinkler system. Gas rooms shall be separated from the remainder of the building in
4 accordance with the construction codes, including the Building Code, based on the
5 occupancy group into which the building has been classified.
6

7 **[2703.8.4.2] 5003.8.4.2 Ventilation system.** The ventilation system for gas rooms shall be
8 designed to operate at a negative pressure relative to the surrounding area. Highly toxic
9 and toxic gases shall additionally comply with the requirements of [FC3704.2.2.6]
10 FC6004.2.2.6. The ventilation system shall be installed in accordance with the construction
11 codes, including the Mechanical Code.
12

13 **[2703.8.5] 5003.8.5 Exhausted enclosures.** Where an exhausted enclosure is used to increase
14 maximum allowable quantity per control area or when the location of hazardous materials in
15 exhausted enclosures is provided to comply with the requirements of FC Chapter [37] 60, the
16 exhausted enclosure shall be in accordance with FC [2703.8.5.1] 5003.8.5.1 through
17 [2703.8.5.3] 5003.8.5.3.
18

19 **[2703.8.5.1] 5003.8.5.1 Construction.** Exhausted enclosures shall be of noncombustible
20 construction.
21

22 **[2703.8.5.2] 5003.8.5.2 Ventilation.** The ventilation system for exhausted enclosures shall
23 be designed to operate at a negative pressure relative to the surrounding area. Ventilation
24 systems used for highly toxic and toxic gases shall additionally comply with the
25 requirements of [FC3704.1.3] FC6004.1.3. The ventilation system shall be installed in
26 accordance with the construction codes, including the Mechanical Code.
27

28 **[2703.8.5.3] 5003.8.5.3 Fire extinguishing system.** Exhausted enclosures where
29 flammable materials are used shall be protected by a fire extinguishing system in
30 accordance with FC Chapter 9 and the construction codes, including the Building Code.
31

32 **[2703.8.6] 5003.8.6 Gas cabinets.** Where a gas cabinet is used to increase the maximum
33 allowable quantity per control area or when the location of compressed gases in gas cabinets
34 is provided to comply with the requirements of FC Chapter [37] 60, the gas cabinet shall be in
35 accordance with FC [2703.8.6.1] 5003.8.6.1 through [2703.8.6.3] 5003.8.6.3.
36

37 **[2703.8.6.1] 5003.8.6.1 Construction.** Gas cabinets shall be constructed of not less than
38 0.097-inch (2.5-mm) (No. 12 gauge) steel; provided with self-closing limited access ports
39 or noncombustible windows to give access to equipment controls; and have all interior
40 surfaces treated, coated or constructed of materials that are compatible with the hazardous
41 materials stored.
42

43 **[2703.8.6.2] 5003.8.6.2 Ventilation.** The ventilation system for gas cabinets shall be
44 designed to operate at a negative pressure relative to the surrounding area. Ventilation
45 systems used for highly toxic and toxic gases shall additionally comply with the
46 requirements of [FC3704.1.2] FC6004.1.2. The ventilation system shall be installed in
47 accordance with the construction codes, including the Mechanical Code.

1
2 [2703.8.6.3] **5003.8.6.3 Maximum number of containers per gas cabinet.** The number
3 of containers stored in a single gas cabinet shall not exceed three.
4

5 [2703.8.7] **5003.8.7 Hazardous materials storage cabinets.** Where storage cabinets are used
6 to increase maximum allowable quantity per control area or to comply with the requirements
7 of this chapter, such cabinets shall be in accordance with FC [2703.8.7.1] 5003.8.7.1 and
8 [2703.8.7.2] 5003.8.7.2.
9

10 [2703.8.7.1] **5003.8.7.1 Construction.** All interior surfaces of such cabinets shall be
11 treated, coated or constructed of materials that are nonreactive with the hazardous material
12 stored. Cabinets shall either be listed in accordance with UL 1275 as suitable for the
13 intended storage or constructed in accordance with the following:
14

- 15 1. Cabinets shall be of steel having a thickness of not less than 0.0478 inch (1.2 mm)
16 (No. 18 [gage] gauge). The cabinet, including the door, shall be double walled with
17 a 1½-inch ([8-] 38 mm) airspace between the walls. Joints shall be riveted or welded
18 and shall be tight fitting. Doors shall be well fitted, self-closing and equipped with a
19 self-latching device.
20
- 21 2. The bottoms of cabinets utilized for the storage of liquids shall be liquid-tight to a
22 minimum height of 2 inches (51 mm).
23

24 [2703.8.7.1.1] **5003.8.7.1.1 Electrical equipment.** Electrical equipment and devices
25 within cabinets used for the storage of hazardous gases or liquids shall be in accordance
26 with the Electrical Code.
27

28 [2703.8.7.2] **5003.8.7.2 Warning markings.** Cabinets shall be clearly identified in an
29 approved manner with red letters on a contrasting background to read: HAZARDOUS —
30 KEEP FIRE AWAY.
31

32 [2703.9] **5003.9 General safety precautions.** General precautions for the safe storage, handling
33 and use of hazardous materials shall be in accordance with FC [2703.9.1] 5003.9.1 through
34 [2703.9.9] 5003.9.10.
35

36 [2703.9.1] **5003.9.1 Personnel training and written procedures.** Persons responsible for the
37 operation of areas in which hazardous materials are stored, handled or used, including
38 dispensing, shall be familiar with the chemical nature of the materials and the appropriate
39 mitigating actions necessary in the event of fire, leak or spill. A certificate of fitness shall be
40 required when specified by this code or the rules or as a condition of a permit.
41

42 [2703.9.1.1] **5003.9.1.1 Fire department liaison.** One or more responsible persons shall
43 be designated to serve as a liaison to the department in connection with any emergency
44 response to the premises, for purposes of providing access to the location where hazardous
45 materials are stored on the premises, providing access to [material] safety data sheets, and
46 otherwise assisting in the development and implementation of emergency procedures. The
47 names and telephone numbers of such responsible persons shall be included on the annual

1 inventory required by New York State General Municipal Law Section 209-u and on a
2 hazardous materials management plan when such plan is required. Telephone numbers
3 shall include a 24-hour contact number for such responsible persons.
4

5 **[2703.9.2] 5003.9.2 Security.** Storage, handling and use areas, including dispensing areas,
6 shall be secured against unauthorized entry and safeguarded in a manner approved by the
7 commissioner.
8

9 **[2703.9.3] 5003.9.3 Protection from vehicles.** Posts or other approved means shall be
10 provided to protect storage tanks and connected piping, valves and fittings; use areas; and
11 dispensing areas subject to vehicular damage in accordance with FC312.
12

13 **[2703.9.4] 5003.9.4 Electrical wiring and equipment.** Electrical wiring and equipment shall
14 be installed and maintained in accordance with the Electrical Code.
15

16 **[2703.9.5] 5003.9.5 Static accumulation.** When conditions exist that could cause a flammable
17 mixture to be ignited by static electricity, equipment shall be grounded and all other necessary
18 and appropriate actions taken to prevent the accumulation of a static charge.
19

20 **[2703.9.6] 5003.9.6 Protection from light.** Materials that are sensitive to light shall be stored
21 in containers designed to protect them from such exposure.
22

23 **[2703.9.7] 5003.9.7 Shock protection.** Materials that are sensitive to shock shall be padded,
24 suspended or otherwise protected against jarring, seismic activity or other movement.
25

26 **[2703.9.8] 5003.9.8 Separation of incompatible materials.** Incompatible materials shall be
27 separated while in storage or use except for stored materials in containers having a capacity of
28 not more than 5 pounds (2 kg) or ½ gallon (2 L). Separation shall be accomplished by:
29

- 30 1. Segregating incompatible materials in storage by a distance of not less than 20 feet
31 (6096 mm).
- 32
- 33 2. Isolating incompatible materials in storage by a noncombustible partition extending not
34 less than 18 inches (457 mm) above and to the sides of the stored material.
35
- 36 3. Storing liquid and solid materials in hazardous material storage cabinets. Materials that
37 are incompatible shall not be stored in the same cabinet.
38
- 39 4. Storing compressed gases in gas cabinets or exhausted enclosures in accordance with
40 FC [2703.8.5] 5003.8.5 and [2703.8.6] 5003.8.6. Materials that are incompatible shall
41 not be stored within the same cabinet or exhausted enclosure.
42

43 **[2703.9.9] 5003.9.9 Shelf storage.** Shelving shall be of substantial construction, and shall be
44 braced and anchored in accordance with the seismic design requirements of the construction
45 codes, including the Building Code, for the seismic zone in which the material is located.
46 Shelving shall be treated, coated or constructed of materials that are compatible with the

1 hazardous materials stored. Shelves shall be provided with a lip or guard when used for the
2 storage of individual containers.

3
4 **Exceptions:**

- 5
6 1. Storage in hazardous material storage cabinets or laboratory furniture specifically
7 designed for such use.
8
9 2. Storage of hazardous materials in amounts not requiring a permit in accordance with
10 FC105.6.

11
12 Shelf storage of hazardous materials shall be maintained in an orderly manner.

13
14 **[2703.9.10] 5003.9.10 Safety cans.** Safety cans shall be listed in accordance with UL 30
15 when used to increase the maximum allowable quantities per control area of flammable or
16 combustible liquids in accordance with FC Table [2703.1.1(1)] 5003.1.1(1). Safety cans
17 listed in accordance with UL 1313 are allowed for flammable and combustible liquids
18 when not used to increase the maximum allowable quantities per control area and for other
19 hazardous material liquids in accordance with the listing.

20
21 **[2703.10] 5003.10 Handling.** In addition to the requirements of [FC2703.2] FC5003.2, the
22 handling of hazardous materials in corridors or exit enclosures shall be in accordance with FC
23 [2703.10.1] 5003.10.1 through [2703.10.3.6] 5003.10.3.6.

24
25 **[2703.10.1] 5003.10.1 Valve protection.** Hazardous material gas containers and tanks moved
26 during handling shall have their protective caps in place. Containers and tanks of highly toxic
27 or toxic compressed gases shall have their valve outlets capped or plugged with an approved
28 closure device in accordance with FC Chapter [30] 53.

29
30 **[2703.10.2] 5003.10.2 Carts and hand trucks required.** Containers of hazardous materials
31 having a hazard ranking of 3 or 4 pursuant to NFPA 704, and liquids in containers exceeding
32 5 gallons (19 L), shall be moved during handling on a cart or hand truck meeting the
33 requirements of [FC2703.10.3] FC5003.10.3, when moved through any corridor or exit
34 enclosure.

35
36 **Exceptions:**

- 37
38 1. Two hazardous material liquid containers, which are hand carried in approved safety
39 carriers.
40
41 2. Not more than four drums not exceeding 55 gallons (208 L) each, which are moved
42 by suitable drum trucks.
43
44 3. Containers of compressed gases, which are moved by approved carts or hand trucks,
45 and containers not exceeding 25 pounds (11 kg), which are hand carried.
46

1 4. Solid hazardous materials not exceeding 100 pounds (45 kg), which are moved by
2 approved hand trucks, and a single container not exceeding 50 pounds (23 kg), which
3 is hand carried.
4

5 **[2703.10.3] 5003.10.3 Carts and hand trucks.** Carts and hand trucks required by
6 [FC2703.10.2] FC5003.10.2 to be used to move hazardous materials shall be designed and
7 constructed in accordance with FC [2703.10.3.1] 5003.10.3.1 through [2703.10.3.6]
8 5003.10.3.6.
9

10 **[2703.10.3.1] 5003.10.3.1 Design.** Carts and hand trucks used to move hazardous materials
11 shall be designed to provide a stable base for such movement during handling and shall
12 have a means of restraining containers to prevent accidental dislodgement. Compressed
13 gas containers placed on carts and hand trucks shall be individually restrained.
14

15 **[2703.10.3.2] 5003.10.3.2 Speed-control devices.** Carts and hand trucks shall be provided
16 with a device that will enable the operator to safely control movement by providing stops
17 or speed-reduction devices.
18

19 **[2703.10.3.3] 5003.10.3.3 Construction.** The cart or hand truck shall be sturdily
20 constructed of materials compatible with the material being moved.
21

22 **[2703.10.3.4] 5003.10.3.4 Spill control.** Carts and hand trucks used to move liquids shall
23 be capable of containing a spill from the largest single container being moved.
24

25 **[2703.10.3.5] 5003.10.3.5 Attendance.** Carts and hand trucks used to move materials shall
26 not obstruct or be left unattended in any corridor, exit enclosure, or other means of egress.
27

28 **[2703.10.3.6] 5003.10.3.6 Incompatible materials.** Incompatible materials shall not be
29 kept on the same cart or hand truck.
30

31 **[2703.11] 5003.11 Group M storage and display and Group S storage.** The aggregate quantity
32 of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored
33 and displayed within a single control area of a Group M occupancy, or an outdoor control area, or
34 stored in a single control area of a Group S occupancy, may exceed the maximum allowable
35 quantity per control area indicated in [FC2703.1] FC5003.1 when stored and displayed in
36 accordance with FC [2703.11.1] 5003.11.1 through [2703.11.3.10] 5003.11.3.10.
37

38 **[2703.11.1] 5003.11.1 Maximum allowable quantity per control area in Group M or S**
39 **occupancies.** The aggregate amount of nonflammable solid and nonflammable or
40 noncombustible liquid hazardous materials stored and displayed within a single control area of
41 a Group M occupancy or stored in a single control area of a Group S occupancy shall not
42 exceed the amounts set forth in FC Table [2703.11.1] 5003.11.1.
43

44 **FC TABLE [2703.11.1] 5003.11.1**
45 **MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES**
46 **NONFLAMMABLE SOLIDS, NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS^{d, e, f}**

CONDITION		MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
Material ^a	Class	Solids	Liquids gallons
		[Pounds] pounds	

HEALTH-HAZARD MATERIALS—NONFLAMMABLE AND NONCOMBUSTIBLE SOLIDS AND LIQUIDS			
Corrosives ^{b, c}	Not Applicable	9,750	975
Highly [Toxics] toxics	Not Applicable	20 ^{b, c}	2 ^{b, c}
Toxics ^{b, c}	Not Applicable	1,000	100
PHYSICAL-HAZARD MATERIALS —NONFLAMMABLE AND NONCOMBUSTIBLE SOLIDS AND LIQUIDS			
Oxidizers ^{b, c}	4	Not Allowed	Not Allowed
	3	1,150 ^g	115
	2	2,250 ^h	225
	1	18,000 ^{i, j}	1,800 ^{i, j}
Nondetonable unstable (reactives) ^{b, c}	4	Not Allowed	Not Allowed
	3	550	55
	2	1,150	115
	1	Not Limited	Not Limited
Nondetonable water-reactives	3 ^{b, c}	550	55
	2 ^{b, c}	1,150	115
	1	Not Limited	Not Limited

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m³.

a. Hazard categories are as specified in [FC2701.2.2] FC5001.2.2.

b. Maximum allowable quantities shall be increased 100 percent in buildings protected throughout by a sprinkler system. When Note c applies, amounts increased shall be as set forth in both notes.

c. Maximum allowable quantities shall be increased 100 percent when stored in approved storage cabinets in accordance with [FC2703.8] FC5003.8. When Note b applies, amounts increased shall be as set forth in both notes.

d. See FC Table [2703.8.3.3] 5003.8.3.3 for design and number of control areas.

e. [Allowable] Maximum allowable quantities for other hazardous material categories shall be in accordance with [FC2703.1] FC5003.1.

f. Maximum allowable quantities shall be increased 100 percent in outdoor control areas.

g. Maximum [amounts] allowable quantities may be increased to 2,250 pounds when individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

h. Maximum [amounts] allowable quantities may be increased to 4,500 pounds when individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

i. Quantities are unlimited where protected by a sprinkler system.

j. Quantities are unlimited in an outdoor control area.

[2703.11.2] 5003.11.2 Maximum allowable quantity per outdoor control area in Group M or S occupancies. The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single outdoor control area of a Group M occupancy shall not exceed the amounts set forth in FC Table [2703.11.1] 5003.11.1.

[2703.11.3] 5003.11.3 Storage and display. Storage and display shall be in accordance with FC [2703.11.3.1] 5003.11.3.1 through [2703.11.3.10] 5003.11.3.10.

[2703.11.3.1] 5003.11.3.1 Density. Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m²) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot ([0.50] 815 L/m²) of floor area actually occupied by liquid merchandise.

[2703.11.3.2] 5003.11.3.2 Storage and display height. Display height shall not exceed 6 feet (1829 mm) above the finished floor in display areas of Group M occupancies. Storage height shall not exceed 8 feet (2438 mm) above the finished floor in storage areas of Group M and Group S occupancies.

[2703.11.3.3] 5003.11.3.3 Container location. Individual containers less than 5 gallons (19 L) or less than 25 pounds (11 kg) shall be stored or displayed on pallets, racks or shelves.

1 [2703.11.3.4] **5003.11.3.4 Racks and shelves.** Racks and shelves used for storage or
2 display shall be in accordance with [FC2703.9.9] FC5003.9.9.

3
4 [2703.11.3.5] **5003.11.3.5 Container type.** Containers shall be approved for the intended
5 use and identified as to their content.

6
7 [2703.11.3.6] **5003.11.3.6 Container size.** Individual containers shall not exceed 100
8 pounds (45 kg) for solids or 10 gallons (38 L) for liquids in storage and display areas.

9
10 [2703.11.3.7] **5003.11.3.7 Incompatible materials.** Incompatible materials shall be
11 separated in accordance with [FC2703.9.8] FC5003.9.8.

12
13 [2703.11.3.8] **5003.11.3.8 Floors.** Floors shall be in accordance with [FC2704.12]
14 FC5004.12.

15
16 [2703.11.3.9] **5003.11.3.9 Aisles.** Aisles 4 feet (1219 mm) in width shall be maintained on
17 three sides of the storage or display area.

18
19 [2703.11.3.10] **5003.11.3.10 Signs.** Hazard identification signs shall be provided in
20 accordance with [FC2703.5] FC5003.5.

21
22 [2703.12] **5003.12 Outdoor control areas.** Outdoor control areas for hazardous materials in
23 amounts not exceeding the maximum allowable quantity per outdoor control area shall be in
24 compliance with the following requirements:

- 25
26 1. Outdoor control area shall be kept free from vegetation, rubbish and other combustible
27 waste, and combustible materials not necessary to the storage. The area surrounding an
28 outdoor control area shall be kept clear of such materials for a minimum of 15 feet
29 (4572 mm).
- 30
31 2. Outdoor control areas shall be located at least 5 feet (1524 mm) from a building opening
32 and at least 15 feet (4572 mm) from Group A occupancies. Outdoor control areas shall be
33 located at least 20 feet (6096 mm) from a lot line, public street or private road.
- 34
35 **Exception:** A 2-hour fire-resistance-rated wall without openings extending not less than
36 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such
37 distances required from a building opening, lot line, public street or private road.
- 38
39 3. Where a property exceeds 10,000 square feet (929 m²), there may be two outdoor control
40 areas separated by a minimum distance of 50 feet (15 240 mm), when approved.
- 41
42 4. Where a property exceeds 35,000 square feet (3252 m²), there may be multiple outdoor
43 control areas, separated a minimum distance of 50 feet (15 240 mm), when approved.
- 44

45 **SECTION FC [2704] 5004**
46 **STORAGE**

1 **[2704.1] 5004.1 General.** Hazardous materials in amounts exceeding the maximum allowable
2 quantity per control area as set forth in [FC2703.1] FC5003.1 shall be stored in accordance with
3 FC [2701] 5001, [2703] 5003 and [2704] 5004. Hazardous materials in amounts not exceeding the
4 maximum allowable quantity per control area as set forth in [FC2703.1] FC5003.1 shall be stored
5 in accordance with FC [2701] 5001 and [2703] 5003. Nonflammable solid and nonflammable and
6 noncombustible liquid hazardous materials in Group M retail occupancies and Group S wholesale
7 storage shall be stored and displayed in accordance with [FC2703.11] FC5003.11.

8
9 **[2704.2] 5004.2 Spill control and secondary containment for liquid and solid hazardous**
10 **materials.** Buildings, structures, rooms or areas used for the storage of liquid or solid hazardous
11 materials shall be provided with spill control and secondary containment in accordance with FC
12 [2704.2.1] 5004.2.1 through [2704.2.3] 5004.2.3.

13
14 **Exception:** Outdoor storage of containers on approved containment pallets in accordance with
15 [FC2704.2.3] FC5004.2.3.

16
17 **[2704.2.1] 5004.2.1 Spill control for hazardous material liquids.** Buildings, structures,
18 rooms or areas used for the storage of hazardous material liquids in individual vessels having
19 a capacity of more than 55 gallons (208 L), or in which the aggregate capacity of multiple
20 vessels exceeds 1,000 gallons (3785 L), shall be provided with spill control to prevent the flow
21 of liquids to adjoining areas. Floors in indoor locations, and similar surfaces in outdoor
22 locations, shall be designed to contain a spill from the largest single vessel by one of the
23 following methods:

- 24
- 25 1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in outdoor
26 locations.
 - 27
 - 28 2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar
29 protection in outdoor locations.
 - 30
 - 31 3. Sumps and collection systems.
 - 32
 - 33 4. Other approved engineered systems.
 - 34

35 **[2704.2.1.1] 5004.2.1.1 Containment system construction.** Except for surfacing, the
36 floors, sills, dikes, sumps and collection systems shall be constructed of noncombustible
37 material, and the liquid-tight seal shall be compatible with the material stored. When liquid-
38 tight sills or dikes are provided, they are not required at perimeter openings having an open-
39 grate trench across the opening that connects to an approved collection system.

40
41 **[2704.2.2] 5004.2.2 Secondary containment for hazardous material liquids and solids.**
42 Where required by FC Table [2704.2.2] 5004.2.2, buildings, structures, rooms or areas used
43 for the storage of hazardous materials liquids or solids shall be provided with secondary
44 containment in accordance with this section when the capacity of an individual vessel or the
45 aggregate capacity of multiple vessels exceeds the following quantities:

1 1. Liquids: Capacity of an individual vessel exceeds 55 gallons (208 L) or the aggregate
2 capacity of multiple vessels exceeds 1,000 gallons (3785 L).

3
4 2. Solids: Capacity of an individual vessel exceeds 550 pounds (250 kg) or the aggregate
5 capacity of multiple vessels exceeds 10,000 pounds (4540 kg).

6
7
8 **FC TABLE [2704.2.2] 5004.2.2**
REQUIRED SECONDARY CONTAINMENT—HAZARDOUS MATERIAL SOLIDS AND LIQUIDS STORAGE

MATERIAL		INDOOR STORAGE		OUTDOOR STORAGE	
		Solids	Liquids	Solids	Liquids
Physical-hazard materials					
Combustible liquids	Class II	Not Applicable	See FC Chapter [34] 57	Not Applicable	See FC Chapter [34] 57
	Class IIIA		See FC Chapter [34] 57		See FC Chapter [34] 57
	Class IIIB		See FC Chapter [34] 57		See FC Chapter [34] 57
	Cryogenic fluids		See FC Chapter [32] 55		See FC Chapter [32] 55
Explosives ^a		See FC Chapter [33] 56		See FC Chapter [33] 56	
Flammable liquids	Class IA	Not Applicable	See FC Chapter [34] 57	Not Applicable	See FC Chapter [34] 57
	Class IB		See FC Chapter [34] 57		See FC Chapter [34] 57
	Class IC		See FC Chapter [34] 57		See FC Chapter [34] 57
Flammable solids		Not Required	Not Applicable	Not Required	Not Applicable
Organic peroxides, nondetonable	Class I	Required	Required	Not Required	Required
	Class II	Required	Required	Not Required	Not Required
	Class III				
	Class IV				
	Class V	Not Required	Not Required	Not Required	Not Required
Oxidizers	Class 4	Required	Required	Not Required	Required
	Class 3				Not Required
	Class 2	Not Required	Not Required	Not Required	Not Required
	Class 1	Not Required	Not Required	Not Required	Not Required
Pyrophorics, nondetonable		Not Required	Required	Not Required	Required
Unstable (reactives), nondetonable	Class 4	Required	Required	Required	Required
	Class 3				
	Class 2	Not Required	Not Required	Not Required	Not Required
	Class 1				
Water-reactives, nondetonable	Class 3	Required	Required	Required	Required
	Class 2	Not Required	Not Required	Not Required	Not Required
	Class 1				
Health-hazard materials					
Corrosives		Not Required	Required	Not Required	Required
Highly toxics		Required	Required	Required	Required
Toxics					

9 a. Unclassified detonable organic peroxides (see FC Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable
10 (reactive) materials (see FC Chapter [43] 66) and detonable water-reactive materials (see FC Chapter [44] 67) shall be treated as explosives for
11 purposes of storage, handling and use (see FC Chapter [33] 56).
12

13 **[2704.2.2.1] 5004.2.2.1 Containment and drainage methods.** The building, structure,
14 room or area shall contain or drain the hazardous materials and fire protection water
15 through the use of one of the following methods:
16

- 1 1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in
2 outdoor locations.
- 3
- 4 2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar
5 protection in outdoor locations.
- 6
- 7 3. Sumps and collection systems.
- 8
- 9 4. Drainage systems leading to an approved location.
- 10
- 11 5. Other approved engineered systems.
- 12

13 **[2704.2.2.2] 5004.2.2.2 Incompatible materials.** Incompatible materials used in open
14 systems shall be separated from each other in the secondary containment system.

15

16 **[2704.2.2.3] 5004.2.2.3 Indoor design.** Secondary containment for indoor storage areas
17 shall be designed to contain a spill from the largest vessel plus the design flow volume of
18 fire protection water calculated to discharge from the fire extinguishing system over the
19 minimum required system design area or area of the room or area in which the storage is
20 located, whichever is smaller. The containment capacity shall be designed to contain the
21 flow for a minimum period of 20 minutes.

22

23 **[2704.2.2.4] 5004.2.2.4 Outdoor design.** Secondary containment for outdoor storage areas
24 shall be designed to contain a spill from the largest individual vessel. If the area is open to
25 rainfall, secondary containment shall be designed to include the volume of a 24-hour
26 rainfall as determined by a 25-year storm but in no case less than 110 percent of the largest
27 individual vessel and provisions shall be made to drain accumulations of ground water and
28 rainwater.

29

30 **[2704.2.2.5] 5004.2.2.5 Monitoring.** Monitoring shall be provided to detect hazardous
31 materials in the secondary containment system. The method of monitoring may be visual
32 inspection of the primary or secondary containment, or other approved means. Where
33 secondary containment is subject to the intrusion of water, a monitoring method for
34 detecting water shall be provided. Where monitoring devices are provided, they shall be
35 connected to approved audible or visible alarms.

36

37 **[2704.2.2.6] 5004.2.2.6 Drainage system design.** Drainage systems shall be in accordance
38 with the Plumbing Code and the following requirements:

- 39
- 40 1. The slope of floors to drains in indoor locations, or similar protection in outdoor
41 locations, shall not be less than 1 percent.
- 42
- 43 2. Drains from indoor storage areas shall be sized to carry the volume of the fire
44 protection water as determined by the design density discharged from the fire
45 extinguishing system over the minimum required system design area or area of the
46 room or area in which the storage is located, whichever is smaller.
- 47

- 1 3. Drains from outdoor storage areas shall be sized to carry the volume of the fire flow
2 and the volume of a 24-hour rainfall as determined by a 25-year storm.
3
- 4 4. Materials of construction for drainage systems shall be compatible with the materials
5 stored.
6
- 7 5. Incompatible materials used in open systems shall be separated from each other in
8 the drainage system.
9
- 10 6. Drains shall terminate in an approved location away from buildings, structures,
11 valves, means of egress, fire access roadways, adjoining property and storm drains.
12

13 **[2704.2.3] 5004.2.3 Containment pallets.** When used as an alternative to spill control and
14 secondary containment for outdoor storage in accordance with the exception set forth in
15 [FC2704.2] FC5004.2, containment pallets shall be in compliance with the following
16 requirements:

- 17 1. A liquid-tight sump accessible for visual inspection shall be provided.
18
- 19 2. The sump shall be designed to contain not less than 66 gallons (250 L).
20
- 21 3. Exposed surfaces shall be compatible with material stored.
22
- 23 4. The containment pallet shall be protected to prevent collection of rainwater within the
24 sump.
25

26
27 **[2704.3] 5004.3 Ventilation.** Indoor storage areas and storage buildings shall be provided with
28 mechanical exhaust ventilation or natural ventilation where natural ventilation can be shown to be
29 acceptable for the materials as stored.
30

31 **Exception:** Storage areas for flammable solids complying with the requirements of FC Chapter
32 [36] 59.
33

34 **[2704.3.1] 5004.3.1 System requirements.** Exhaust ventilation systems shall comply with the
35 following requirements:
36

- 37 1. Installation shall be in accordance with the Mechanical Code.
38
- 39 2. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per
40 square foot (0.00508 m³/s/m²) of floor area over the storage area.
41
- 42 3. Systems shall operate continuously unless alternative designs are approved.
43
- 44 4. A manual shutoff control shall be provided outside of the room in a position adjacent to
45 the access door to the room or in an approved location. The switch shall be a break-glass
46 or other approved type and shall be labeled: VENTILATION SYSTEM EMERGENCY
47 SHUTOFF.

1
2 5. Exhaust ventilation shall be designed based on the density of the potential fumes or
3 vapors released. For fumes or vapors that are heavier than air, exhaust shall be taken from
4 a point within 12 inches (305 mm) of the floor. For fumes or vapors that are lighter than
5 air, exhaust shall be taken from a point within 12 inches (305 mm) of the highest point
6 of the room.

7
8 6. The design and location of exhaust and inlet air openings shall serve to provide air
9 movement across all portions of the floor and room to prevent the accumulation of
10 vapors.

11
12 **[2704.4] 5004.4 Separation of incompatible hazardous materials.** Incompatible materials shall
13 be separated in accordance with [FC2703.9.8] FC5003.9.8.

14
15 **[2704.5] 5004.5 Sprinkler systems.** Indoor storage areas and storage buildings shall be protected
16 throughout by a sprinkler system. The design of the sprinkler system shall not be less than that
17 required for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (279 m²).
18 Where the materials or storage arrangement are required by other regulations to be provided with
19 a higher level of sprinkler system protection, the higher level of sprinkler system protection shall
20 be provided.

21
22 **[2704.6] 5004.6 Explosion control.** Buildings, structures and indoor rooms and other areas shall
23 be provided with explosion control in accordance with FC911.

24
25 **[2704.7] 5004.7 Emergency power.** Where mechanical ventilation, treatment systems,
26 temperature control, alarm, detection or other electrically operated systems are required, such
27 systems shall be provided with an emergency power system in accordance with the Electrical
28 Code, and the construction codes, including the Building Code, and FC604.

29
30 **Exceptions:**

31
32 1. Mechanical ventilation for storage of Class IB and Class IC flammable liquids
33 and combustible liquids in closed containers not exceeding 6½ gallons (25 L)
34 capacity.

35
36 2. Storage areas for Class 1 and 2 oxidizers.

37
38 3. Storage areas for Class III, IV and V organic peroxides.

39
40 4. Storage areas for highly toxic or toxic materials, in accordance with FC [3704.2.2.8]
41 6004.2.2.8 and [3704.3.2.6] 6004.3.2.6.

42
43 5. Storage areas for which an approved fail-safe engineered system has been installed for
44 mechanical ventilation, treatment systems or temperature control systems.

45
46 **[2704.8] 5004.8 Limit controls.** Limit controls shall be provided in accordance with FC [2704.8.1]
47 5004.8.1 and [2704.8.2] 5004.8.2.

1
2 [2704.8.1] **5004.8.1 Temperature control.** Materials that must be kept at temperatures other
3 than normal ambient temperatures shall be provided with an approved means to maintain the
4 temperature within a safe range. Redundant temperature control equipment that will operate
5 on failure of the primary temperature control system, or other approved means to maintain the
6 required temperature range, shall be provided.

7
8 [2704.8.2] **5004.8.2 Pressure control.** Stationary tanks and equipment containing hazardous
9 material liquids that can generate pressures exceeding design limits because of exposure fires
10 or internal reaction, shall have some form of construction or other approved means that will
11 relieve excessive internal pressure. The means of pressure relief shall vent to an approved
12 location outdoors or to an exhaust scrubber or treatment system in accordance with FC Chapter
13 [37] 60.

14
15 [2704.9] **5004.9 Emergency alarm.** An approved manual emergency alarm system shall be
16 provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-
17 initiating devices shall be installed outside of each interior exit or exit access door of storage
18 buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local
19 alarm to alert occupants of an emergency situation involving hazardous materials.

20
21 [2704.10] **5004.10 Supervision.** Emergency alarm, detection and fire extinguishing systems
22 required by [FC2704] FC5004 shall be supervised by an approved central, proprietary or remote
23 station service or shall initiate an audible and visual signal at a constantly attended on-site location.

24
25 [2704.11] **5004.11 Clearance from combustibles.** The area surrounding an outdoor storage area
26 or tank shall be kept clear of vegetation, rubbish and other combustible waste, and storage of
27 combustible materials, for a minimum distance of 25 feet (7620 mm).

28
29 [2704.12] **5004.12 Noncombustible floor.** Except for surfacing, floors of storage areas shall be of
30 noncombustible construction.

31
32 [2704.13] **5004.13 Weather protection.** Outdoor hazardous material storage areas sheltered by
33 overhead noncombustible construction shall not be considered indoor storage when the area is
34 constructed in accordance with the requirements for weather protection as required by the
35 construction codes, including the Building Code.

36
37 **Exception:** Storage of explosives shall be considered as indoor storage.

38
39 **SECTION FC [2705] 5005**
40 **HANDLING AND USE**

41
42 [2705.1] **5005.1 General.** Hazardous materials in amounts exceeding the maximum allowable
43 quantity per control area set forth in [FC2703.1] FC5003.1 shall be handled and used, including
44 dispensed, in accordance with FC [2701] 5001, [2703] 5003 and [2705] 5005. Hazardous materials
45 in amounts not exceeding the maximum allowable quantity per control area set forth in [FC2703.1]
46 FC5003.1 shall be handled and used, including dispensed, in accordance with FC [2701] 5001 and
47 [2703] 5003.

1
2 **[2705.1.1] 5005.1.1 Separation of incompatible materials.** Separation of incompatible
3 materials shall be in accordance with [FC2703.9.8] FC5003.9.8.

4
5 **[2705.1.2] 5005.1.2 Noncombustible floor.** Except for floor finishing operations, floors of
6 areas where liquid or solid hazardous materials are used in open systems shall be of
7 noncombustible, liquid-tight construction.

8
9 **[2705.1.3] 5005.1.3 Spill control and secondary containment for hazardous material**
10 **liquids.** Where required by other provisions of [FC2705] FC5005, spill control and secondary
11 containment shall be provided for hazardous material liquids in accordance with [FC2704.2]
12 FC5004.2.

13
14 **[2705.1.4] 5005.1.4 Limit controls.** Limit controls shall be provided in accordance with FC
15 [2705.1.4.1] 5005.1.4.1 through [2705.1.4.4] 5005.1.4.4.

16
17 **[2705.1.4.1] 5005.1.4.1 High-liquid-level control.** Open tanks in which liquid hazardous
18 materials are used shall be equipped with a liquid-level limit control or other means to
19 prevent overfilling of the tank.

20
21 **[2705.1.4.2] 5005.1.4.2 Low-liquid-level control.** Approved safeguards shall be provided
22 to prevent a low-liquid level in a tank from creating a hazardous condition, including
23 overheating of a tank or its contents.

24
25 **[2705.1.4.3] 5005.1.4.3 Temperature control.** Temperature control shall be provided in
26 accordance with [FC2704.8.1] FC5004.8.1.

27
28 **[2705.1.4.4] 5005.1.4.4 Pressure control.** Pressure control shall be provided in accordance
29 with [FC2704.8.2] FC5004.8.2.

30
31 **[2705.1.5] 5005.1.5 Emergency power.** Where mechanical ventilation, treatment systems,
32 temperature control, alarm, detection or other electrically operated systems are required, such
33 systems shall be provided with an emergency power system in accordance with the Electrical
34 Code, the construction codes, including the Building Code, and FC604.

35
36 **[Exceptions:**

- 37
38 1. Areas in which an approved fail-safe engineered system has been installed for
39 mechanical ventilation, treatment systems and temperature control systems.
40
41 2. **[Exception:** Systems for highly toxic or toxic gases provided with emergency power
42 in accordance with FC [3704.2.2.8] 6004.2.2.8 and [3704.3.2.6] 6004.3.2.6.

43
44 **[2705.1.6] 5005.1.6 Supervision.** Alarm, detection and fire extinguishing systems required by
45 other provisions of [FC2705] FC5005 shall be supervised by an approved central station or
46 shall initiate an audible and visible signal at a continuously attended on-site location.

1 [2705.1.7] **5005.1.7 Lighting.** Adequate lighting by natural or artificial means shall be
2 provided.
3

4 [2705.1.8] **5005.1.8 Fire extinguishing systems.** Indoor rooms or areas in which hazardous
5 materials are handled or used shall be protected by a fire extinguishing system in accordance
6 with FC Chapter 9 and the construction codes, including the Building Code. The design of any
7 sprinkler system shall not be less than that required for Ordinary Hazard, Group 2, with a
8 minimum design area of 3,000 square feet (279 m²). Where the materials or storage
9 arrangement are required by other regulations to be provided with a higher level of sprinkler
10 system protection, the higher level of sprinkler system protection shall be provided.
11

12 [2705.1.9] **5005.1.9 Ventilation.** Indoor use areas, including dispensing areas, shall be
13 provided with exhaust ventilation in accordance with Section 502.8 of the Mechanical Code.
14

15 **Exception:** Ventilation is not required for flammable solids, unless they are in the form of
16 finely divided particles or generate finely divided particles during use.
17

18 [2705.1.10] **5005.1.10 Liquid transfer.** Liquids having a hazard ranking of 3 or 4 pursuant to
19 NFPA 704 shall be transferred by one of the following methods:
20

- 21 1. From safety cans complying with the requirements of UL 30.
- 22
- 23 2. Through an approved closed piping system.
- 24
- 25 3. From containers or tanks by an approved pump taking suction through an opening in the
26 top of the container or tank.
- 27
- 28 4. From containers or tanks by gravity through an approved self-closing or automatic-
29 closing valve when the container or tank and dispensing operations are provided with
30 spill control and secondary containment in accordance with [FC2704.2] FC5004.2.
31 Highly toxic liquids shall not be dispensed by gravity from tanks.
- 32
- 33 5. Approved engineered liquid transfer systems.
- 34

35 **Exceptions:**

- 36
- 37 1. Liquids having a hazard ranking of 4 when dispensed from approved containers not
38 exceeding 1.3 gallons (5 L).
- 39
- 40 2. Liquids having a hazard ranking of 3 when dispensed from approved containers not
41 exceeding 5.3 gallons (20 L).
- 42

43 [2705.2] **5005.2 Indoor use.** Indoor use, including dispensing, of hazardous materials shall be in
44 buildings complying with the requirements of the construction codes, including the Building Code,
45 and in accordance with [FC2705.1] FC5005.1 and FC [2705.2.1] 5005.2.1 through [2705.2.2.5]
46 5005.2.2.5.
47

1 [2705.2.1] **5005.2.1 Open systems.** Use of hazardous materials in open containers or systems
 2 shall be in accordance with FC [2705.2.1.1] 5005.2.1.1 through [2705.2.1.4] 5005.2.1.4.

3
 4 [2705.2.1.1] **5005.2.1.1 Ventilation.** Where gases, liquids or solids having a hazard
 5 ranking of 3 or 4, as defined in NFPA 704 are used, mechanical exhaust ventilation shall
 6 be provided to capture gases, fumes, mists or vapors at the point of generation.

7
 8 **Exception:** Gases, liquids or solids that do not generate harmful fumes, mists or vapors.
 9

10 [2705.2.1.2] **5005.2.1.2 Explosion control.** Explosion control shall be provided in
 11 accordance with [FC2704.6] FC5004.6 when an explosive environment can occur because
 12 of the characteristics or nature of the hazardous materials or the manner in which they are
 13 used.

14
 15 [2705.2.1.3] **5005.2.1.3 Spill control for hazardous material liquids.** Buildings, rooms
 16 or areas where hazardous material liquids are dispensed into vessels exceeding a 1.3-gallon
 17 (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be
 18 provided with spill control in accordance with [2704.2.1] FC5004.2.1.

19
 20 [2705.2.1.4] **5005.2.1.4 Secondary containment for hazardous material liquids.** Where
 21 required by FC Table [2705.2.1.4] 5005.2.1.4, buildings, structures, rooms or areas where
 22 hazardous material liquids are used in open systems shall be provided with secondary
 23 containment in accordance with [FC2704.2.2] FC5004.2.2 when the capacity of an
 24 individual vessel or system or the capacity of multiple vessels or systems exceeds the
 25 following quantities:

- 26
 27 1. Individual vessel or system: greater than 1.3 gallons (5 L).
 28
 29 2. Multiple vessels or systems: greater than 5.3 gallons (20 L).
 30
 31

32
 FC TABLE [2705.2.1.4] **5005.2.1.4**
REQUIRED SECONDARY CONTAINMENT—HAZARDOUS MATERIAL SOLIDS AND LIQUIDS USE

MATERIAL		INDOOR USE		OUTDOOR USE	
		Solids	Liquids	Solids	Liquids
Physical-hazard materials					
Combustible liquids	Class II	Not Applicable	See FC Chapter [34] <u>57</u>	Not Applicable	See FC Chapter [34] <u>57</u>
	Class IIIA		See FC Chapter [34] <u>57</u>		See FC Chapter [34] <u>57</u>
	Class IIIB		See FC Chapter [34] <u>57</u>		See FC Chapter [34] <u>57</u>
Cryogenic fluids		Not Applicable	See FC Chapter [32] <u>55</u>	Not Applicable	See FC Chapter [32] <u>55</u>
Explosives ^a		See FC Chapter [33] <u>56</u>		See FC Chapter [33] <u>56</u>	
Flammable liquids	Class IA	Not Applicable	See FC Chapter [34] <u>57</u>	Not Applicable	See FC Chapter [34] <u>57</u>
	Class IB		See FC Chapter [34] <u>57</u>		See FC Chapter [34] <u>57</u>
	Class IC		See FC Chapter [34] <u>57</u>		See FC Chapter [34] <u>57</u>
Flammable solids		Not Required	Not Applicable	Not Required	Not Applicable
Organic peroxides nondetonable	Class I	Not Required	Required	Not Required	Required
	Class II				

	Class III				
	Class IV				
	Class V		Not Required	Not Required	Not Required
Oxidizers	Class 4		Required	Not Required	Required
	Class 3				
	Class 2				
	Class 1				
Pyrophorics nondetonable		Not Required	Required	Not Required	Required
Unstable (reactives) nondetonable	Class 4	Not Required	Required	Required	Required
	Class 3				
	Class 2				
	Class 1	Not Required	Not Required	Required	Required
Water-reactives, nondetonable	Class 3	Not Required	Required	Required	Required
	Class 2				
	Class 1	Not Required	Not Required	Required	Required
Health-hazard materials					
Corrosives		Not Required	Required	Not Required	Required
Highly toxics		Required			
Toxics		Not Required			

a. Unclassified detonable organic peroxides (see FC Chapter [39] 62), detonable pyrophoric materials (see FC Chapter [41] 64), detonable unstable (reactive) materials (see FC Chapter [43] 66) and detonable water-reactive materials (see FC Chapter [44] 67) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter [33] 56).

[2705.2.2] 5005.2.2 Closed systems. Use of hazardous materials in closed containers or systems shall be in accordance with FC [2705.2.2.1] 5005.2.2.1 through [2705.2.2.5] 5005.2.2.5.

[2705.2.2.1] 5005.2.2.1 Design. Systems shall be suitable for the use intended and shall be designed by a qualified person. Controls shall be designed to prevent materials from entering or leaving the process or reaction systems at other than the intended time, rate or path. Where automatic controls are provided, they shall be designed to be fail safe.

[2705.2.2.2] 5005.2.2.2 Ventilation. Where closed systems are designed to be opened as part of normal operations, ventilation shall be provided in accordance with [FC2705.2.1.1] FC5005.2.1.1.

[2705.2.2.3] 5005.2.2.3 Explosion control. Explosion control shall be provided in accordance with [FC2704.6] FC5004.6 where an explosive environment exists because of the hazardous materials or the manner in which they are used.

Exception: Where process vessels are designed to contain fully the worst-case explosion anticipated within the vessel under process conditions based on the most likely failure.

[2705.2.2.4] 5005.2.2.4 Spill control for hazardous material liquids. Buildings, rooms or areas where hazardous material liquids are used in individual vessels exceeding a 55-gallon (208 L) capacity shall be provided with spill control in accordance with [FC2704.2.1] FC5004.2.1.

[2705.2.2.5] 5005.2.2.5 Secondary containment for hazardous material liquids. Where required by FC Table [2705.2.1.4] 5005.2.1.4, buildings, rooms or areas where hazardous material liquids are used in vessels or systems shall be provided with secondary

1 containment in accordance with [FC2704.2.2] FC5004.2.2 when the capacity of an
2 individual vessel or system or the capacity of multiple vessels or systems exceeds the
3 following quantities:

- 4
- 5 1. Individual vessel or system: greater than 55 gallons (208 L).
- 6
- 7 2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).
- 8

9 **[2705.3] 5005.3 Outdoor use.** Outdoor use, including dispensing, of hazardous materials shall be
10 in accordance with FC [2705.3.1] 5005.3.1 through [2705.3.9] 5005.3.9.

11

12 **[2705.3.1] 5005.3.1 Quantities exceeding the maximum allowable quantity per control**
13 **area.** Outdoor use of hazardous materials, in either closed or open containers or systems, in
14 amounts exceeding the maximum allowable quantity per control area indicated in FC Tables
15 [2703.1.1(3)] 5003.1.1(3) and [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701]
16 5001, [2703] 5003, [2705.1] 5005.1 and [2705.3] 5005.3.

17

18 **[2705.3.2] 5005.3.2 Quantities not exceeding the maximum allowable quantity per control**
19 **area.** Outdoor use of hazardous materials, in either closed or open containers or systems, in
20 amounts not exceeding the maximum allowable quantity per control area indicated in FC
21 Tables [2703.1.1(3)] 5003.1.1(3) and [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC
22 [2701] 5001 and [2703] 5003.

23

24 **[2705.3.3] 5005.3.3 Location.** Outdoor use areas for hazardous materials shall be located as
25 required for outdoor storage in accordance with [FC2704] FC5004.

26

27 **[2705.3.4] 5005.3.4 Spill control for hazardous material liquids in open systems.** Outdoor
28 areas where hazardous material liquids are dispensed in vessels exceeding a 1.3-gallon (5 L)
29 capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with
30 spill control in accordance with [FC2704.2.1] FC5004.2.1.

31

32 **[2705.3.5] 5005.3.5 Secondary containment for hazardous material liquids in open**
33 **systems.** Where required by FC Table [2705.2.1.4] 5005.2.1.4, outdoor areas where hazardous
34 material liquids are used in open systems shall be provided with secondary containment in
35 accordance with [FC2704.2.2] FC5004.2.2 when the capacity of an individual vessel or system
36 or the capacity of multiple vessels or systems exceeds the following quantities:

- 37
- 38 1. Individual vessel or system: greater than 1.3 gallons (5 L).
- 39
- 40 2. Multiple vessels or systems: greater than 5.3 gallons (20 L).
- 41

42 **[2705.3.6] 5005.3.6 Spill control for hazardous material liquids in closed systems.** Outdoor
43 areas where hazardous material liquids are used in closed systems exceeding 55 gallons (208
44 L) shall be provided with spill control in accordance with [FC2704.2.1] FC5004.2.1.

45

46 **[2705.3.7] 5005.3.7 Secondary containment for hazardous material liquids in closed**
47 **systems.** Where required by FC Table [2705.2.1.4] 5005.2.1.4, outdoor areas where hazardous

1 material liquids are used in closed systems shall be provided with secondary containment in
2 accordance with [FC2704.2.2] FC5004.2.2 when the capacity of an individual vessel or system
3 or the capacity of multiple vessels or systems exceeds the following quantities:
4

5 1. Individual vessel or system: greater than 55 gallons (208 L).
6

7 2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).
8

9 **[2705.3.8] 5005.3.8 Clearance from combustibles.** The area surrounding an outdoor use area,
10 including an area used for dispensing, shall be kept clear of vegetation, rubbish and other
11 combustible waste, and combustible materials, for a minimum distance of 30 feet (9144 mm).
12

13 **[2705.3.9] 5005.3.9 Weather protection.** Outdoor hazardous material use areas sheltered by
14 overhead noncombustible construction shall not be considered indoor use when the area is
15 constructed in accordance with the requirements for weather protection as required in the
16 construction codes, including the Building Code.
17

18 **Exception:** Use of explosives shall be considered as indoor use.
19

20 **[2705.4] 5005.4 Handling.** Handling of hazardous materials shall be in accordance with FC
21 [2705.4.1] 5005.4.1 through [2705.4.4] 5005.4.4.
22

23 **[2705.4.1] 5005.4.1 Quantities exceeding the maximum allowable quantity per control**
24 **area.** Handling of hazardous materials in indoor and outdoor locations in amounts exceeding
25 the maximum allowable quantity per control area indicated in FC Tables [2703.1.1(1)]
26 5003.1.1(1) through [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001,
27 [2703] 5003, [2705.1] 5005.1 and [2705.4] 5005.4.
28

29 **[2705.4.2] 5005.4.2 Quantities not exceeding the maximum allowable quantity per control**
30 **area.** Handling of hazardous materials in indoor locations in amounts not exceeding the
31 maximum allowable quantity per control area indicated in FC Tables [2703.1.1(1)] 5003.1.1(1)
32 and [2703.1.1(2)] 5003.1.1(2) shall be in accordance with FC [2701] 5001 and [2703] 5003.
33 Handling of hazardous materials in outdoor locations in amounts not exceeding the maximum
34 allowable quantity per control area indicated in FC Tables [2703.1.1(3)] 5003.1.1(3) and
35 [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001 and [2703] 5003.
36

37 **[2705.4.3] 5005.4.3 Location.** Outdoor handling areas for hazardous materials shall be located
38 as required for outdoor storage in accordance with [FC2704] FC5004.
39

40 **[2705.4.4] 5005.4.4 Emergency alarm.** Where hazardous materials in quantities exceeding
41 the maximum allowable quantity per control area having a hazard ranking of 3 or 4 pursuant
42 to NFPA 704 are moved through corridors or exit enclosures, there shall be an emergency
43 telephone system, a local manual alarm station or an approved alarm-initiating device at not
44 more than 150-foot (45 720-mm) intervals throughout the handling route, and at each exit
45 doorway throughout the handling route. The signal shall be relayed to an approved central
46 station or remote supervising station or a constantly attended on-site location and shall also
47 initiate a local audible alarm.

1
2
3 **SECTION FC [2706] 5006**
4 **NON-PRODUCTION CHEMICAL LABORATORIES**

5 **[2706.1] 5006.1 Scope.** This section shall govern the storage, handling and use of laboratory
6 chemicals in a non-production laboratory and accessory storage of laboratory chemicals in a
7 storage room. The design and construction of non-production laboratories and accessory storage
8 rooms for laboratory chemicals shall comply with the requirements of the construction codes,
9 including the Building Code and the Mechanical Code.

10
11 **[2706.2] 5006.2 General.** Laboratory chemicals within a laboratory unit, including an educational
12 or instructional laboratory unit, shall be stored, handled and used in accordance with this section
13 and, except as otherwise provided in this section, NFPA 45, as modified by FC Appendix B with
14 respect to laboratory unit fire hazard class D requirements. The ceiling, floor and walls of a
15 laboratory unit shall be separated from all adjoining areas by a minimum 1-hour fire-rated
16 construction.

17
18 **[2706.3] 5006.3 Permits.** Permits shall be required as set forth in FC105.6.

19
20 **[2706.4] 5006.4 Supervision.** Non-production laboratory operations requiring a permit shall be
21 under the personal supervision of a certificate of fitness holder. At least one certificate of fitness
22 holder shall be present on each floor of the laboratory unit on which laboratory operations are
23 being conducted while the laboratory is in operation. Additional certificate of fitness holders shall
24 be provided as the commissioner may require as a condition of the permit. Accessory laboratory
25 chemical storage rooms shall be under the general supervision of a certificate of fitness holder.

26
27 **[2706.5] 5006.5 Prohibitions.** It shall be unlawful in any non-production laboratory or any
28 accessory storage of laboratory chemicals in a storage room to:

- 29
30 1. Store, handle or use any explosive.
31
32 2. Store, handle or use any unclassified detonable organic peroxide, detonable pyrophoric
33 material, detonable unstable (reactive) material or detonable water-reactive material.
34
35 3. Store, handle or use any Class 4 unstable (reactive) material.
36
37 4. Store, handle or use any Class 4 oxidizing material.
38
39 5. Store, handle or use below grade any flammable gas.
40
41 6. Use an open flame for heating or distilling any flammable solid, flammable liquid or
42 flammable gas.
43
44 7. Store flammable liquids in basements, cellars or other areas below grade.
45
46 8. Store combustible liquids in basements, cellars or other areas below grade in a manner
47 contrary to [FC3404.3.5.1] FC5704.3.5.1.

1
2 9. Store, handle or use LPG in Group E and I occupancies in a manner contrary to
3 FC6103.2.1.4.

4
5 10. Store, handle or use in an educational laboratory gases classified as a Class 3 or 4 health
6 hazard.

7
8 **[2706.6] 5006.6 Quantity limitations.** The quantities of laboratory chemicals stored, handled or
9 used within a laboratory unit, excluding storage rooms, shall be in accordance with FC 5006.6.1
10 through 5006.6.10. Unless designated as a control area, FC5003.8.3 shall not apply to a laboratory
11 unit.

12
13 **[2706.6.1] 5006.6.1 Flammable and combustible liquids.** The density and total quantity of
14 flammable and combustible liquids allowed within a laboratory unit, excluding storage rooms,
15 shall be in accordance with [Table 10.1.1] Table 9.1.1(b) of NFPA 45, as modified by FC
16 Appendix B, for laboratory unit fire hazard Class D.

17
18 **Exceptions:** For laboratory units other than educational or instructional laboratories
19 pursuant to NFPA 45, as modified by FC Appendix B:

- 20
21 1. The density of flammable and combustible liquids allowed within a Class D
22 laboratory unit may be increased to those set forth in [Table 10.1.1] Table 9.1.1(b) of
23 NFPA 45, as modified by FC Appendix B, for laboratory unit fire hazard Class B
24 provided the total quantity of flammable and combustible liquid, including any in
25 storage cabinets or safety cans, does not exceed 25 gallons (95 L).
- 26
27 2. The density of flammable and combustible liquids allowed within a Class D
28 laboratory unit may be increased to those set forth in [Table 10.1.1] Table 9.1.1(b) of
29 NFPA 45, as modified by FC Appendix B, for laboratory unit fire hazard Class B
30 provided the total quantity of flammable and combustible liquid, including any in
31 storage cabinets or safety cans, does not exceed 30 gallons (114 L) and the walls,
32 floors and ceilings of the laboratory unit are separated from all adjoining areas by
33 2-hour fire-rated construction.
- 34
35 3. The quantity of flammable and combustible liquids allowed within a Class D
36 laboratory unit, excluding quantities in storage cabinets or safety cans, may be
37 increased from 75 gallons (284 L) to 100 gallons (379 L), [and the total quantities of
38 flammable and combustible liquids, including quantities in storage cabinets or safety
39 cans, may be increased to 200 gallons (757 L)] provided the walls, floors and ceilings
40 of the laboratory unit are separated from all adjoining areas by 2-hour fire-rated
41 construction. Total quantities of flammable and combustible liquids, including
42 quantities in storage cabinets and safety cans, may be increased from 150 gallons
43 (568 L) to 200 gallons (757 L), provided the walls, floors and ceilings of the
44 laboratory unit are separated from all adjoining areas by 2-hour fire-rated
45 construction.

1 **[2706.6.2] 5006.6.2 Flammable solids.** The storage, handling and use of flammable solids
2 within a laboratory unit shall be in accordance with FC Chapters [27] 50 and [36] 59. The total
3 quantity of flammable solids stored, handled and used, excluding any quantities in a storage
4 room, shall not exceed 10 pounds (4.54 kg).

5
6 **Exception:** The total quantity of flammable solids allowed within a laboratory unit that is
7 provided with walls, floors and ceilings that separate the laboratory unit from all adjoining
8 areas by 2-hour fire-rated construction shall not exceed 15 pounds (6.81 kg).

9
10 **[2706.6.3] 5006.6.3 Oxidizers and organic peroxides.** The storage, handling and use of solid
11 and liquid oxidizers and organic peroxides within a laboratory unit shall be in accordance with
12 FC Chapters [27] 50, [39] 62 and [40] 63 and the total quantity of all such material, excluding
13 any quantities in a storage room, shall not exceed 40 pounds ([18.16] 18.14 kg), provided that
14 not more than 2 pounds ([0.908] 0.907 kg) of such oxidizers are Class 3 oxidizers and not more
15 than 1 pound (0.454 kg) of such peroxides are Class I organic peroxides.

16
17 **Exception:** The total aggregate quantity of solid and liquid oxidizers and organic peroxides
18 allowed within a laboratory unit that is provided with walls, floors and ceilings that separate
19 the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not
20 exceed 50 pounds (22.7 kg), provided that not more than 2 pounds ([0.908] 0.907 kg) of
21 such oxidizers are Class 3 oxidizers and not more than 1 pound (0.454 kg) of such
22 peroxides are Class I organic peroxides.

23
24 **[2706.6.4] 5006.6.4 Unstable (reactive) material.** The storage, handling and use of unstable
25 (reactive) material within a laboratory unit shall be in accordance with FC Chapters [27] 50
26 and [43] 66 and the total quantity, excluding any quantities in a storage room, shall not exceed
27 6 pounds ([2.724] 2.722 kg), provided not more than 1 pound (0.454 kg) of such reactive
28 material is Class 3 unstable (reactive).

29
30 **Exception:** The total quantity of unstable (reactive) material allowed within a laboratory
31 unit that is provided with walls, floors and ceilings that separate the laboratory unit from
32 all adjoining areas by 2-hour fire-rated construction shall not exceed 12 pounds (5.44 kg),
33 provided not more than 1 pound (0.454 kg) of such reactive material is Class 3 unstable
34 (reactive).

35
36 **[2706.6.5] 5006.6.5 Water-reactive material.** The storage, handling and use of water-reactive
37 material within a laboratory unit shall be in accordance with FC Chapters [27] 50 and [44] 67
38 and the total quantity, excluding any quantities in a storage room, shall not exceed 2½ pounds
39 ([1.135] 1.134 kg).

40
41 **Exception:** The total quantity of water-reactive material allowed within a laboratory unit
42 that is provided with walls, floors and ceilings that separate the laboratory unit from all
43 adjoining areas by 2-hour fire-rated construction shall not exceed 5 pounds (2.27 kg).

44
45 **[2706.6.6] 5006.6.6 Pyrophoric material.** The storage, handling and use of solid or liquid
46 pyrophoric material within a laboratory unit shall be in accordance with FC Chapters [27] 50

1 and [41] 64 and the total quantity, excluding any quantities in a storage room, shall not exceed
2 ½ pound (0.227 kg).

3
4 **Exception:** The total quantity of solid or liquid pyrophoric material allowed within a
5 laboratory unit that is provided with walls, floors and ceilings that separate the laboratory
6 unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 1 pound
7 (0.454 kg).

8
9 **[2706.6.7] 5006.6.7 Highly toxic material.** The storage, handling and use of solid or liquid
10 highly toxic material within a laboratory unit shall be in accordance with FC Chapters [27] 50
11 and [37] 60 and the total quantity, excluding any quantities in a storage room, shall not exceed
12 5 pounds (2.27 kg).

13
14 **[2706.6.8] 5006.6.8 Toxic material.** The storage, handling and use of solid or liquid toxic
15 material within a laboratory unit shall be in accordance with FC Chapters [27] 50 and [37] 60
16 and the total quantity, excluding any quantities in a storage room, shall not exceed 250 pounds
17 ([113.5] 113.4 kg).

18
19 **[2706.6.9] 5006.6.9 Corrosive material.** The storage, handling or use of solid or liquid
20 corrosive material within a laboratory shall be in accordance with FC Chapters [27] 50 and
21 [31] 54 and the total quantity, excluding any quantity in a storage room, shall not exceed 250
22 gallons (946 L).

23
24 **[2706.6.10] 5006.6.10 Hazardous gases.** The storage, handling and use of hazardous gases
25 within a laboratory unit shall be in accordance with this section, FC Chapters 50, 53 through
26 55, 58, 60, 63, 64 and 66, as applicable, and NFPA 45, as modified by FC Appendix B. The
27 total quantity of hazardous gases, excluding any quantity stored in a storage room, shall be in
28 accordance with NFPA 45, as modified by FC Appendix B.

29
30 **5006.6.10.1 Highly toxic [and], toxic, and corrosive gases.** It shall be unlawful to store,
31 handle or use in any [educational and] instructional laboratory unit any combination of
32 highly toxic [and], toxic, and corrosive gases in quantities that exceed 20 SCF (0.566 m³).

33
34 **5006.6.10.2 Asphyxiant gases.** When the quantity of cryogenic inert gases or refrigerated
35 carbon dioxide stored, handled or used within a laboratory unit exceeds 60 gallons (227 L),
36 an oxygen sensor shall be installed and maintained at one or more locations within the
37 laboratory unit in accordance with FC5505.4.1.1.1, provided that at least one oxygen sensor
38 is installed in the laboratory unit.

39
40 **[2706.7] 5006.7 Storage room classification.** Storage rooms for laboratory chemicals accessory
41 to a laboratory unit shall be classified as set forth in the Building Code.

42
43 **[2706.8] 5006.8 Storage rooms.** In addition to the quantities that may be stored, handled and used
44 in a laboratory unit pursuant to [FC2706.6] FC5006.6, chemicals for use in a laboratory unit may
45 be stored in a dedicated storage room complying with Chapter 4 of the Building Code and the
46 following requirements:

- 1 1. Storage room capacity shall not exceed a maximum of 300 gallons (1136 L) of chemicals,
2 not to exceed 5 gallons per square foot (204 L/m²) of floor area.
3
- 4 2. Flammable gas storage rooms shall not contain more than 2,500 SCF (70.8 m³) of flammable
5 gas.
6
- 7 3. Chemicals that are incompatible with each other shall not be stored in the same storage
8 room, unless in compliance with the requirements of this chapter.
9
- 10 4. Chemicals shall not be used within the storage room.

11
12 **[2706.9] 5006.9 Safety showers.** Where more than 5 gallons (19 L) of corrosive liquid or
13 flammable liquid are stored, handled or used, suitable facilities with fixed overhead or flexible
14 hand-held showers shall be provided. Such shower shall be within 25 feet (7620 mm) of the
15 laboratory unit and storage room door and shall be maintained in good working order, and readily
16 accessible at all times.
17

18 **[2706.10] 5006.10 Neutralizing or absorbing agents.** Where more than 5 gallons (19 L) of
19 corrosive liquids are stored, handled or used, a sufficient quantity of suitable neutralizing or
20 absorbing agents shall be provided.
21

22 **[2706.11] 5006.11 Curtains and drapes.** Curtains and drapes installed in a laboratory unit shall
23 comply with the flame resistance requirements of FC Chapter 8.
24

25 **SECTION FC [2707] 5007**
26 **TRANSPORTATION OF HAZARDOUS MATERIALS**
27

28 **[2707.1] 5007.1 Scope.** This section shall govern the transportation of hazardous materials, as
29 defined in the regulations of the United States Department of Transportation, as set forth in 49
30 CFR Part 173.
31

32 **[2707.2] 5007.2 General.** Transportation of hazardous materials shall be in accordance with the
33 regulations of the United States Department of Transportation and this section.
34

35 **[2707.3] 5007.3 Prohibitions.** It shall be unlawful to:
36

- 37 1. Transport hazardous materials in or through the city where such transport is prohibited or
38 restricted by federal or state law, rule or regulation, including restrictions on transportation
39 of hazardous materials over bridges and through tunnels.
40
- 41 2. Transport in or through the city hazardous materials of such type, in such quantities, or in
42 such manner as is prohibited by this code or the rules, except where such transport is in
43 accordance with approved routes and times or other approved procedures or safety measures.
44
- 45 3. Transport hazardous materials in quantities requiring a permit pursuant to this code or the
46 rules without such permit.
47

1 4. Deliver hazardous materials in quantities requiring a permit pursuant to this code or the rules
2 to any location unless the owner or other person taking delivery thereof is in possession of a
3 permit for the storage, handling and/or use of such hazardous material at such location.
4

5 5. Transport LPG containers that are or have ever been filled with LPG in the trunk of a
6 passenger motor vehicle, or other area of such vehicle not readily visible to emergency
7 responders.
8

9 **[2707.4 Permits.** Permits to transport hazardous materials shall be required as set forth in FC105.6.
10 Such permits shall be issued to a particular motor vehicle, marine vessel, or watercraft for such
11 transportation. Any hazardous material for which a permit is required pursuant to FC105.6 for
12 transportation, may be transported without a permit provided that such cargo originates outside
13 New York State and: (1) remains in continuous transit without picking up or delivering such cargo
14 in the city; or (2) remains in continuous transit through the city until delivering such cargo to piers,
15 airports and shipping terminals for transshipment out of the city. Such transport shall be in
16 accordance with approved routes and times or other approved procedures and safety measures.]
17 **5007.4 Reserved.**
18

19 **[2707.5] 5007.5 Transportation of hazardous materials by vehicle.** Transportation of hazardous
20 materials by vehicle shall be in accordance with this section, the rules, and the requirements
21 contained in the regulations of the United States Department of Transportation, as set forth in 49
22 CFR, Parts 171, 172, 173, 177, 178, 180, 383, 387, 390, 392, 393, 396 and 397 and their
23 appendices, and any amendments thereto, with respect to:
24

25 1. The design, construction, maintenance and equipment of cargo tanks and other vehicles.
26

27 2. The marking and placarding of vehicles.
28

29 3. The preparation, execution and use of shipping documents.
30

31 4. The handling, loading and unloading of hazardous materials.
32

33 5. The qualifications and commercial driver's license requirements of vehicle operators.
34

35 6. Insurance and other financial requirements.
36

37 **[2707.6] 5007.6 Transportation of explosives by vehicle.** Transportation of explosives by vehicle
38 for storage, handling and use in the city shall additionally comply with the requirements of FC
39 [2707.6.1] 5007.6.1 through [2707.6.6] 5007.6.6.
40

41 **[2707.6.1] 5007.6.1 Approved vehicles.** [It] Except as otherwise authorized by the
42 department, it shall be unlawful to transport, including delivering, any blasting materials or
43 Division 1.1 or 1.5 explosives for storage, handling or use in the city, except in a vehicle
44 designed and constructed in accordance with the rules, and for which a permit has been issued.
45

46 **[2707.6.2] 5007.6.2 Nitroglycerine.** It shall be unlawful to transport any nitroglycerine-
47 containing material, except nitroglycerine in the form of tablets, pills or granules, in quantities

1 not exceeding ten thousand, containing not more than 1/50 of a grain each, or to transport
2 frozen nitroglycerine.

3
4 **[2707.6.3] 5007.6.3 Packing and marking.** Other than as prescribed or approved by the
5 commissioner, it shall be unlawful to sell or deliver for use any explosive except in original
6 and unopened packages, packed in accordance with FC [2707.6.3.1] 5007.6.3.1 through
7 [2707.6.3.3] 5007.6.3.3.

8
9 **[2707.6.3.1] 5007.6.3.1 Explosives containing liquids.** Dynamite and other explosives
10 containing a liquid which may exude a liquid shall be transported in DOTn approved cases,
11 lined with a liquidproof plastic lining sufficient to prevent the exudation of the liquid. Such
12 cases shall contain not more than 50 pounds (22.7 kg) of net explosive weight.

13
14 **[2707.6.3.2] 5007.6.3.2 Other explosives.** Other blasting materials (except black powder,
15 blasting powder and smokeless propellant) that do not contain a substance subject to
16 deterioration or instability by exposure to moisture shall be transported in DOTn approved
17 cases each containing not more than 50 pounds (22.7 kg) of net explosive weight.

18
19 **[2707.6.3.3] 5007.6.3.3 Sticks or cartridges.** All explosives in the form of sticks or
20 cartridges shall be packed so as to lie on their sides; and, when the boxes are loaded in or
21 upon a motor vehicle, marine vessel or watercraft they shall be so arranged that the sticks
22 or cartridges rest on their sides.

23
24 **[2707.6.4] 5007.6.4 Detonators.** Transportation of blasting caps and other detonators shall
25 additionally comply with the requirements of FC [2707.6.4.1] 5007.6.4.1 and [2707.6.4.2]
26 5007.6.4.2.

27
28 **[2707.6.4.1] 5007.6.4.1 Packaging.** It shall be unlawful to bring into, transport, or deliver
29 within the city any blasting caps and other detonators, unless packaged in original,
30 unopened boxes.

31
32 **[2707.6.4.2] 5007.6.4.2 Delivery vehicles.** It shall be unlawful to transport any detonators
33 in quantities exceeding five thousand, or to transport or cause to be transported, detonators
34 together with any other explosives, except in an approved container in accordance with the
35 regulations of the United States Department of Transportation, as set forth in 49 CFR Part
36 177.

37
38 **[2707.6.5] 5007.6.5 Black powder, blasting powder or smokeless propellants.** Black
39 powder, blasting powder or smokeless propellant shall be transported in containers of not more
40 than 25 pounds ([11.35] 11.34 kg).

41
42 **[2707.6.6] 5007.6.6 Restrictions.** Vehicles transporting explosives shall comply with the
43 following requirements:

- 44
45 1. Explosives shall be delivered only during daylight hours.
46
47 2. No unnecessary stops shall be made in transit.

1
2 3. Vehicles shall be escorted in accordance with [FC2707.12] FC5007.12, as applicable.

3
4 4. If explosives are being transported in more than one vehicle, the vehicles shall maintain
5 a safe distance from each other of not less than 250 feet (76 200 mm).

6
7 5. It shall be unlawful to transport or deliver any explosives in a subway or other
8 underground tunnel or conveyance, except as approved for blasting operations.

9
10 **[2707.7] 5007.7 Transportation of explosives by marine vessel.** Transportation of explosives by
11 marine vessel and watercraft shall be in accordance with the regulations of the United States
12 Department of Transportation, as set forth in CFR Part 176, and any amendments thereto, and shall
13 additionally comply with the requirements of FC [2707.7.1] 5007.7.1 through [2707.7.5] 5007.7.5.

14
15 **[2707.7.1] 5007.7.1 Temporary storage on marine vessel.** It shall be unlawful to store for
16 more than 48 hours on board of any marine vessel or watercraft lying to at a wharf, pier,
17 bulkhead or other structure over or contiguous to navigable waters within the city, any
18 explosives in excess of the amount required for the vessel's own use for signaling or lifesaving
19 purposes.

20
21 **[2707.7.2] 5007.7.2 Supervision.** Any powder-boat or other marine vessel or watercraft used
22 to transport explosives upon the navigable waters within the city for delivery at a wharf, pier,
23 bulkhead or other structure over or contiguous to navigable waters, or to a marine vessel or
24 watercraft lying thereto, shall, while transporting explosives, have on board at all times two
25 persons, each holding a certificate of fitness for explosives handling. Only such certificate
26 holders, the permit holder and the marine vessel or watercraft's crew shall be allowed in or
27 upon such vessel or watercraft. Whenever practicable, all explosives shall be stowed on deck
28 under a waterproof cover or otherwise kept dry.

29
30 **[2707.7.3] 5007.7.3 Detonators.** Except for marine vessels and watercraft engaged in export
31 trade, it shall be unlawful to carry in or upon a marine vessel or watercraft transporting
32 explosives within the city, detonators together with any other explosives, except in approved
33 containers in accordance with the regulations of the United States Department of
34 Transportation, as set forth in 49 CFR Part 176.

35
36 **[2707.7.4] 5007.7.4 Unloading.** It shall be unlawful to unload explosives onto a wharf, pier,
37 bulkhead or other structure over or contiguous to navigable waters. Explosives intended for
38 storage, handling or use within the city shall be transferred from the marine vessel or watercraft
39 making the delivery directly to a vehicle at a wharf, pier, bulkhead or other structure over or
40 contiguous to navigable waters approved by the commissioner. Explosives intended for
41 shipment to points outside the city may be transferred from a marine vessel or watercraft
42 directly to another marine vessel or watercraft lying at a wharf, pier, bulkhead or other structure
43 within the city over or contiguous to navigable waters approved by the commissioner, provided
44 the amount so transferred does not exceed 2,500 pounds ([1135] 1134 kg). All such shipments
45 in quantities exceeding 2,500 pounds ([1135] 1134 kg) but not more than 5,000 pounds ([2270]
46 2268 kg), may be transferred from marine vessel or watercraft to a marine vessel or watercraft
47 at a distance of not less than 1,000 feet (304 800 mm) from any pier line.

1
2 [2707.7.5] **5007.7.5 Smoking and intoxicated persons.** It shall be unlawful to smoke or
3 maintain any flame while in or upon any marine vessel or watercraft carrying explosives, or
4 allow in or upon such vessel or watercraft, any intoxicated person.
5

6 [2707.8] **5007.8 Transportation of fireworks by vehicle.** Transportation of fireworks by vehicle
7 for firework displays in the city shall additionally comply with the requirements of FC [2707.8.1]
8 5007.8.1 and [2707.8.2] 5007.8.2.
9

10 [2707.8.1] **5007.8.1 Delivery to display site.** It shall be unlawful to transport fireworks
11 through the city unless such fireworks are being transported to or from a display site for which
12 a permit has been issued and such vehicle is escorted by department firefighting apparatus in
13 accordance with [FC2707.12] FC5007.12.
14

15 [2707.8.2] **5007.8.2 Restrictions.** Vehicles transporting fireworks shall comply with the
16 requirements of [FC2707.6.6] FC5007.6.6.
17

18 [2707.9] **5007.9 Transportation of flammable and combustible liquids by vehicle.**
19 Transportation of flammable and combustible liquids by vehicle shall additionally comply with
20 the requirements of FC [2707.9.1] 5007.9.1 through [2707.9.5] 5007.9.6.
21

22 [2707.9.1] **5007.9.1 Operation of cargo tanks.** Cargo tanks shall be maintained and operated
23 in accordance with FC [2707.9.1.1] 5007.9.1.1 through [2707.9.1.13] 5007.9.1.13.
24

25 [2707.9.1.1] **5007.9.1.1 Vehicle maintenance.** Cargo tanks shall not be used unless they
26 are in good working order and free from accumulation of grease, oil or other flammable or
27 combustible waste.
28

29 [2707.9.1.2] **5007.9.1.2 Monitoring of loading and unloading.** The operator of a cargo
30 tank shall not remain in the vehicle during loading or unloading of the cargo and shall
31 personally supervise such operation from a location at which the operator may observe the
32 vehicle, the delivery and vapor recovery hoses, the fill connection and any overfilling of
33 the tank.
34

35 [2707.9.1.3] **5007.9.1.3 Vehicle shutdown.** The cargo tank motor shall be shut down
36 during the making and breaking of hose connections. If loading or unloading is performed
37 without the use of a power pump, the cargo tank motor shall be shut down throughout such
38 operations.
39

40 [2707.9.1.4] **5007.9.1.4 Secured from movement.** All appropriate actions shall be taken
41 to prevent vehicle movement during the loading and unloading of the cargo, including
42 setting the parking brake and chocking of tires.
43

44 [2707.9.1.5] **5007.9.1.5 Outage.** A cargo tank or compartment thereof shall not be loaded
45 to absolute capacity. The vacant space in a cargo tank or compartment thereof shall not be
46 less than 1 percent to prevent leakage from or distortion of such tank or compartment by
47 expansion of the contents caused by a rise in temperature.

1
2 [2707.9.1.6] **5007.9.1.6 Overfill prevention.** The operator of a cargo tank shall, before
3 making delivery to a tank, determine the unfilled capacity of the tank by use of a suitable
4 gauging device, and shall not deliver cargo in excess of that amount.
5

6 [2707.9.1.7] **5007.9.1.7 Securing hatches.** During the loading of cargo tanks with
7 openable domes, the domes shall be secured on all but the receiving compartment, except
8 that during loading of gasoline, all domes shall be secured.
9

10 [2707.9.1.8] **5007.9.1.8 Cargo temperature.** Flammable and combustible liquids shall not
11 be loaded into or transported in a cargo tank or delivered at a temperature above the
12 material's ignition temperature.
13

14 [2707.9.1.9] **5007.9.1.9 Bonding to underground tanks.** An external bond-wire
15 connection or bond-wire integral to the delivery hose shall be provided when transferring
16 flammable liquids into underground tanks.
17

18 [2707.9.1.10] **5007.9.1.10 Smoking.** It shall be unlawful for the operator of a cargo tank
19 to smoke in and within 25 feet (7620 mm) of the vehicle while transporting, loading or
20 unloading cargo or to allow others to do so.
21

22 [2707.9.1.11] **5007.9.1.11 Hose connections.** Flammable and combustible liquids shall be
23 transferred to tanks by means of approved liquid- and vapor-tight connections between the
24 delivery hose and fill tank connection. Where underground tanks are equipped with a vapor
25 recovery system, all connections required for the safe and proper functioning of the vapor
26 recovery system shall be made and maintained liquid- and vapor-tight throughout the
27 unloading process. Vapors shall not be discharged at grade level during delivery.
28

29 [2707.9.1.12] **5007.9.1.12 Hose protection.** In making any delivery of flammable or
30 combustible liquid the operator of the cargo tank shall ensure, prior to unloading, that all
31 hoses utilized for liquid delivery and vapor recovery are protected from physical damage,
32 including damage by motor vehicles. Such protection shall be provided by positioning the
33 cargo tank to prevent motor vehicles from passing through the area or areas occupied by
34 hoses, or by other approved equivalent means.
35

36 [2707.9.1.13] **5007.9.1.13 Method of discharge.** Gasoline that is transferred to
37 underground tanks shall be discharged by gravity only.
38

39 [2707.9.2] **5007.9.2 Parking restrictions.** Parking of cargo tanks shall be in accordance with
40 FC [2707.9.2.1] **5007.9.2.1** and [2707.9.2.2] **5007.9.2.2**, except that in the event of an accident,
41 mechanical breakdown or other emergency, a cargo tank may be parked and left unattended at
42 any safe location while the operator is obtaining assistance.
43

44 [2707.9.2.1] **5007.9.2.1 Restricted areas.** It shall be unlawful to:
45

1 1. Leave a cargo tank unattended at any time on a public street, or any off-street location
2 within 250 feet (76 200 mm) of an occupied building, or any other restricted location
3 designated by the commissioner by rule or as a condition of a permit.
4

5 2. Park cargo tanks indoors.
6

7 **[2707.9.2.2] 5007.9.2.2 Approved parking.** Cargo tanks temporarily parked during
8 working hours shall be parked at an approved off-street location not less than 250 feet (76
9 200 mm) from an occupied building. Cargo tanks shall be parked during nonworking hours
10 on the grounds of a bulk plant or terminal, not less than 25 feet (7620 mm) from the nearest
11 lot line; or at other approved location, not less than 50 feet (15 240 mm) from any building.
12

13 **[2707.9.3] 5007.9.3 Portable fire extinguishers.** Cargo tanks shall be equipped with a
14 portable fire extinguisher complying with the requirements of FC906 and having a minimum
15 rating of 2-A:20-B:C. During unloading of the cargo tank, the portable fire extinguisher shall
16 be outside of the motor vehicle and shall be readily available, but at a distance of at least 15
17 feet (4572 mm) from the unloading valves.
18

19 **[2707.9.4] 5007.9.4 Delivery and unloading of cargo.** Except as otherwise provided in
20 [FC3406.2.8] FC5706.2.8, cargo tanks shall deliver flammable or combustible liquids only to
21 approved stationary storage systems. Flammable liquids being transported by a motor vehicle
22 other than a cargo tank shall not be dispensed from a container prior to removal of the container
23 from the vehicle.
24

25 **[2707.9.5] 5007.9.5 Emergency transfers between vehicles.** Department representatives may
26 authorize a transfer from one cargo tank directly into a permitted or other approved cargo tank
27 in the interest of public safety, such as when a cargo tank has been involved in a vehicular
28 accident or has otherwise been damaged.
29

30 **[2707.9.6] 5007.9.6 Compartmental markings.** The maximum capacity of each compartment
31 of a cargo tank shall be marked, in gallons, on the driver and passenger sides of the cargo tank
32 in 3-inch (76-mm) white letters.
33

34 **[2707.10] 5007.10 Transportation of compressed gases by cargo tank.** Transportation of
35 compressed gases by cargo tank shall additionally comply with the requirements of [FC2707.10.1]
36 FC5007.10.1.
37

38 **[2707.10.1] 5007.10.1 Prohibited compressed gases.** It shall be unlawful to transport the
39 following compressed gases in a cargo tank:
40

- 41 1. Acetylene.
- 42 2. Liquefied carbon monoxide.
- 43 3. Liquefied chlorine.
- 44 4. Cyanogen.
- 45 5. Cyclopropane.
- 46 6. Diborane.
- 47 7. Di-, mono-, and tri-methylamines.

- 1 8. Dimethyl ether.
- 2 9. Ethylene.
- 3 10. Fluorine.
- 4 11. Liquefied hydrogen.
- 5 12. Hydrogen cyanide.
- 6 13. Hydrogen sulfide.
- 7 14. Liquefied petroleum gases (LPG).
- 8 15. Liquefied natural gas (LNG).
- 9 16. Methylacetylene propadiene mixture-stabilized, including propyns, mapp gas or apache
- 10 gas.
- 11 17. Methyl chloride.
- 12 18. Methyl mercaptan.
- 13 19. Phosgene.
- 14 20. Phosphine.
- 15 21. Vinyl chloride.
- 16 22. Vinyl fluoride.
- 17 23. Vinyl methyl ether.
- 18 24. Any gas mixtures of the foregoing.
- 19 25. Any gas that contains:
 - 20 25.1. Bromacetone.
 - 21 25.2. Cyanogen chloride containing less than 0.9 percent water.
 - 22 25.3. Diphosgene.
 - 23 25.4. Ethyldichlorarsine.
 - 24 25.5. Methylchlorarsine.
 - 25 25.6. Nitrogen peroxide (tetroxide).
 - 26 25.7. Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight
 - 27 nitric oxide.
 - 28

29 **[2707.11] 5007.11 Route and time requirements.** Vehicles transporting hazardous materials
30 shall comply with such route and time requirements as the commissioner may promulgate by rule,
31 [except that vehicles for which a permit has been issued for the transportation of hazardous
32 materials may transport such hazardous materials, including delivery, without having to comply
33 with such route and time requirements] to the maximum extent possible, to minimize their travel
34 on local, non-arterial roads.

35
36 **[2707.12] 5007.12 Escort requirements for vehicles transporting explosives and fireworks.**
37 Vehicles transporting explosives and fireworks shall additionally comply with the requirements of
38 FC [2707.12.1] 5007.12.1 and [2707.12.2] 5007.12.2.

39
40 **[2707.12.1] 5007.12.1 Vehicles transporting explosives.** Vehicles transporting in or through
41 the city Division 1.1, 1.2, 1.3 or 1.5 explosives requiring the vehicle to be placarded pursuant
42 to DOTn regulations, including vehicles in continuous transit or transporting such explosives
43 on approved routes at approved times, shall be escorted by department firefighting apparatus
44 unless such explosives are transported in a vehicle for which a transportation permit has been
45 issued.

46

1 [2707.12.2] **5007.12.2 Vehicles transporting fireworks.** Vehicles transporting fireworks in
2 amounts requiring the vehicle to be placarded pursuant to DOTn regulations, whether in
3 continuous transit through the city or to or from a fireworks display in the city or surrounding
4 waters, shall be escorted by department firefighting apparatus, in accordance with approved
5 routes and times.
6

7
8 **CHAPTER 51**
9 **AEROSOLS**

10
11 **SECTION FC [2801] 5101**
12 **GENERAL**

13
14 [2801.1] **5101.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
15 combustible Level 1, 2 and 3 aerosol products, including the display of such products in any
16 building, structure or premises.
17

18 [2801.2] **5101.2 Permits.** Permits shall be required as set forth in FC105.6.
19

20 [2801.3] **5101.3 Supervision.** The handling and use of aerosols in quantities requiring a permit
21 shall be performed under the personal supervision of a person holding a certificate of fitness. The
22 storage of aerosols in quantities requiring a permit shall be under the general supervision of a
23 person holding a certificate of fitness.
24

25 [2801.4] **5101.4 General.** Combustible Level 1, 2 and 3 aerosol products shall be manufactured,
26 stored, handled and used in accordance with this chapter, the construction codes, including the
27 Building Code, and NFPA 30B.
28

29 [2801.5] **5101.5 Manufacturing prohibited.** It shall be unlawful to manufacture Level 1, 2 or 3
30 aerosol products.
31

32 [2801.6] **5101.6 Aerosol container size limitations.** It shall be unlawful to store, handle or use
33 Level 1[,] or 2 [or 3] aerosol products in metal cans exceeding 33.8 fluid ounces (1000 ml), or in
34 glass or plastic bottles exceeding 4 fluid ounces (118 ml). Level 3 aerosol products shall be stored,
35 handled and used in containers with a maximum capacity of 24 fluid ounces (708 ml).
36

37 **Exceptions:**

38
39 1. [Level 3 aerosol products shall be stored, handled and used in containers with a
40 maximum capacity of 24 fluid ounces (708 ml).
41

42 2.] Pressurized ether shall be stored, handled or used only in metal containers with a
43 maximum capacity of 8 fluid ounces (236 ml).
44

45 [3.] 2. Level 1, 2 and 3 oven-cleaning aerosol products shall be stored, handled or used in
46 containers with a maximum capacity of 16 fluid ounces (472 ml).
47

1 3. Level 1 or 2 aerosol products in plastic containers exceeding 4 fluid ounces (118 ml) but
2 not exceeding 33.8 fluid ounces (1000 ml), and Level 3 aerosol products in plastic
3 containers exceeding 4 fluid ounces (118 ml) but not exceeding 24 fluid ounces (708 ml),
4 that meet one or more of the following conditions:

5
6 3.1. Base product has no fire point when tested in accordance with ASTM D 92, and
7 nonflammable propellant.

8
9 3.2. Base product has no sustained combustion as tested in accordance with Appendix
10 H, "Method of Testing for Sustained Combustibility in DOTn 49 CFR Part 173."

11
12 3.3. Base product contains up to 20 percent by volume (15.8 percent by weight) of
13 ethanol and/or isopropyl alcohol in an aqueous mix, and nonflammable propellant.

14
15 3.4. Base product contains 4 percent by weight or less of an emulsified flammable
16 liquefied gas propellant within an aqueous base. The propellant shall remain
17 emulsified for the life of the product. Where such propellant is not permanently
18 emulsified, the propellant shall be nonflammable.

19
20 **SECTION FC [2802] 5102**
21 **DEFINITIONS**

22
23 **[2802.1] 5102.1 Definitions.** The following terms shall, for the purposes of this chapter and as
24 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

25
26 **AEROSOL.** [A product that is dispensed from a container by a propellant, classified as follows:

27
28 **Level 1.** Aerosol products with a total chemical heat of combustion that is greater than 0 and
29 less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

30
31 **Level 2.** Aerosol products with a total chemical heat of combustion that is greater than 8,600
32 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

33
34 **Level 3.** Aerosol products with a total chemical heat of combustion that is greater than 13,000
35 Btu/lb (30 kJ/g).]

36
37 **AEROSOL CONTAINER.** [A metal can, or a glass or plastic bottle designed to dispense an
38 aerosol.]

39
40 **AEROSOL WAREHOUSE.** [A Group H or S occupancy used exclusively for the nonretail
41 storage and transshipment of aerosol products.]

42
43 **PROPELLANT.** [The liquefied or compressed gas in an aerosol container that expels the contents
44 from an aerosol container when the valve is actuated. A propellant is considered flammable if it
45 forms a flammable mixture with air, or if a flame is self-propagating in a mixture with air.]

1 **RETAIL DISPLAY AREA.** [The area of a Group M occupancy open for the purpose of viewing
2 or purchasing merchandise offered for sale. Individuals in such establishments are free to circulate
3 among the items offered for sale which are typically displayed on shelves, racks or the floor.]
4

5 **SECTION FC [2803] 5103**
6 **CLASSIFICATION OF AEROSOL PRODUCTS**
7

8 **[2803.1] 5103.1 Classification levels.** Aerosol products shall be classified as Level 1, 2 or 3 in
9 accordance with [FC2802.1] FC5102.1. Aerosol products in cartons which are not identified shall
10 be classified as Level 3.

11 **[2803.2] 5103.2 Identification.** Cartons shall be identified on at least one side with the
12 classification level of the aerosol products contained within the carton as follows: LEVEL
13 _____ AEROSOLS.
14

15 **SECTION FC [2804] 5104**
16 **INDOOR STORAGE OF AEROSOL PRODUCTS**
17

18 **[2804.1] 5104.1 General.** Indoor storage of Level 2 and 3 aerosol products shall comply with the
19 requirements of FC [2804.2] 5104.2 through [2804.7] 5104.7 and NFPA 30B. Level I aerosol
20 products, and Level 1, 2 and 3 aerosol products in plastic containers covered by FC5101.6
21 Exception 3, shall be [considered equivalent to] deemed a Class III commodity and shall comply
22 with the requirements for palletized or rack storage set forth in NFPA 13, as modified by FC
23 Appendix B.
24

25 **[2804.2] 5104.2 Storage in [Groups] buildings with Group A, B, E, F, I and R occupancies.**
26 Except as otherwise provided in [FC2804.2.1] FC5104.2.1, it shall be unlawful to store Level 2
27 and 3 aerosol products in excess of the following amounts in buildings that house Group A, B, E,
28 F, I and R occupancies [in excess of the following amounts]:
29

- 30
- 31 1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
 - 32
 - 33 2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
 - 34
 - 35 3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.
 - 36

37 **[2804.2.1] 5104.2.1 Excess storage.** Level 2 and 3 aerosol products exceeding the maximum
38 quantities set forth in [FC2804.2] FC5104.2 may be lawfully stored in accordance with FC
39 [2804.2.1.1] 5104.2.1.1 and [2804.2.1.2] 5104.2.1.2.
40

41 **[2804.2.1.1] 5104.2.1.1 Storage cabinets.** Aerosol products in a quantity not to exceed
42 100 percent of the maximum storage limitation may be stored in storage cabinets in
43 accordance with [FC3404.3.2] FC5704.3.2.
44

45 **[2804.2.1.2] 5104.2.1.2 Storage rooms.** Level 2 and 3 aerosol products in a quantity
46 exceeding that set forth in [FC2804.2] FC5104.2 may be lawfully stored indoors in a
47 flammable liquid storage room in accordance with [FC2804.5] FC5104.5.

1
2 **[2804.3] 5104.3 Storage in general purpose warehouses.** Storage of aerosol products in general
3 purpose warehouses, as defined in NFPA 30B, utilized only for warehousing-type operations
4 involving mixed commodities shall comply with the requirements of FC [2804.3.1] 5104.3.1 or
5 [2804.3.2] 5104.3.2.

6
7 **[2804.3.1] 5104.3.1 Nonsegregated storage.** Storage consisting of solid pile, palletized or rack
8 storage of Level 2 and 3 aerosol products not segregated into areas utilized exclusively for the
9 storage of aerosols shall comply with the requirements of FC Table [2804.3.1] 5104.3.1.

10
11 **FC TABLE [2804.3.1] 5104.3.1**
12 **NONSEGREGATED STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS IN GENERAL PURPOSE WAREHOUSES^b**

AEROSOL LEVEL	MAXIMUM NET WEIGHT PER FLOOR (pounds) ^b			
	Palletized or solid-pile storage		Rack storage	
	Unprotected	Protected ^a	Unprotected	Protected ^a
2	2,500	12,000	2,500	24,000
3	1,000	12,000	1,000	24,000
Combination 2 and 3	2,500	12,000	2,500	24,000

13 For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 square foot = 0.0929 m².

14 a. Sprinkler system protection and storage arrangements shall comply with the requirements of NFPA 30B. Sprinkler system protection shall extend
15 20 feet beyond the storage area containing the aerosol products.

16 b. Storage quantities indicated are the maximum allowed in any 50,000-square-foot area.

17
18 **[2804.3.2] 5104.3.2 Segregated storage.** Storage of Level 2 and 3 aerosol products segregated
19 into areas utilized exclusively for the storage of aerosols shall be in accordance with FC Table
20 [2804.3.2] 5104.3.2 and FC [2804.3.2.1] 5104.3.2.1 and [2804.3.2.2] 5104.3.2.2.

21
22 **[2804.3.2.1] 5104.3.2.1 Chain-link fence enclosures.** Chain-link fence enclosures
23 required by FC Table [2804.3.2] 5104.3.2 shall comply with the following requirements:

- 24
25 1. The fence shall not be less than No. 9 [gauge] gauge steel wire, woven into a maximum
26 2-inch (51-mm) diamond mesh.
27
28 2. The fence shall be installed from the floor to the underside of the roof or ceiling
29 above.
30
31 3. Class IV and high-hazard commodities shall be stored outside of the aerosol storage
32 area and a minimum of 8 feet (2438 mm) from the fence.
33
34 4. Access openings in the fence shall be provided with either self-closing or automatic-
35 closing devices or a labyrinth opening arrangement preventing aerosol containers
36 from rocketing through the access openings.
37
38 5. Not less than two means of egress shall be provided from the fenced enclosure.

39
40 **[2804.3.2.2] 5104.3.2.2 Aisles.** The minimum aisle requirements for segregated storage in
41 general purpose warehouses shall be in accordance with FC Table [2804.3.2.2] 5104.3.2.2.

1 **[2804.4] 5104.4 Storage in aerosol warehouses.** The total quantity of Level 2 and 3 aerosol
 2 products stored in an aerosol warehouse shall not be restricted provided such warehouse complies
 3 with the requirements of FC [2804.4.1] 5104.4.1 through [2804.4.4] 5104.4.4.

4
 5
 6 **FC TABLE [2804.3.2] 5104.3.2
 SEGREGATED STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS IN GENERAL PURPOSE WAREHOUSES**

STORAGE SEPARATION	MAXIMUM SEGREGATED STORAGE AREA ^a		SPRINKLER REQUIREMENTS
	Percentage of building area (percent)	Area limitation (square feet)	
Separation area ^{e, f}	15	20,000	Notes b, c
Chain-link fence enclosure ^d	20	20,000	Notes b, c
1-hour fire-resistance-rated interior walls	20	30,000	Note b
2-hour fire-resistance-rated interior walls	25	40,000	Note b
3-hour fire-resistance-rated interior walls	30	50,000	Note b

7 For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

- 8 a. The maximum segregated storage area shall be limited to the smaller of the two areas resulting from the percentage of building area limitation
 9 and the area limitation.
 10 b. Sprinkler system protection in aerosol product storage areas shall comply with the requirements of NFPA 30B and be approved. Other building
 11 areas not containing aerosol product storage shall be protected throughout by a sprinkler system in accordance with the construction codes,
 12 including the Building Code.
 13 c. Sprinkler system protection in aerosol product storage areas shall comply with the requirements of NFPA 30B and be approved. Sprinkler system
 14 protection shall extend a minimum 20 feet beyond the aerosol storage area.
 15 d. Chain-link fence enclosures shall comply with the requirements of [FC2804.3.2.1] 5104.3.2.1.
 16 e. A separation area shall be defined as an area extending outward from the periphery of the segregated aerosol product storage area as follows.
 17 1. The limits of the aerosol product storage shall be clearly marked on the floor.
 18 2. The separation distance shall be a minimum of 25 feet and maintained clear of all materials with a commodity classification greater than
 19 Class III in accordance with NFPA 13, as modified by FC Appendix B.
 20 f. Separation areas shall be allowed when approved.

21
 22
 23 **FC TABLE [2804.3.2.2] 5104.3.2.2
 SEGREGATED STORAGE AISLE WIDTHS AND DISTANCE TO AISLES IN GENERAL PURPOSE WAREHOUSES**

STORAGE CONDITION	MINIMUM AISLE WIDTH (feet)	MAXIMUM DISTANCE FROM STORAGE TO AISLE (feet)
Solid pile or palletized ^a	4 feet between piles	25
Racks with ESFR sprinklers ^a	4 feet between racks and adjacent Level 2 and 3 aerosol product storage	25
Racks without ESFR sprinklers ^a	8 feet between racks and adjacent Level 2 and 3 aerosol product storage	25

24 For SI: 1 foot = 304.8 mm.

- 25 a. Sprinklers shall comply with the requirements of NFPA 30B.

26
 27 **[2804.4.1] 5104.4.1 Sprinkler system.** Aerosol warehouses shall be protected throughout by
 28 a wet-pipe sprinkler system in accordance with NFPA 30B. Sprinkler protection shall be
 29 designed based on the highest classification level of aerosol product present.

30
 31 **[2804.4.2] 5104.4.2 Pile and palletized storage aisles.** Solid pile and palletized storage shall
 32 be arranged so the maximum travel distance to an aisle is 25 feet (7620 mm). Aisles shall have
 33 a minimum width of 4 feet (1219 mm).

34
 35 **[2804.4.3] 5104.4.3 Rack storage aisles.** Rack storage shall be arranged with a minimum aisle
 36 width of 8 feet (2438 mm) between rows of racks and 8 feet (2438 mm) between racks and

1 adjacent solid pile or palletized storage. Where early suppression fast-response (ESFR)
2 sprinklers provide sprinkler protection, the minimum aisle width shall be 4 feet (1219 mm).

3
4 **[2804.4.4] 5104.4.4 Combustible commodities.** Combustible commodities, other than
5 flammable and combustible liquids, may be stored in an aerosol warehouse.

6
7 **Exception:** Flammable and combustible liquids in 1-quart (0.95 L) metal containers and
8 smaller may be stored in an aerosol warehouse.

9
10 **[2804.5] 5104.5 Storage in indoor flammable liquid storage rooms.** Indoor flammable liquid
11 storage rooms shall comply with the requirements of [FC3404.3.7] FC5704.3.7. The maximum
12 quantities of aerosol products shall comply with the requirements of FC [2804.5.1] 5104.5.1 or
13 [2804.5.2] 5104.5.2.

14
15 **[2804.5.1] 5104.5.1 Storage rooms of 500 square feet or less.** The storage of aerosol products
16 in flammable liquid storage rooms less than or equal to 500 square feet (46 m²) in area shall
17 not exceed the following quantities:

- 18 1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
- 19 2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
- 20 3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.

21
22
23 **[2804.5.2] 5104.5.2 Storage rooms greater than 500 square feet.** The storage of aerosol
24 products in flammable liquid storage rooms greater than 500 square feet (46 m²) in area shall
25 not exceed the following quantities:

- 26 1. A net weight of 2,500 pounds (1135 kg) of Level 2 aerosol products.
- 27 2. A net weight of 1,000 pounds (454 kg) of Level 3 aerosol products.
- 28 3. A combined net weight of 2,500 pounds (1135 kg) of Level 2 and 3 aerosol products.
29 The maximum aggregate storage quantity of Level 2 and 3 aerosol products allowed in
30 separate indoor storage rooms protected by a sprinkler system in accordance with NFPA
31 30B shall be 5,000 pounds (2270 kg).

32
33
34 **[2804.6] 5104.6 Storage in liquid warehouses.** The storage of Level 2 and 3 aerosol products in
35 liquid warehouses, as defined in NFPA 30B, shall comply with the requirements of NFPA 30B.
36 The storage shall be located within segregated storage areas in accordance with [FC2804.3.2]
37 FC5104.3.2 and FC [2804.6.1] 5104.6.1 through [2804.6.3] 5104.6.3.

38
39 **[2804.6.1] 5104.6.1 Containment.** Spill control or drainage shall be provided to prevent the
40 flow of liquid to within 8 feet (2438 mm) of the segregated storage area.

41
42
43 **[2804.6.2] 5104.6.2 Sprinkler design.** Sprinkler protection shall be designed based on the
44 highest level of aerosol product present.

[2804.6.3] 5104.6.3 Opening protection into segregated storage areas. Fire doors or gates opening into the segregated storage area shall either be self-closing or provided with automatic-closing devices activated by sprinkler water flow or an approved fire detection system.

[2804.7] 5104.7 Storage in Group M occupancies. Storage of Level 2 and 3 aerosol products in occupancies in Group M shall comply with the requirements of FC Table [2804.7] 5104.7. Retail display shall comply with the requirements of [FC2806] FC5106.

**FC TABLE [2804.7] 5104.7
MAXIMUM QUANTITIES OF LEVEL 2 AND 3 AEROSOL
PRODUCTS IN RETAIL STORAGE AREAS**

MAXIMUM NET WEIGHT PER FLOOR (pounds)			
Floor	Nonsegregated storage ^{a, b}	Segregated storage	
		Storage cabinets ^b	Separated from retail area ^c
Basement, cellar or other area below grade	Not permitted	Not permitted	Not permitted
Ground floor	2,500	5,000	Note d
Upper floors	500	1,000	Note d

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m².

a. The total aggregate quantity on display and in storage shall not exceed the maximum retail display quantity indicated in [FC2806.3] FC5106.3.

b. Storage quantities indicated are the maximum allowed in any 50,000-square-foot area.

c. The storage area shall be separated from the retail area with a 1-hour fire-resistance-rated assembly.

d. See FC Table [2804.3.2] 5104.3.2.

SECTION FC [2805] 5105 OUTDOOR STORAGE

[2805.1] 5105.1 General. The outdoor storage of Level 2 and 3 aerosol products, including storage in temporary storage trailers, shall be separated from exposures in accordance with FC Table [2805.1] 5105.1.

**FC TABLE [2805.1] 5105.1
DISTANCE TO EXPOSURES FOR OUTDOOR STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS**

EXPOSURE	MINIMUM DISTANCE FROM AEROSOL STORAGE (feet) ^a
Public streets or private roads	20
Buildings	50
Exit discharge to a public street or private road	50
Lot lines	20
Other outdoor hazardous material storage	50

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. The minimum separation distance indicated is not required where exterior walls having a 2-hour fire-resistance rating without penetrations separate the storage from the exposure. The walls shall extend not less than 30 inches above and to the sides of Level 2 and 3 aerosol products.

SECTION FC [2806] 5106 RETAIL DISPLAY

[2806.1] 5106.1 General. This section shall apply to the retail display of Level 2 and 3 aerosol products.

[2806.2] 5106.2 Retail aerosol product displays not exceeding 8 feet high. Aerosol product displays for retail sale not exceeding 8 feet (2438 mm) in height shall comply with the requirements of FC [2806.2.1] 5106.2.1 through [2806.2.4] 5106.2.4.

1 **[2806.2.1] 5106.2.1 Maximum quantity.** Only aerosol products being used for display
 2 purposes shall be stored for sale in retail display areas and the total quantity of such aerosol
 3 products shall not exceed the amounts set forth in FC Table [2806.2.1] 5106.2.1.

4
 5
 6 **FC TABLE [2806.2.1] 5106.2.1
 MAXIMUM QUANTITIES OF LEVEL 2 AND 3 AEROSOL PRODUCTS IN RETAIL DISPLAY AREAS**

MAXIMUM NET WEIGHT PER FLOOR (pounds) ^b			
FLOOR	Unprotected ^a	Protected in accordance with [FC2806.2 ^{a, c}] FC5106.2 ^{a, c}	Protected in accordance with [FC2806.3 ^c] FC5106.3 ^c
Basement, cellar or other area below grade	Not allowed	500	500
Ground	2,500	10,000	10,000
Upper	500	2,000	Not allowed

7 For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m².

8 a. The total quantity shall not exceed 1,000 pounds net weight in any one 100-square-foot retail display area.

9 b. Per 25,000-square-foot retail display area.

10 c. Minimum Ordinary Hazard Group 2 wet-pipe sprinkler system throughout the retail sales occupancy.

11
 12 **[2806.2.2] 5106.2.2 Display of containers.** Aerosol containers shall not be stacked more than
 13 6 feet (1829 mm) high from the base of the aerosol array to the top of the aerosol array unless
 14 the containers are placed on fixed shelving or otherwise secured in an approved manner. When
 15 storage or retail display is on shelves, the height of such storage or retail display to the top of
 16 aerosol containers shall not exceed 8 feet (2438 mm) from the floor.

17
 18 **Exception:** Storage or display protected in accordance with [FC2806.3] FC5106.3.

19
 20 **[2806.2.3] 5106.2.3 Combustible cartons.** Aerosol products located in retail display areas
 21 shall be removed from combustible cartons.

22
 23 **Exceptions:**

- 24
 25 1. Display areas that use a portion of combustible cartons, which consist of only the
 26 bottom panel and not more than 2 inches (51 mm) of side panel are allowed.
 27
 28 2. When the display area is protected in accordance with Tables 6.3.2.7(a) through
 29 6.3.2.7(l) of NFPA 30B, storage of aerosol products in combustible cartons is
 30 allowed.
 31

32 **[2806.2.4] 5106.2.4 Retail display sprinkler system.** When a sprinkler system is required for
 33 the protected retail display of aerosol products, the wet-pipe sprinkler system shall be in
 34 accordance with this code, and the construction codes, including the Building Code. The
 35 minimum system design shall be for an Ordinary Hazard Group 2 occupancy. The system shall
 36 be provided throughout the retail display area.
 37

38 **[2806.3] 5106.3 Retail aerosol displays exceeding 8 feet high.** Aerosol product displays for
 39 retail sale exceeding 8 feet (2438 mm) in height shall comply with the requirements of FC
 40 [2806.3.1] 5106.3.1 through [2806.3.3] 5106.3.3.
 41

1 **[2806.3.1] 5106.3.1 Maximum quantity.** Only aerosol products being used for display
2 purposes shall be stored for sale in retail display areas and the total quantity of such aerosol
3 products shall not exceed the amounts set forth in FC Table [2806.2.1] 5106.2.1.

4
5 **[2806.3.2] 5106.3.2 Fire protection.** Aerosol displays shall be protected by a sprinkler system
6 in accordance with NFPA 30B and the following requirements:

- 7
8 1. The fire protection required for a retail display of aerosol products shall be determined
9 based on the height of the aerosol products in the display and the type of packaging in
10 which aerosol products displayed more than 6 feet (1829 mm) above the finished floor
11 are stored.
12
- 13 2. Uncartoned Level 2 and 3 aerosols and Level 2 and 3 aerosols in display-cut cartons may
14 be displayed not more than 6 feet (1829 mm) above the finished floor when applying the
15 cartoned aerosol display tables set forth in NFPA 30B.
16
- 17 3. Where sprinkler protection is provided for a Level 2 or 3 aerosol retail display area, such
18 sprinkler system shall be designed to extend coverage to an area not less than 20 feet
19 (6096 mm) in all directions beyond the display area.
20
- 21 4. Where ordinary and high-temperature ceiling sprinkler systems are adjacent to each
22 other, noncombustible draft curtains shall be installed between the areas protected by the
23 respective sprinkler systems.
24

25 **[2806.3.3] 5106.3.3 Fire separation.** Retail displays of Level 2 and 3 aerosol products shall
26 comply with the following separation distance requirements:

- 27
28 1. Level 2 and 3 aerosol display areas shall be separated from each other by not less than
29 25 feet (7620 mm).
30
- 31 2. Level 2 and 3 aerosol displays shall be separated from flammable and combustible
32 liquids storage and display areas by one or more of the following measures:
33
 - 34 2.1. A horizontal distance of not less than 25 feet (7620 mm).
 - 35
36 2.2. A noncombustible partition extending not less than 18 inches (457 mm) above the
37 merchandise. When the aerosol products are located within 25 feet (7620 mm) of
38 flammable or combustible liquids, the noncombustible partition shall be liquid tight
39 at the floor level.
40
 - 41 2.3. Special fire protection for double-row racks in accordance with [FC2806.5]
42 FC5106.5.

43
44 **[2806.4] 5106.4 Maximum quantities in storage areas.** Aerosol products in storage areas
45 adjacent to retail display areas shall not exceed the quantities in FC Table [2806.4] 5106.4.

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**FC TABLE [2806.4] 5106.4
MAXIMUM STORAGE QUANTITIES FOR STORAGE AREAS ADJACENT TO RETAIL DISPLAY OF LEVEL 2 AND LEVEL 3
AEROSOLS**

MAXIMUM NET WEIGHT PER FLOOR (pounds)			
Floor	Unseparated ^{a, b}	Separated	
		Storage cabinets ^b	1-hour occupancy separation
Basement, cellar or other area below grade	Not allowed	Not allowed	Not allowed
Ground	2,500	5,000	In accordance with NFPA 30B, Sections 6.3.4.3 and 6.3.4.4
Upper	500	1,000	In accordance with NFPA 30B, Sections 6.3.4.3 and 6.3.4.4

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m².

a. The aggregate quantity in storage and retail display shall not exceed the quantity limits for retail display.

b. In any 50,000-square-foot area.

[2806.5] 5106.5 Special protection design for Level 2 and 3 aerosols adjacent to flammable and combustible liquids in double-row racks. The display of Level 2 and 3 aerosols adjacent to flammable and combustible liquids in double-row racks shall be in accordance with FC [2806.5.1] 5106.5.1 through [2806.5.8] 5106.5.8 or [FC2806.3.3] FC5106.3.3.

[2806.5.1] 5106.5.1 Fire protection. Fire protection for the display of Level 2 and 3 aerosols in double-row racks shall be in accordance with Table 7.4.1 and Figure 7.4.1 of NFPA 30B.

[2806.5.2] 5106.5.2 Cartoned products. Level 2 and 3 aerosols displayed more than 8 feet (2438 mm) above the finished floor shall be in cartons.

[2806.5.3] 5106.5.3 Shelving. Shelving in racks shall be limited to wire mesh shelving having uniform openings not more than 6 inches (152 mm) apart, with the openings comprising at least 50 percent of the overall shelf area.

[2806.5.4] 5106.5.4 Aisles. Racks shall be arranged so that aisles not less than 7½ feet (2286 mm) wide are maintained between rows of racks and adjacent solid-piled or palletized merchandise.

[2806.5.5] 5106.5.5 Flue spaces. Flue spaces in racks shall comply with the following:

1. Transverse flue spaces—nominal 3-inch (76-mm) transverse flue spaces shall be maintained between merchandise and rack uprights.
2. Longitudinal flue spaces—nominal 6-inch (152-mm) longitudinal flue spaces shall be maintained.

[2806.5.6] 5106.5.6 Horizontal barriers. Horizontal barriers constructed of minimum 3/8-inch-thick (10-mm-thick) plywood or minimum 0.034-inch (0.086-mm) (No. 22 [gage] gauge) sheet metal shall be provided and located in accordance with NFPA 30B when in-rack sprinklers are installed.

1 **[2806.5.7] 5106.5.7 Class I, II, III, IV and plastic commodities.** Class I, II, III, IV and plastic
2 commodities located adjacent to retail Level 2 and 3 aerosol product displays shall be protected
3 in accordance with NFPA 13, as modified by FC Appendix B.
4

5 **[2806.5.8] 5106.5.8 Flammable and combustible liquids.** Class I, II, IIIA and IIIB Liquids
6 shall be allowed to be located adjacent to Level 2 and 3 aerosol products when the following
7 conditions are met:
8

- 9 1. Class I, II, IIIA and IIIB liquid containers: Containers for Class I, II, IIIA and IIIB liquids
10 shall be limited to 1.06-gallon (4-L) metal-relieving and nonrelieving style containers
11 and 5.3-gallon (20-L) metal-relieving style containers.
12
- 13 2. Fire protection for Class I, II, IIIA and IIIB [Liquids] liquids: Automatic sprinkler
14 protection for Class I, II, IIIA and IIIB liquids shall be in accordance with FC Chapter
15 [34] 57.
16

17
18 **CHAPTER 52**
19 **RESERVED**
20

21
22 **CHAPTER 53**
23 **COMPRESSED GASES**
24

25 **SECTION FC [3001] 5301**
26 **GENERAL**
27

28 **[3001.1] 5301.1 Scope.** This chapter shall govern the storage, handling and use of compressed
29 gases in compressed gas containers and systems, including those gases regulated elsewhere in this
30 code.
31

32 **Exceptions:**
33

- 34 1. Compressed gases used as refrigerants in refrigerating systems in accordance with FC
35 Chapter 6.
36
- 37 2. Compressed natural gas (CNG) stored and used on a motor vehicle for motive power in
38 accordance with FC Chapter [22] 23, NFPA 52 and the Fuel Gas Code.
39
- 40 3. Compressed gases connected for use in a fire extinguishing system.
41

42 **[3001.2] 5301.2 Permits.** Permits shall be required as set forth in FC105.6.
43

44 **[3001.3] 5301.3 General.** Compressed gases shall be stored, handled and used in accordance with
45 this chapter.
46

1 **[3001.3.1] 5301.3.1 Cutting and welding gases.** Cutting and welding gases shall additionally
2 comply with the requirements of FC Chapter [26] 35.

3
4 **[3001.3.2] 5301.3.2 Cryogenic fluids.** Cryogenic fluids shall additionally comply with the
5 requirements of FC Chapter [32] 55.

6
7 **[3001.3.3] 5301.3.3 Hazardous materials.** Compressed gases classified as hazardous
8 materials shall additionally comply with the requirements of FC Chapter [27] 50 and any other
9 applicable chapters of this code, including FC Chapters [35] 58 (Flammable Gases), [37] 60
10 (Highly Toxic and Toxic Materials), [40] 63 (Oxidizers, Oxidizing Gases and Oxidizing
11 Cryogenic Fluids) and [41] 64 (Pyrophoric Materials), as applicable.

12
13 **[3001.3.4] 5301.3.4 Liquefied petroleum gas (LPG).** LPG shall additionally comply with the
14 requirements of FC Chapter [38] 61 and the Fuel Gas Code.

15
16 **[3001.4] 5301.4 Supervision.** The storage, handling, use and compression of compressed gases
17 shall be supervised as set forth in FC [3001.4.1] 5301.4.1 through [3001.4.4] 5301.4.5.

18
19 **[3001.4.1] 5301.4.1 Handling and use.** The handling and use of compressed gases in
20 quantities requiring a permit, including piped medical gas systems and the removal of leaking,
21 damaged or corroded compressed gas cylinders from service, shall be under the personal
22 supervision of a person holding a certificate of fitness.

23
24 **[3001.4.2] 5301.4.2 Storage.** The storage of compressed gases in quantities requiring a permit,
25 including medical gases that are not piped, shall be under the general supervision of a person
26 holding a certificate of fitness.

27
28 **[3001.4.3] 5301.4.3 Compressing.** The compressing of gases requiring a permit shall be
29 performed by or under the personal supervision of a person holding a certificate of fitness.

30
31 **Exception:** Compressing atmospheric air may be under the general supervision of a person
32 holding a certificate of fitness.

33
34 **[3001.4.4] 5301.4.4 Filling of containers.** The transfer of nonflammable compressed gases
35 between containers shall be performed by a person holding a certificate of fitness.

36
37 **5301.4.5 Installation.** The installation of carbon dioxide beverage dispensing systems,
38 including the maintenance and repair of such systems, shall be conducted by or under personal
39 supervision of a person holding a certificate of fitness.

40
41 **SECTION FC [3002] 5302**
42 **DEFINITIONS**

43
44 **[3002.1] 5302.1 Definitions.** The following terms shall, for the purposes of this chapter and as
45 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

1 **COMPRESSED GAS**[. A material, or mixture of materials, that is a gas at 68°F (20°C) or less at
2 14.7 psia (101 kPa) of pressure; and has a boiling point of 68°F (20°C) or less at 14.7 psia (101
3 kPa) that is either liquefied, nonliquefied or in solution at that temperature and pressure, except
4 that gases which have no other health- or physical-hazard properties are not considered to be
5 compressed until the pressure in the packaging exceeds 41 psia (28 kPa) at 68°F (20°C).
6 Compressed gases shall be classified as follows:];

7
8 **Nonliquefied compressed gases.** [Gases, other than those in solution, that are in a packaging
9 under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C).]

10
11 **Liquefied compressed gases.** [Gases that, in a packaging under the charged pressure, are
12 partially liquid at a temperature of 68°F (20°C).]

13
14 **Compressed gases in solution.** [Nonliquefied gases that are dissolved in a solvent.]

15
16 **Compressed gas mixtures.** [A mixture of two or more compressed gases contained in a single
17 packaging, the hazard properties of which are represented by the properties of the mixture as
18 a whole.]

19
20 **COMPRESSED GAS CONTAINER.** [A pressure container designed to hold compressed gases
21 at pressures greater than one atmosphere at 68°F (20°C).]

22
23 **COMPRESSED GAS SYSTEM.** [An assembly of components, such as containers, reactors,
24 pumps, compressors and connecting piping and tubing, designed to contain, distribute or transport
25 compressed gases.]

26
27 **HYPERBARIC FACILITY.**

28
29 **NESTING.** [A method of securing flat-bottomed compressed gas containers upright in a tight
30 mass using a contiguous three-point contact system whereby all containers within a group have a
31 minimum of three points of contact with other containers, walls or bracing.]

32
33 **TUBE TRAILER.** [A tractor trailer upon which a number of tubular gas containers have been
34 installed, typically with a manifold connecting the container valves, that is used to deliver and
35 dispense a compressed gas.]

36
37 **SECTION FC [3003] 5303**
38 **GENERAL REQUIREMENTS**

39
40 **[3003.1] 5303.1 Containers.** Compressed gas containers shall comply with the requirements of
41 this section. Compressed gas containers that are not designed for refillable use shall not be refilled
42 after use of the original contents. Compressed gas containers that are partially full or contain
43 residual fumes or vapors shall be considered as full for the purposes of complying with the
44 requirements of this chapter.

45
46 **[3003.1.1] 5303.1.1 Design and construction.** Compressed gas containers shall be designed,
47 fabricated, tested, marked with the specifications of manufacture and maintained in accordance

1 with Section VIII of the ASME Boiler and Pressure Vessel Code, or the regulations of the
2 United States Department of Transportation, as set forth in 49 CFR Parts 100-180.

3
4 **[3003.1.2] 5303.1.2 Pressure relief devices.** Pressure relief devices shall be designed in
5 compliance with the requirements of FC [3003.1.2.1] 5303.1.2.1 through [3003.1.2.4]
6 5303.1.2.4.

7
8 **[3003.1.2.1] 5303.1.2.1 Where required.** Containers and tanks for compressed gas storage
9 shall be provided with pressure relief devices designed in accordance with CGA S-1.1,
10 CGA S-1.2, CGA S-1.3, or Section VIII of the ASME Boiler and Pressure Vessel Code, as
11 applicable, to protect such containers and tanks from rupture in the event of overpressure.
12

13 **[3003.1.2.2] 5303.1.2.2 Size.** Pressure relief devices shall be sized in accordance with the
14 specifications to which the container was fabricated and to material-specific requirements,
15 as applicable.
16

17 **[3003.1.2.3] 5303.1.2.3 Arrangement.** Pressure relief devices shall be arranged to
18 discharge upward and unobstructed to the open air in such a manner as to prevent any
19 impingement of escaping gas upon the container, adjacent structures or personnel.
20

21 **Exception:** DOTn specification containers having an internal volume of 30 SCF (0.855
22 m³) or less.
23

24 **[3003.1.2.4] 5303.1.2.4 Protection against freezing.** Pressure relief devices shall be
25 designed and installed to prevent moisture from collecting and freezing in a manner that
26 would impair the operation of the device.
27

28 **[3003.2] 5303.2 Marking.** Stationary and portable compressed gas containers and systems shall
29 be marked in compliance with the requirements of FC [3003.2.1] 5303.2.1 through [3003.2.4]
30 5303.2.4.

31
32 **[3003.2.1] 5303.2.1 Stationary compressed gas containers.** Stationary compressed gas
33 containers shall be marked with the name of the gas in accordance with FC [2703.5] 5003.5
34 and [2703.6] 5003.6. Markings shall be visible from any direction of approach. All uninsulated
35 stationary outdoor compressed gas containers shall be of light-reflective design or painted with
36 a light-reflecting color.
37

38 **[3003.2.2] 5303.2.2 Portable containers.** Portable compressed gas containers shall be marked
39 in accordance with CGA C-7 and DOTn regulations.
40

41 **[3003.2.3] 5303.2.3 Piping systems.** Piping systems shall be marked in accordance with
42 ASME A13.1. Markings used for piping systems shall consist of the name of the contents and
43 include an arrow indicating direction of flow. Markings shall be provided at each valve; at
44 wall, floor or ceiling penetrations; at each change of direction; and at a minimum of every 20
45 feet (6096 mm) or fraction thereof throughout the piping run.
46

47 **Exceptions:**

1
2 1. Piping that is designed or intended to carry more than one compressed gas at various
3 times shall have appropriate signs or markings posted at the manifold, along the
4 piping and at each point of use to provide clear identification and warning.
5

6 2. Piping within gas-manufacturing plants, gas-processing plants and similar
7 occupancies shall be marked in an approved manner.
8

9 **[3003.2.4] 5303.2.4 Out-of-service containers.** Out-of-service compressed gas containers
10 shall be marked to indicate that they are no longer available for service.
11

12 **[3003.3] 5303.3 Container protection.** Compressed gas containers and systems shall be secured
13 and protected against physical damage and tampering in compliance with the requirements of FC
14 [2703.9.2] 5003.9.2, [3003.3.2] 5303.3.2 and [3003.3.3] 5303.3.3.
15

16 **[3003.3.1] 5303.3.1 Flood hazard.** Stationary compressed gas containers located in areas of
17 special flood hazard or on the premises of Group I-2 occupancies that are hospitals located in
18 shaded X-Zones (as defined in Section G201.2 of Appendix G of the Building Code) shall
19 comply with Section G307.5 of the Building Code.
20

21 **[3003.3.2] 5303.3.2 Physical protection.** Compressed gas containers and systems that could
22 be exposed to physical damage shall be protected. Posts or other approved means shall be
23 provided to protect compressed gas containers and systems indoors and outdoors from
24 vehicular damage and shall comply with the requirements of FC312.
25

26 **[3003.3.3] 5303.3.3 Securing compressed gas containers.** Compressed gas containers shall
27 be secured to prevent movement from contact, vibration or seismic activity, utilizing one or
28 more of the following methods:
29

- 30 1. Securing containers to a fixed object with one or more noncombustible restraints.
31 Containers shall not be secured to plumbing systems or electrical conduits.
32
- 33 2. Securing containers on a cart or other mobile device designed for the movement of
34 compressed gas containers.
35
- 36 3. Nesting of compressed gas containers at container filling or servicing facilities or in
37 seller's warehouses not accessible to the public. Nesting may be used provided the nested
38 containers, if dislodged, do not obstruct any required means of egress.
39
- 40 4. Securing of compressed gas containers to or within a rack, framework, cabinet or similar
41 assembly designed for such use, except when the containers are being inspected,
42 serviced, filled or transported.
43
- 44 5. Securing stationary compressed gas containers to a foundation designed for such use in
45 accordance with the construction codes, including the Building Code.
46

1 **[3003.4] 5303.4 Valve protection.** Compressed gas container valves shall be protected from
2 physical damage by means of protective caps, collars or similar devices, in compliance with the
3 requirements of FC [3003.4.1] 5303.4.1 and [3003.4.2] 5303.4.2.

4
5 **[3003.4.1] 5303.4.1 Compressed gas container protective caps or collars.** Compressed gas
6 containers designed to be fitted with protective caps, collars or other protective devices shall
7 have such caps or devices in place except when the containers are in use or are being serviced
8 or filled.

9
10 **[3003.4.2] 5303.4.2 Caps and plugs.** Valves of compressed gas containers designed to accept
11 protection caps or other protective devices shall have such caps or devices attached. Outlet
12 caps or plugs shall be in place except when the compressed gas containers are in use or are
13 being serviced or filled.

14
15 **[3003.5] 5303.5 Separation from hazardous conditions.** Compressed gas containers and systems
16 in storage or use shall be separated from materials and conditions that present potential hazards to
17 them, or to which they present potential hazards. Compressed gas containers and systems in
18 storage or use shall be separated in accordance with FC [3003.5.1] 5303.5.1 through [3003.5.10]
19 5303.5.11.

20
21 **[3003.5.1] 5303.5.1 Incompatible materials.** Compressed gas containers shall be separated
22 from each other based on the hazard class of their contents. Compressed gas containers shall
23 be separated from incompatible materials in accordance with [FC2703.9.8] FC5003.9.8.

24
25 **[3003.5.2] 5303.5.2 Combustible waste and vegetation.** Combustible waste and vegetation
26 shall be kept a minimum of 10 feet (3048 mm) from compressed gas containers and systems.
27 A noncombustible partition, without openings or penetrations extending not less than 18 inches
28 (457 mm) above the height of the tallest container or system piping and not less than 18 inches
29 (457 mm) to the sides of the storage area is allowed in lieu of such distance. The wall shall
30 either be an independent structure, or the exterior wall of the building adjacent to the storage
31 area.

32
33 **[3003.5.3] 5303.5.3 Ledges, platforms and elevators.** Compressed gas containers shall not
34 be placed near elevators, unprotected platform ledges or other areas where the container could
35 drop a distance exceeding one-half the height of the container.

36
37 **[3003.5.4] 5303.5.4 Extreme temperature.** Compressed gas containers, regardless of
38 contents, shall not be exposed to temperatures exceeding 125°F (52°C) or less than mean low
39 atmospheric temperatures unless designed for use under such conditions.

40
41 **[3003.5.5] 5303.5.5 Falling objects.** Compressed gas containers and systems shall not be
42 placed in areas where they are exposed to damage from falling objects.

43
44 **[3003.5.6] 5303.5.6 Heating.** Compressed gas containers shall not be heated by devices that
45 could raise the surface temperature of the container to above 125°F (52°C). Heating devices
46 shall comply with the requirements of the Mechanical Code and the Electrical Code. Approved
47 heating methods not capable of producing surface temperatures above 125°F (52°C) are

1 allowed to be used by trained personnel. Devices designed to maintain individual compressed
2 gas containers at constant temperature shall be approved and shall be designed to be fail-safe.

3
4 **[3003.5.7] 5303.5.7 Sources of ignition.** Compressed gas containers and tanks shall not be
5 exposed to open flames or high-temperature devices in a manner that could create a hazardous
6 condition.

7
8 **[3003.5.8] 5303.5.8 Exposure to chemicals.** Compressed gas containers and systems shall not
9 be exposed to corrosive chemicals or fumes that could damage containers, valves or valve-
10 protective caps.

11
12 **[3003.5.9] 5303.5.9 Exhausted enclosures.** When exhausted enclosures are provided as a
13 means to segregate compressed gas containers from exposure hazards, such enclosures shall
14 comply with the requirements of [FC2703.8.5] FC5003.8.5.

15
16 **[3003.5.10] 5303.5.10 Gas cabinets.** When gas cabinets are provided as a means to separate
17 compressed gas containers from exposure hazards, such gas cabinets shall comply with the
18 requirements of [FC2703.8.6] FC5003.8.6.

19
20 **[3003.5.11] 5303.5.11 Tube trailers.** A tube trailer may be used to deliver compressed gas
21 to a stationary compressed gas storage system, or, when approved, may serve as a temporary
22 storage system to supply compressed gas for on-site equipment or operations. Except for
23 the tube trailer's piping system connections, a minimum separation distance of 3 feet (914
24 mm) shall be maintained in all directions around tube trailers to allow for access, inspection
25 and maintenance. The separation distance between individual tube trailers containing
26 incompatible gases shall be in accordance with [FC3003.5.1] FC5303.5.1.

27
28 **[3003.6] 5303.6 Wiring and equipment.** Electrical wiring and equipment shall comply with the
29 requirements of the Electrical Code. Compressed gas containers and systems shall not be located
30 where they could become part of an electrical circuit. Compressed gas containers and systems shall
31 not be used for electrical grounding.

32
33 **[3003.7] 5303.7 Maintenance and alteration.** Servicing, repairs and other maintenance work or
34 alteration to a valve, pressure-relief device or other compressed gas container or system component
35 shall be performed by competent personnel.

36
37 **[3003.8] 5303.8 Unauthorized use.** Compressed gas containers and systems shall not be used for
38 any purpose other than as a vessel for the materials that they are designed to contain.

39
40 **[3003.9] 5303.9 Exposure to fire.** Compressed gas containers that have been exposed to fire shall
41 be removed from service. Containers so removed shall be handled by qualified persons under the
42 personal supervision of a certificate of fitness holder. Containers exposed to fire shall not be used
43 unless they have been requalified in accordance with the standards set forth in ASME or DOTn
44 regulations, or otherwise approved by the commissioner.

1 **[3003.10] 5303.10 Leaks, damage or corrosion.** Leaking, damaged or corroded compressed gas
2 containers shall be removed from service under the personal supervision of a certificate of fitness
3 holder, and properly repaired or disposed.

4
5 **[3003.11] 5303.11 Protection against corrosion.** Except as otherwise provided in this section,
6 compressed gas containers may be stored or used without being placed under overhead cover.
7 Containers shall be protected from direct contact with soil or unimproved surfaces to prevent
8 bottom corrosion. The surface of the area upon which the containers are placed shall be graded to
9 prevent accumulation of water.

10
11 **[3003.12] 5303.12 Overhead cover.** Compressed gas containers in quantities requiring a permit
12 are allowed to be stored or used in the sun except in locations where extreme temperatures prevail.
13 When extreme temperatures prevail, overhead covers shall be provided. Overhead covers shall
14 also be provided to prevent accumulations of ice and snow on the valves of containers connected
15 for use.

16
17 **[3003.13] 5303.13 Lighting.** Areas used for the storage, handling and use of compressed gas
18 containers and systems shall be provided with approved lighting by natural or artificial means.

19
20 **SECTION FC [3004] 5304**
21 **STORAGE OF COMPRESSED GASES**
22

23 **[3004.1] 5304.1 Upright storage.** Compressed gas containers, except those designed for use in a
24 horizontal position, and all compressed gas containers containing nonliquefied gases, shall be
25 stored in an upright position with the valve end up. The axis of the container stored in the upright
26 position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is
27 properly secured.

28
29 **Exception:** Compressed gas containers with an internal volume less than 0.174 ft³ (0.005 m³)
30 may be stored in a horizontal position.

31
32 **[3004.2] 5304.2 Material-specific regulations.** In addition to the requirements of this section,
33 indoor and outdoor storage of compressed gases shall comply with the material-specific
34 requirements of FC Chapters [31] 54, [35] 58 and [37] 60 through [44] 67.

35
36 **SECTION FC [3005] 5305**
37 **HANDLING AND USE OF COMPRESSED GASES**
38

39 **[3005.1] 5305.1 Compressed gas systems.** Compressed gas systems shall be suitable for the use
40 intended and shall be designed and installed by persons competent in such design and installation.
41 Compressed gas devices and systems shall be listed or approved.

42
43 **[3005.2] 5305.2 Controls.** Compressed gas system controls shall be designed to prevent materials
44 from entering or leaving process or reaction systems at other than the intended time, rate or path.
45 Automatic controls shall be designed to be fail-safe.

1 **[3005.3] 5305.3 Piping systems.** Piping, including tubing, valves, fittings and pressure regulators,
2 shall comply with the requirements of this section and FC Chapter [27] 50. Piping, tubing, pressure
3 regulators, valves and other apparatus shall be kept gas tight to prevent leakage. Adequate
4 pressure-relief devices shall be provided where refrigerated liquefied gas can become trapped in
5 the piping.

6
7 **[3005.4] 5305.4 Valves.** Valves utilized on compressed gas systems shall be suitable for the use
8 intended and shall be accessible. Valve handles or operators for required shutoff valves shall not
9 be removed or otherwise altered to prevent access or hinder operation.

10
11 **[3005.5] 5305.5 Venting.** Venting of gases shall be directed to an approved location. Venting shall
12 comply with the requirements of the Mechanical Code.

13
14 **[3005.6] 5305.6 Upright use.** Compressed gas containers, except those designed for use in a
15 horizontal position, and all compressed gas containers containing nonliquefied gases, shall be used
16 in an upright position with the valve end up. The axis of a container being used in an upright
17 position may be inclined as much as 45 degrees (0.80 rad) from the vertical provided that it is
18 properly secured. Use of nonflammable liquefied gases in the inverted position when the
19 compressed gas is in the liquid state shall be allowed provided that the container is properly secured
20 and the dispensing apparatus is designed for such liquefied gas use.

21
22 **Exception:** Compressed gas containers with an internal volume less than 0.174 ft³ (0.005 m³)
23 may be used in a horizontal position.

24
25 **[3005.7] 5305.7 Transfer.** Transfer of nonflammable compressed gases between containers shall
26 be performed using equipment and operating procedures specified in CGA P-1 and NFPA 99.

27
28 **[3005.8] 5305.8 Use of compressed gas for inflation.** Inflatable equipment, devices or balloons
29 shall be pressurized or filled only with nonflammable gases.

30
31 **[3005.9] 5305.9 Material-specific regulations.** In addition to the requirements of this section,
32 indoor and outdoor use of compressed gases shall comply with the material-specific requirements
33 of FC Chapters [31] 54, [35] 58 and [37] 60 through [44] 67.

34
35 **[3005.10] 5305.10 Handling.** The handling of compressed gas containers shall comply with the
36 requirements of FC [3005.10.1] 5305.10.1 and [3005.10.2] 5305.10.2.

37
38 **[3005.10.1] 5305.10.1 Carts and hand trucks.** Containers shall be moved using an approved
39 method. Where containers are moved by cart, hand truck or other mobile device, such carts,
40 hand trucks or devices shall be designed for the secure movement of containers. Carts and hand
41 trucks utilized for moving compressed gas containers indoors shall comply with the
42 requirements of [FC2703.10] FC5003.10. Carts and hand trucks utilized for moving
43 compressed gas containers outdoors shall be designed so that the containers will be secured
44 against dropping or otherwise striking against each other or other surfaces.

1 [3005.10.2] **5305.10.2 Lifting of containers.** Ropes, chains or slings shall not be used to
2 suspend compressed gas containers unless such containers have been designed for such
3 handling. Valves of compressed gas containers shall not be used for lifting.
4

5 **SECTION FC [3006] 5306**
6 **MEDICAL GAS STORAGE**
7

8 [3006.1] **5306.1 General.** The storage of compressed gases intended for inhalation or sedation
9 including, but not limited to, analgesics for dentistry, podiatry, veterinary and similar uses at
10 hospitals and other medical facilities shall comply with the requirements of this section in addition
11 to other requirements of this chapter and the Plumbing Code.
12

13 [3006.2] **5306.2 Storage locations within buildings.** Medical gases shall be stored in areas
14 dedicated to the storage of such gases without other storage or uses. Where containers of medical
15 gases in quantities greater than 1,500 SCF (42.5 m³) per control area are located indoors, they shall
16 be stored in a gas room in accordance with [FC3006.2.1] FC5306.2.1 or a gas cabinet in accordance
17 with [FC3006.2.3] FC5306.2.3. Where gas rooms are located above or below grade, the fire-
18 resistance rating and maximum number of gas rooms shall be in accordance with FC Table
19 5003.8.3.3. Rooms or areas where medical gases are stored or used in quantities exceeding 6,000
20 SCF (169.9 m³) shall be designed and constructed in compliance with Building Code requirements
21 for high-hazard occupancies.
22

23 [3006.2.1] **5306.2.1 Gas rooms.** A gas room shall be a room separated from the remainder of
24 the building or structure by fire barriers with a fire-resistance rating of not less than 1 hour.
25 Openings between the room and interior spaces shall be protected by self-closing smoke and
26 draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms having
27 an exterior wall shall be provided with at least two vents in such wall, each having not less
28 than 36 square inches (0.023 m²) free area. One vent shall be within 6 inches (152 mm) of the
29 floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms with no exterior wall
30 shall be exhausted through a duct to the outdoors. Supply and exhaust ducts shall be enclosed
31 in a 1-hour-rated shaft enclosure from the room to the outdoors. Approved mechanical
32 ventilation shall comply with the requirements of the Mechanical Code and be provided at a
33 minimum rate of 1 cubic foot per minute per square foot (0.00508 m³/s/m²) of the area of the
34 room. Rooms shall be protected by a sprinkler system.
35

36 [3006.2.2] **5306.2.2** Reserved.
37

38 [3006.2.3] **5306.2.3 Gas cabinets.** Gas cabinets shall be constructed in accordance with
39 [FC2703.8.6] FC5003.8.6 and the following:
40

- 41 1. The average velocity of ventilation at the face of access ports or windows shall not be
42 less than 200 feet per minute ([61] 1.02 m/s) with a minimum of 150 feet per minute
43 ([46] 0.76 m/s) at any point of the access port or window.
44
- 45 2. Connected to an exhaust system.
46
- 47 3. Internally protected by a sprinkler system.

1
2 **[3006.3] 5306.3 Outdoor storage locations.** The storage of oxidizing medical gases located
3 outdoors in quantities greater than the amount requiring a permit shall be located in accordance
4 with [FC4004.2.1] FC6304.2.

5
6 **[3006.4] 5306.4 Medical gas [storage] system.** Medical gas [storage] system, including
7 containers, distribution piping, supply manifolds, connections, pressure regulators, relief devices,
8 valves, and monitoring and alarm systems shall comply with the requirements of NFPA 99 and
9 this chapter.

10
11 **5306.5 Hyperbaric facilities.** Hyperbaric facilities shall be designed, installed, operated and
12 maintained in accordance with the construction codes and this section.

13
14 **5306.5.1 Maintenance.** Hyperbaric chambers and associated medical gas systems shall be
15 inspected, tested and otherwise maintained in accordance with NFPA 99.

16
17 **5306.5.2 Precaution against electronic devices.** Mobile telephones and other transmitting
18 electronic devices shall not be brought into the hyperbaric facility when the hyperbaric system
19 is in operation, unless the device has been approved or listed for use in a hyperbaric
20 atmosphere.

21
22 **5306.6 Signage.** A durable sign shall be conspicuously posted at each entrance to any indoor
23 medical gas storage room and any hyperbaric facility, indicating that medical gas is in storage
24 and/or use in the room or facility, and clearly stating all applicable prohibitions and hazards, in
25 accordance with FC 5003.5 and 5003.6.

26
27 **5306.7 Portable fire extinguishers.** Portable fire extinguishers shall be provided outside of the
28 entrance to any indoor medical gas storage room, including any room in which medical gas
29 containers are manifolded.

30
31 **[SECTION FC 3007**
32 **COMPRESSED GASES NOT OTHERWISE REGULATED**

33
34 **3007.1 General.** Compressed gases in storage or use not regulated by the material-specific
35 provisions of FC Chapters 6, 31, 35 and 37 through 45, including asphyxiant, irritant and
36 radioactive gases, shall comply with the requirements of this section in addition to other
37 requirements of this chapter.

38
39 **3007.2 Ventilation.** Indoor storage and use areas and storage buildings shall be provided with
40 mechanical exhaust ventilation or natural ventilation in accordance with FC 2704.3 or 2705.1.9.
41 Mechanical exhaust ventilation shall be provided where required by FC 2705.2.1.1 or 2705.2.2.2.
42 When mechanical ventilation is provided, the systems shall be operational during such time as the
43 building or space is occupied.]

44
45 **SECTION FC 5307**
46 **CARBON DIOXIDE BEVERAGE DISPENSING SYSTEMS**

1 **5307.1 Scope.** The storage, handling and use in beverage dispensing systems of more than
2 100 pounds (874 SCF) of carbon dioxide, in low-pressure, liquefied form, shall be in
3 accordance with this section. The storage, handling and use of carbon dioxide in other forms and
4 for other purposes shall be regulated by other applicable provisions of this code and the rules.

5
6 **5307.2 Permits.** Permits shall be required as set forth in FC105.6.

7
8 **5307.3 General.** Carbon dioxide beverage dispensing systems shall be designed, installed,
9 operated and maintained in accordance with this section, the construction codes, the rules, Chapter
10 13 of NFPA 55, and the equipment manufacturer’s instructions.

11
12 **5307.4 Supervision.** The storage, handling and use of carbon dioxide in carbon beverage
13 dispensing systems shall be supervised as set forth in FC 5307.4.1 and 5307.4.2:

14
15 **5307.4.1 Installation.** Carbon dioxide beverage dispensing systems shall be installed by a
16 person holding a certificate of fitness.

17
18 **5307.4.2. Filling of containers.** The filling of a carbon dioxide container from any source shall
19 be performed by a person holding a certificate of fitness.

20
21 **5307.5 Carbon dioxide detection and alarm systems.** All carbon dioxide beverage dispensing
22 systems shall be equipped with a carbon dioxide detection and alarm system in accordance with
23 the rules. Such a system shall be installed in the room or other area in which the carbon dioxide
24 storage containers are installed and any other room or area in which carbon dioxide could
25 accumulate, and shall activate an alarm in such room or area, outside the entrance to such room or
26 area and such other locations that the department may prescribe by rule.

27
28 **Exceptions:**

29
30 1. Any aboveground room or area provided with continuous mechanical ventilation system
31 designed to exhaust carbon dioxide to a safe outdoor location. Such mechanical
32 ventilation shall be designed to operate at a negative pressure in relation to the
33 surrounding area; provide ventilation at a rate of not less than 1 cubic foot per minute per
34 square foot (0.00508 m³/(s·m²)); and take exhaust from a point within 12 inches
35 (305 mm) of the floor.

36
37 2. Any room or area provided with a gas detection system in accordance with FC908.

38
39 **5307.6 Operational and Maintenance Requirements.** Carbon dioxide beverage dispensing
40 systems shall be operated and maintained in accordance with the standards set forth in FC5307.3
41 and such other requirements as the department may prescribe by rule, including:

42
43 1. Warning signs.

44
45 2. Periodic inspections of the system.

46
47 3. User safety training.

1
2 4. Required notifications in the event of a carbon dioxide leak.

3
4 5. Filing of affidavit of carbon dioxide beverage dispensing system installation, alteration and
5 repair, and carbon dioxide release.

6
7 6. Protected from physical damage.

8
9 **SECTION FC [3008] 5308**
10 **ETHYLENE OXIDE**

11
12 **[3008.1] 5308.1 Scope.** This section shall govern the storage, handling and use of gases containing
13 ethylene oxide used for sterilization purposes. The storage, handling and use of gases containing
14 ethylene oxide for purposes other than sterilization shall comply with the other applicable
15 requirements of this chapter. The storage, handling and use of flammable gases containing ethylene
16 oxide shall additionally comply with the requirements of FC Chapter [35] 58.

17
18 **[3008.2] 5308.2 General.** The storage, handling and use of gases containing ethylene oxide used
19 for sterilization purposes shall comply with the other requirements of this chapter, as applicable,
20 and shall additionally be in accordance with this section.

21
22 **[3008.3] 5308.3 Prohibitions.** It shall be unlawful to sterilize pressurized oxygen equipment with
23 gases containing ethylene oxide.

24
25 **[3008.4] 5308.4 Application.** Prior to storing or using gases containing ethylene oxide, or
26 modifying an existing installation or system, the owner shall file with the department an
27 application for the approval of the design and installation of the sterilization system which contains
28 such information and documentation as the commissioner may prescribe.

29
30 **[3008.5] 5308.5 Design and installation requirements.** The design and installation of
31 sterilization systems shall comply with the requirements of FC [3008.5.1] 5308.5.1 through
32 [3008.5.3] 5308.5.3.

33
34 **[3008.5.1] 5308.5.1 Compliance with other codes and standards.** The design and installation
35 of sterilization systems and the storage of gases containing ethylene oxide shall be in
36 accordance with the construction codes, including the Building Code, the Electrical Code, the
37 manufacturer's specifications and the approved testing laboratory that listed the sterilizer.

38
39 **[3008.5.2] 5308.5.2 Sterilization system room and local area ventilation.** Sterilization
40 systems shall be installed in rooms that are ventilated as follows:

41
42 **[3008.5.2.1] 5308.5.2.1 Room ventilation.** Sterilizers shall be installed in a well-ventilated
43 room or other area provided with an independent, nonrecirculating mechanical ventilation
44 system that discharges outdoors. Ventilation supply and exhaust registers shall be located
45 such that there are no stagnant air spaces in the immediate area of the sterilizer and that the
46 direction of air movement is away from the operator.

1 [3008.5.2.2] **5308.5.2.2 Local area ventilation.** Where a local ventilation system is
2 required by the regulations of the United States Department of Labor, such ventilation
3 system shall be an independent, dedicated and nonrecirculating system that discharges
4 directly outdoors or to an emission control system and only metallic ductwork impervious
5 to ethylene oxide shall be used. The amount of flexible ducting and the number of elbows
6 in the duct shall be kept to a minimum.
7

8 [3008.5.3] **5308.5.3 Vent lines.** Sterilizer vent lines shall be designed and installed in
9 compliance with the following requirements:
10

- 11 1. Each sterilizer shall be equipped with an independent, dedicated and gas-tight vent line
12 for the discharge of gases containing ethylene oxide.
- 13
- 14 2. Vent lines shall discharge directly outdoors or to an emission control system. []Such
15 vent lines shall not discharge into any other ventilation or exhaust system.
- 16
- 17 3. The piping and the point of discharge for all vent lines discharging outdoors shall be
18 designed and installed to prevent moisture from entering the vent line.
19
- 20 4. Vent lines, including piping, fittings and other components, shall be in accordance with
21 the specifications of the sterilizer manufacturer. Pipe lengths shall not exceed the
22 maximum lengths specified by the manufacturer. Vertical travel distances, elbows, sharp
23 bends and any reduction in vent line size shall be kept to a minimum.
24

25 [3008.6] **5308.6 Operation and maintenance.** Sterilization systems shall be operated and
26 maintained in compliance with the following requirements:
27

- 28 1. Sterilization systems shall be operated and maintained in compliance with the
29 manufacturer's specifications and the approved testing laboratory listing requirements.
30
- 31 2. Air compressors and their air intakes shall be located such that any gas that may leak from
32 the sterilization system or stored containers will not enter the compressor.
33
- 34 3. Sterilizers shall not be operated if the room ventilation system, local area ventilation system
35 or vent pipe is not operational.
36

37 [3008.7] **5308.7 Emergency plan.** Where required by the regulations of the United States
38 Department of Labor, a written emergency plan to be implemented in the event of an ethylene
39 oxide spill or leak shall be prepared, shall be maintained on the premises and made available for
40 inspection by any representative of the department.
41

42 [3008.8] **5308.8 Recordkeeping.** A copy of the manufacturer's instructions for the installation,
43 operation and maintenance of the sterilizer shall be maintained in the room or other area in which
44 the sterilization system is located.
45

46 **SECTION FC 5309**
47 **COMPRESSED GASES NOT OTHERWISE REGULATED**

1
2 **5309.1 General.** Compressed gases in storage or use not regulated by the material-specific
3 provisions of FC Chapters 6, 54, 58 and 60 through 67, including asphyxiant, irritant and
4 radioactive gases, shall comply with the requirements of this section in addition to other applicable
5 requirements of this chapter.

6
7 **5309.2 Ventilation.** Indoor storage and use areas and storage buildings shall be provided with
8 mechanical exhaust ventilation or natural ventilation in accordance with FC 5004.3 or 5005.1.9.
9 Mechanical exhaust ventilation shall be provided where required by FC 5005.2.1.1 or 5005.2.2.2.
10 When mechanical ventilation is provided, the systems shall be operational during such time as the
11 building or space is occupied.

12
13
14 **CHAPTER 54**
15 **CORROSIVE MATERIALS**

16
17 **SECTION FC [3101] 5401**
18 **GENERAL**

19
20 **[3101.1] 5401.1 Scope.** This chapter shall govern the storage, handling and use of corrosive
21 materials.

22
23 **Exceptions:**

- 24
25 1. Display and storage in Group M and storage in Group S occupancies complying with
26 the requirements of [FC2703.11] FC5003.11.
27
28 2. Stationary energy storage [battery] systems in accordance with FC608.
29
30 3. [This chapter shall not apply to ammonia] Ammonia (R-717) when used as a refrigerant
31 in a refrigerating system in accordance with FC606.
32

33 **[3101.2] 5401.2 Permits.** Permits shall be required as set forth in FC105.6.
34

35 **[3101.3] 5401.3 General.** Corrosive materials shall be stored, handled and used in accordance
36 with this chapter. Corrosive materials that are compressed gases shall additionally comply with
37 the requirements of FC Chapter [30] 53.
38

39 **[3101.4] 5401.4 Supervision.** The handling and use of corrosive materials in quantities [exceeding
40 55 gallons (208 L) of liquid or 1,000 pounds (454 kg) of solid] requiring a permit shall be under
41 the personal supervision of a certificate of fitness holder. The storage of corrosive materials in
42 quantities [exceeding 55 gallons (208 L) of liquid or 1,000 pounds (454 kg) of solid] requiring a
43 permit shall be under the general supervision of a certificate of fitness holder.
44

45 **SECTION FC [3102] 5402**
46 **DEFINITIONS**
47

1 **[3102.1] 5402.1 Definition.** The following term shall, for the purposes of this chapter and as used
2 elsewhere in this code, have the meaning [shown herein] set forth in FC202.

3
4 **CORROSIVE MATERIAL.** [A material that causes full thickness destruction of human skin at
5 the site of contact within a specified period of time when tested by methods set forth in DOTn
6 regulations 49 CFR Sections 173.136 and 173.137, or a liquid that has a severe corrosion rate on
7 steel or aluminum based on the criteria set forth in DOTn regulation 49 CFR Section
8 173.137(c)(2).]

9
10 **SECTION FC [3103] 5403**
11 **GENERAL REQUIREMENTS**
12

13 **[3103.1] 5403.1 Quantities not exceeding the maximum allowable quantity per control area.**
14 The storage, handling and use of corrosive materials in amounts not exceeding the maximum
15 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with
16 FC [2701] 5001, [2703] 5003 and [3101] 5401.

17
18 **[3103.2] 5403.2 Quantities exceeding the maximum allowable quantity per control area.** The
19 storage, handling and use of corrosive materials in amounts exceeding the maximum allowable
20 quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with this
21 chapter and FC Chapter [27] 50.

22
23 **SECTION FC [3104] 5404**
24 **STORAGE**
25

26 **[3104.1] 5404.1 Indoor storage.** Indoor storage of corrosive materials in amounts exceeding the
27 maximum allowable quantity per control area indicated in FC Table [2703.1.1(2)] 5003.1.1(2),
28 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter.

29
30 **[3104.1.1] 5404.1.1 Liquid-tight floor.** In addition to the provisions of [FC2704.12]
31 FC5004.12, floors in storage areas for corrosive liquids shall be of liquid-tight construction.

32
33 **[3104.2] 5404.2 Outdoor storage.** Outdoor storage of corrosive materials in amounts exceeding
34 the maximum allowable quantity per control area indicated in FC Table [2703.1.1(4)] 5003.1.1(4)
35 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter.

36
37 **[3104.2.1] 5404.2.1 Aboveground outdoor storage tanks.** Aboveground outdoor storage
38 tanks exceeding an aggregate quantity of 1,000 gallons (3785 L) of corrosive liquids shall be
39 provided with secondary containment in accordance with [FC2704.2.2] FC5004.2.2.

40
41 **[3104.2.2] 5404.2.2 Distance from storage to exposures.** Outdoor storage of corrosive
42 materials shall not be within 20 feet (6096 mm) of buildings not associated with the
43 manufacturing or distribution of such materials, lot lines, public streets, private roads or means
44 of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less
45 than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such
46 distance. The wall shall either be an independent structure, or the exterior wall of the building
47 adjacent to the storage area.

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**SECTION FC [3105] 5405
HANDLING AND USE**

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[3105.1] **5405.1 Indoor use.** The indoor handling and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(2)] 5003.1.1(2) shall be in accordance with FC [2701] 5001, [2703] 5003, [2705] 5005 and this chapter.

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[3105.1.1] **5405.1.1 Liquid transfer.** Corrosive liquids shall be transferred in accordance with [FC2705.1.10] FC5005.1.10.

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25

[3105.1.2] **5405.1.2 Ventilation.** When corrosive materials are dispensed or used, mechanical exhaust ventilation in accordance with [FC2705.2.1.1] FC5005.2.1.1 shall be provided.

26
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30

[3105.2] **5405.2 Outdoor use.** The outdoor handling and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001, [2703] 5003, [2705] 5005 and this chapter.

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[3105.2.1] **5405.2.1 Distance from use to exposures.** Outdoor handling and use of corrosive materials shall be located in accordance with [FC3104.2.2] FC5404.2.2.

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**CHAPTER 55
CRYOGENIC FLUIDS**

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46

**SECTION FC [3201] 5501
GENERAL**

[3201.1] **5501.1 Scope.** This chapter shall govern the storage, handling and use of cryogenic fluids.

Exception: Fluids used as refrigerants in refrigerating systems (see FC606).

[3201.2] **5501.2 Permits.** Permits shall be required as set forth in FC105.6.

[3201.3] **5501.3 General.** Cryogenic fluids shall be stored, handled and used in accordance with this chapter, except that liquefied natural gas (LNG) shall comply with the requirements of [FC3206] FC5506 only. Containers that contain any amount of cryogenic fluid, including containers that are partially full or have residual gas, shall be considered as full for the purposes of the requirements of this chapter.

[3201.3.1] **5501.3.1 Oxidizing cryogenic fluids.** Oxidizing cryogenic fluids, including oxygen, shall additionally comply with the requirements of NFPA 55 and FC Chapter [40] 63, as applicable.

1 [3201.3.2] **5501.3.2 Flammable cryogenic fluids.** Flammable cryogenic fluids, including
2 hydrogen, methane and carbon monoxide, shall additionally comply with the requirements of
3 NFPA 55 and FC Chapter [35] 58, as applicable.

4
5 [3201.3.3] **5501.3.3 Inert cryogenic fluids.** Inert cryogenic fluids, including argon, helium
6 and nitrogen, shall additionally comply with the requirements of CGA P-18.

7
8 [3201.4] **5501.4 Supervision.** The storage, handling and use of cryogenic fluids shall be
9 supervised as set forth in FC [3201.4.1] 5501.4.1 through [3201.4.3] 5501.4.3.

10
11 [3201.4.1] **5501.4.1 Handling and use.** Handling and use of cryogenic fluid in quantities
12 requiring a permit shall be performed under the personal supervision of a person holding a
13 certificate of fitness.

14
15 [3201.4.2] **5501.4.2 Installation and maintenance.** The installation and maintenance of
16 cryogenic containers and of systems containing cryogenic fluids, including the repair of such
17 systems, shall be conducted under the personal supervision of a person holding a certificate of
18 fitness.

19
20 [3201.4.3] **5501.4.3 Storage.** Storage of cryogenic fluids in quantities requiring a permit shall
21 be under the general supervision of a person holding a certificate of fitness.

22
23 [3201.5] **5501.5 Prohibition.** It shall be unlawful to fill a container with a flammable cryogenic
24 fluid except for containers mounted on a hydrogen-powered motor vehicle and used for motive
25 power as authorized by [FC2209.1.1(1)] FC2309.1.1(1).

26
27 **SECTION FC [3202] 5502**
28 **DEFINITIONS**

29
30 [3202.1] **5502.1 Definitions.** The following terms shall, for the purposes of this chapter and as
31 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

32
33 **CRYOGENIC CONTAINER.** [A pressure container, low-pressure container or atmospheric
34 container of any size designed or used for the transportation, handling or storage of a cryogenic
35 fluid, and which utilizes venting, insulation, refrigeration or a combination thereof to maintain the
36 pressure within design parameters for such container and to keep the contents in a liquid state.]

37
38 **CRYOGENIC FLUID.** [A fluid having a boiling point lower than -130°F (-89.9°C) at 14.7
39 pounds per square inch absolute (psia) (an absolute pressure of 101.3 kPa).]

40
41 **FLAMMABLE CRYOGENIC FLUID.** [A cryogenic fluid that is flammable in its vapor state.]

42
43 **LOW-PRESSURE CONTAINER.** [A storage container designed to withstand an internal
44 pressure greater than ½ pound per square inch gauge (psig) (3.4 kPag) but not greater than 15 psig
45 (103.4 kPag).]

1 **MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP).** [The maximum pressure
2 permissible at the top of a container in its operating position for a designated temperature, as
3 established by the container manufacturer.]
4

5 **SECTION FC [3203] 5503**
6 **GENERAL REQUIREMENTS**
7

8 **[3203.1] 5503.1 Cryogenic container.** Cryogenic containers shall comply with the requirements
9 of FC [3203.1.1] 5503.1.1 through [3203.1.3.3] 5503.1.3.3 and FC Chapter [27] 50.
10

11 **[3203.1.1] 5503.1.1 Cryogenic container standards.** Cryogenic containers shall be designed,
12 constructed, operated and maintained in accordance with the ASME Boiler and Pressure Vessel
13 Code or United States Department of Transportation regulations, or as otherwise approved.
14

15 **[3203.1.1.1] 5503.1.1.1 Pressure gauges.** Cryogenic containers shall be provided with
16 pressure gauges. The maximum face reading for dial-type gauges shall not be less than 133
17 percent nor more than 250 percent of the MAWP of the cryogenic container.
18

19 **[3203.1.1.2] 5503.1.1.2 Liquid level-indicating devices.** Cryogenic containers shall be
20 provided with a liquid level-indicating device. It shall be unlawful to use cryogenic
21 containers with glass liquid level gauges in direct contact with the contents of such
22 containers.
23

24 **[3203.1.2] 5503.1.2 Flood hazard.** Stationary cryogenic containers located in areas of special
25 flood hazard or on the premises of Group I-2 occupancies that are hospitals in shaded X-Zones
26 (as defined in Section G201.2 of Appendix G of the Building Code) shall comply with Section
27 G307.5 of the Building Code.
28

29 **[3203.1.3] 5503.1.3 Foundations and supports.** Cryogenic containers shall be installed upon
30 substantial concrete or masonry foundations or structural steel supports on firm concrete or
31 masonry foundations. Cryogenic containers shall be supported to prevent the concentration of
32 excessive loads on the supporting portion of the shell. Foundations for horizontal cryogenic
33 containers shall be constructed to accommodate expansion and contraction of the cryogenic
34 container. Foundations shall be provided to support the weight of vaporizers and heat
35 exchangers.
36

37 **[3203.1.3.1] 5503.1.3.1 Temperature effects.** When cryogenic container foundations or
38 supports are subject to exposure to temperatures below -130°F (-89.9°C), the foundations
39 or supports shall be constructed of materials to withstand the low-temperature effects of
40 cryogenic fluid spillage.
41

42 **[3203.1.3.2] 5503.1.3.2 Corrosion protection.** Portions of cryogenic containers in contact
43 with foundations or saddles shall be painted to protect against corrosion. Precautions shall
44 be taken to avoid or minimize corrosion due to galvanic action.
45

1 [3203.1.3.3] **5503.1.3.3 Fill connection supports.** Fill connection supports shall be
2 designed and maintained to withstand the repeated application of force required to connect
3 and disconnect hoses of cargo tanks.
4

5 [3203.2] **5503.2 Pressure relief devices.** Pressure relief devices shall be provided in accordance
6 with FC [3203.2.1] 5503.2.1 through [3203.2.6] 5503.2.6 to protect cryogenic containers and
7 systems containing cryogenic fluids from rupture in the event of overpressure. Pressure relief
8 devices shall be designed in accordance with CGA S-1.1, CGA S-1.2 and CGA S-1.3.
9

10 [3203.2.1] **5503.2.1 Cryogenic containers.** Cryogenic containers shall be provided with
11 pressure relief devices. Precautions shall be taken to prevent overpressurization of atmospheric
12 tanks. Such pressure relief devices shall communicate with the vapor space of the container,
13 not the cryogenic fluid.
14

15 [3203.2.2] **5503.2.2 Equipment other than cryogenic containers.** Heat exchangers,
16 vaporizers, insulation casings surrounding cryogenic containers, and sections of coaxial or
17 single wall piping systems in which liquefied cryogenic fluids could be trapped because of
18 leakage from cryogenic containers or isolation by valves shall be provided with pressure relief
19 devices.
20

21 [3203.2.3] **5503.2.3 Sizing.** Pressure relief devices shall be sized in accordance with the
22 specifications to which the cryogenic container was fabricated. The relief devices shall have
23 sufficient capacity to prevent the MAWP of the cryogenic container or system from being
24 exceeded. It shall be unlawful to use pressure relief devices that are not clearly marked by the
25 manufacturer with their set pressure.
26

27 [3203.2.4] **5503.2.4 Accessibility.** Pressure relief devices shall be located such that they are
28 readily accessible for inspection, repair and other maintenance.
29

30 [3203.2.5] **5503.2.5 Arrangement.** Pressure relief devices shall be arranged to discharge
31 unobstructed, at rated capacity, to the outdoors in such a manner as to prevent escaping gas
32 from impinging on personnel, cryogenic containers, equipment and adjacent structures or from
33 entering enclosed spaces.
34

35 **Exception:** United States Department of Transportation specification cryogenic containers
36 with an internal volume of 2 cubic feet (0.057 m³) or less.
37

38 [3203.2.6] **5503.2.6 Shutoffs between pressure relief devices and cryogenic containers.**
39 Shutoff valves shall not be installed between pressure relief devices and cryogenic containers.
40

41 **Exception:** A shutoff valve is allowed on cryogenic containers equipped with multiple
42 pressure-relief device installations where the design and arrangement of the valves provide
43 sufficient relief capacity for the pressure relief devices to prevent the MAWP of the
44 cryogenic container or system from being exceeded at all times.
45

1 **[3203.3] 5503.3 Pressure-relief vent piping.** Pressure-relief vent-piping systems shall be
2 constructed and arranged so as to remain functional and direct the flow of gas to a safe location in
3 accordance with FC [3203.3.1] 5503.3.1 and [3203.3.2] 5503.3.2.

4
5 **[3203.3.1] 5503.3.1 Sizing.** Pressure-relief-device vent piping shall have a cross-sectional area
6 not less than that of the pressure-relief-device vent opening and shall be arranged so as not to
7 restrict the flow of escaping gas.

8
9 **[3203.3.2] 5503.3.2 Arrangement.** Pressure-relief-device vent piping and drains in vent lines
10 shall be arranged so that escaping gas will discharge unobstructed to the outdoors and not
11 impinge on personnel, containers, equipment, foundations and adjacent structures or enter
12 enclosed spaces. Pressure-relief-device vent lines shall be installed in such a manner to exclude
13 or remove moisture and condensation and prevent malfunction of the pressure relief device
14 because of freezing or ice accumulation or other types of obstruction.

15
16 **[3203.4] 5503.4 Marking.** Cryogenic containers and systems shall be marked in accordance with
17 FC [3203.4.1] 5503.4.1 through [3203.4.6] 5503.4.6.

18
19 **[3203.4.1] 5503.4.1 Identification signs.** Visible hazard identification signs in accordance
20 with NFPA 704 shall be provided at entrances to areas in which cryogenic fluids are stored,
21 handled or used.

22
23 **[3203.4.2] 5503.4.2 Identification of contents.** Stationary and portable cryogenic containers
24 shall be clearly marked with the name of the cryogenic fluid contained therein. Stationary
25 aboveground cryogenic containers shall be placarded in accordance with FC [2703.5] 5003.5
26 and [2703.6] 5003.6. Portable cryogenic containers shall be identified in accordance with CGA
27 C-7.

28
29 **[3203.4.3] 5503.4.3 Identification of cryogenic containers.** Stationary cryogenic containers
30 shall be identified with a permanent nameplate indicating the manufacturing specification and
31 MAWP. The nameplate shall be installed on the cryogenic container in an accessible location.
32 The nameplate shall be marked in accordance with the ASME Boiler and Pressure Vessel Code
33 or the regulations of the United States Department of Transportation, as set forth in 49 CFR
34 Parts 100-180.

35
36 **[3203.4.4] 5503.4.4 Identification of cryogenic container connections.** Cryogenic container
37 inlet and outlet connections, liquid level indicating devices, liquid level limit controls, valves,
38 pressure gauges, regulators, and safety devices shall be marked with a permanent tag or label
39 identifying their function or identified by a schematic drawing designating their function and
40 whether they are connected to the vapor or liquid space of the cryogenic container. Where a
41 schematic drawing is provided, it shall be permanently attached to the cryogenic container and
42 maintained in a legible condition.

43
44 **[3203.4.5] 5503.4.5 Identification of piping systems.** Piping systems shall be identified in
45 accordance with [FC3003.2.3] FC5303.2.3.

1 [3203.4.6] **5503.4.6 Identification of emergency shutoff valves.** Emergency shutoff valves
2 shall be identified by posting a durable sign at a conspicuous location at or near the valve.
3

4 [3203.5] **5503.5 Container protection.** Cryogenic containers and systems shall be secured and
5 protected against physical damage and tampering in accordance with [FC2703.9.2] FC5003.9.2,
6 and FC [3203.5.2] 5503.5.2 through [3203.5.4] 5503.5.4.
7

8 [3203.5.1] **5503.5.1** Reserved.
9

10 [3203.5.2] **5503.5.2 Securing of cryogenic containers.** Stationary containers shall be secured
11 to foundations in accordance with the Building Code. Portable cryogenic containers shall be
12 secured to prevent movement from contact, vibration or seismic activity. Nesting shall be an
13 acceptable means of securing cryogenic containers. Cryogenic containers shall not be secured
14 to plumbing pipes or electrical conduits.
15

16 [3203.5.3] **5503.5.3 Securing of vaporizers.** Vaporizers, heat exchangers and similar
17 equipment shall be anchored to a suitable foundation. Connecting piping shall be sufficiently
18 flexible to provide for the effects of expansion and contraction due to temperature changes.
19

20 [3203.5.4] **5503.5.4 Physical protection.** Cryogenic containers, piping, valves, pressure relief
21 devices, regulating equipment and other appurtenances which could be exposed to physical
22 damage and tampering shall be protected by posts or other approved means.
23

24 [3203.6] **5503.6 Electrical wiring and equipment.** Electrical wiring and equipment shall comply
25 with the requirements of the Electrical Code and FC [3203.6.1] 5503.6.1 and [3203.6.2] 5503.6.2.
26

27 [3203.6.1] **5503.6.1 Location.** Cryogenic containers and systems shall not be located where
28 they could become part of an electrical circuit.
29

30 [3203.6.2] **5503.6.2 Electrical grounding and bonding.** Cryogenic containers and systems
31 shall not be used for electrical grounding. When electrical grounding and bonding is required,
32 the grounding and bonding system shall comply with the requirements of the Electrical Code.
33 The grounding system shall be protected against corrosion, including corrosion caused by stray
34 electric currents or galvanic action.
35

36 [3203.7] **5503.7 Service and repair.** Service, repair, modification or removal of valves, pressure
37 relief devices or other cryogenic container appurtenances, shall comply with the requirements of
38 FC [3203.7.1] 5503.7.1 and [3203.7.2] 5503.7.2 and the ASME Boiler and Pressure Vessel Code,
39 Section VIII or the regulations of the United States Department of Transportation, as set forth in
40 49 CFR Parts 100-180, as applicable.
41

42 [3203.7.1] **5503.7.1 Cryogenic containers.** Cryogenic containers that have been removed
43 from service shall be repaired or disposed of lawfully.
44

45 [3203.7.2] **5503.7.2 System inspection.** Cryogenic containers and systems shall be inspected
46 by competent personnel at least once a month.
47

1 [3203.8] **5503.8 Unauthorized use.** Cryogenic containers shall not be used for any purpose other
2 than as a container for the product that it is designed to contain.

3
4 [3203.9] **5503.9 Leaks, damage and corrosion.** Leaking, damaged or corroded cryogenic
5 containers shall be immediately removed from service. Leaking, damaged or corroded systems
6 shall be replaced, repaired or disposed of lawfully in accordance with [FC3203.7] FC5503.7.

7
8 [3203.10] **5503.10 Lighting.** Lighting shall be provided for equipment such as control valves,
9 gauges, regulators, vaporizers and heat exchangers and operating facilities such as walkways and
10 gates ancillary to stationary cryogenic container installations.

11
12 **SECTION FC [3204] 5504**
13 **STORAGE**
14

15 [3204.1] **5504.1 General.** Storage of cryogenic containers shall be in accordance with this section.

16
17 [3204.2] **5504.2 Indoor storage.** Indoor storage of cryogenic containers shall be in accordance
18 with FC [3204.2.1] 5504.2.1 through [3204.2.1.3] 5504.2.1.3.

19
20 [3204.2.1] **5504.2.1 Cryogenic containers.** Cryogenic containers shall be installed in
21 accordance with the provisions applicable to the type of cryogenic fluid stored and this section.

22
23 [3204.2.1.1] **5504.2.1.1 Cryogenic containers.** Cryogenic containers shall be in
24 accordance with [FC3203.1] FC5503.1.

25
26 [3204.2.1.2] **5504.2.1.2 Construction of indoor areas.** Cryogenic containers stored
27 indoors shall be located in buildings, rooms or areas constructed in accordance with the
28 Building Code.

29
30 [3204.2.1.3] **5504.2.1.3 Ventilation.** Storage areas for cryogenic containers shall be
31 ventilated in accordance with the Mechanical Code.

32
33 [3204.3] **5504.3 Outdoor cryogenic storage.** Outdoor storage of cryogenic containers shall be in
34 accordance with FC [3204.3.1] 5504.3.1 through [3204.3.1.2.5] 5504.3.1.2.5.

35
36 [3204.3.1] **5504.3.1 Separation from hazardous conditions.** Cryogenic containers and
37 systems in storage or use shall be separated from materials and conditions which pose exposure
38 hazards to or from each other in accordance with FC [3204.3.1.1] 5504.3.1.1 through
39 [3204.3.1.1.5] 5504.3.1.1.5.

40
41 [3204.3.1.1] **5504.3.1.1 Stationary cryogenic containers.** Stationary cryogenic containers
42 shall be separated from exposure hazards in accordance with the minimum separation
43 distances set forth in FC Table [3204.3.1.1] 5504.3.1.1.

44
45 **FC TABLE [3204.3.1.1] 5504.3.1.1**
46 **SEPARATION OF STATIONARY CRYOGENIC CONTAINERS FROM EXPOSURE HAZARDS**

EXPOSURE	MINIMUM DISTANCE (feet)
Buildings, regardless of construction type	1, or minimum required for service access

Building exit	10
Building openings other than building exits	1
Air intakes	10
Lot lines	5
Group A occupancies and other public gathering places	50
Nonambulatory patient areas	50
Combustible waste or vegetation	15
Other hazardous materials	In accordance with FC Chapter [27] <u>50</u>

For SI: 1 foot = 304.8 mm.

[3204.3.1.1.1] 5504.3.1.1.1 Point-of-fill connections. Fill connections for stationary cryogenic containers shall not be positioned closer to exposure hazards than the minimum distances required for stationary cryogenic containers. Fill connections for stationary cryogenic containers shall be located and maintained to afford cargo tank operator access to valves and indicators on the cryogenic containers and cargo tank.

[3204.3.1.1.2] 5504.3.1.1.2 Surfaces beneath cryogenic containers. The surface of the area on which stationary cryogenic containers are placed, including the surface of the area located below the point where connections are made for the purpose of filling such cryogenic containers, shall be compatible with the cryogenic fluid in the cryogenic container. The surface shall be capable of withstanding temperatures of cryogenic fluid that may be released during normal filling operations, without cracking, shifting or other impact upon the stability of the installation.

[3204.3.1.1.3] 5504.3.1.1.3 Location. Containers of cryogenic fluids shall not be stored or used within diked areas containing other hazardous materials.

[3204.3.1.1.3.1] 5504.3.1.1.3.1 Prohibited locations. It shall be unlawful to install stationary cryogenic containers on the roof of any building or structure.

[3204.3.1.1.4] 5504.3.1.1.4 Areas subject to flooding. Stationary cryogenic containers, vaporizers, heat exchangers and connecting piping located in areas subject to flooding shall be securely anchored or elevated to prevent separation of the cryogenic containers and related equipment from foundations or supports.

[3204.3.1.1.5] 5504.3.1.1.5 Drainage. The area surrounding stationary cryogenic containers shall be provided with a means to prevent accidental discharge of cryogenic fluid from endangering personnel, cryogenic containers, equipment and adjacent structures or to enter enclosed spaces. The stationary cryogenic container shall not be placed where spilled or discharged fluid will be retained around the cryogenic container.

Exception: These drainage requirements shall not apply when it is determined by the commissioner that the cryogenic container does not constitute a hazard, upon consideration of special features such as crushed rock utilized as a heat sink, topographical conditions, nature of occupancy, proximity to structures on the same or adjacent property, and the capacity and construction of cryogenic containers and character of cryogenic fluid to be stored.

1 [3204.3.1.2] **5504.3.1.2 Portable cryogenic containers.** Outdoor storage of portable
2 cryogenic containers shall comply with the requirements of [FC3203] FC5503 and this
3 section.

4
5 [3204.3.1.2.1] **5504.3.1.2.1 Exposure hazard separation.** Portable cryogenic
6 containers shall be separated from exposure hazards in accordance with FC Table
7 [3204.3.1.2.1] 5504.3.1.2.1.

8
9
10 **FC TABLE [3204.3.1.2.1] 5504.3.1.2.1**
SEPARATION OF PORTABLE CRYOGENIC CONTAINERS FROM EXPOSURE HAZARDS

EXPOSURE	MINIMUM DISTANCE (feet)
Building exits	10
Building openings other than building exits	1
Air intakes	10
Lot lines	5
Combustible waste or vegetation	15
Other hazardous materials	In accordance with FC Chapter [27] <u>50</u>

11 For SI: 1 foot = 304.8 mm.

12
13 [3204.3.1.2.2] **5504.3.1.2.2 Surfaces beneath cryogenic containers.** Cryogenic
14 containers shall be placed on surfaces that are compatible with the cryogenic fluid in
15 the cryogenic container.

16
17 [3204.3.1.2.3] **5504.3.1.2.3 Drainage.** The area surrounding portable cryogenic
18 containers shall be provided with a means to prevent accidental discharge of fluids from
19 endangering adjacent containers, buildings, equipment or adjoining property.

20
21 **Exception:** These requirements shall not apply when it is determined by the
22 commissioner that the cryogenic container does not constitute a hazard.

23
24 [3204.3.1.2.4] **5504.3.1.2.4 Areas subject to flooding.** Portable cryogenic containers
25 located in areas subject to flooding shall be properly secured to prevent movement.

26
27 [3204.3.1.2.5] **5504.3.1.2.5 Pressure relief valve discharge.** Cryogenic containers
28 shall be positioned such that the pressure relief valve discharge is directed away from
29 any building exit.

30
31 **SECTION FC [3205] 5505**
32 **HANDLING AND USE**

33
34 [3205.1] **5505.1 Applicability.** Handling and use of cryogenic containers and systems shall be in
35 accordance with this section.

36
37 [3205.1.1] **5505.1.1 Cryogenic fluid systems.** Cryogenic systems shall be suitable for the use
38 intended and designed by persons competent in such design. Equipment and processes shall be
39 listed or approved.

40
41 [3205.1.2] **5505.1.2 Piping systems.** Piping, tubing, valves, joints and fittings used in
42 cryogenic systems shall be designed and installed in accordance with the material-specific

1 provisions of FC [3201.3.1] 5501.3.1, [3201.3.2] 5501.3.2, [3201.3.3] 5501.3.3 and
2 [3205.1.2.1] 5505.1.2.1 through [3205.1.2.6] 5505.1.2.6.

3
4 **[3205.1.2.1] 5505.1.2.1 Design and construction.** Piping systems shall be suitable for the
5 use intended through the full range of pressure and temperature to which they will be
6 subjected. Piping systems shall be designed and constructed to provide adequate allowance
7 for expansion, contraction, vibration, settlement and fire exposure.

8
9 **[3205.1.2.2] 5505.1.2.2 Joints.** Joints on cryogenic container piping and tubing shall be
10 threaded, welded, silver brazed or flanged.

11
12 **[3205.1.2.3] 5505.1.2.3 Valves and piping components.** Valves and piping components
13 shall be suitable for the intended use at the temperatures of the application and shall be
14 designed and constructed to withstand the maximum pressure at the minimum temperature
15 to which they will be subjected. Valves shall be oriented so that the stem is above the
16 horizontal plane and discharge is directed away from supporting elements.

17
18 **[3205.1.2.3.1] 5505.1.2.3.1 Shutoff valves on cryogenic containers.** Shutoff valves
19 shall be provided on all cryogenic container connections except for pressure relief
20 devices. Shutoff valves shall be readily accessible and located as close as practical to
21 the cryogenic container. Manually-operated shutoff valves shall be designed and
22 installed to minimize accidental opening and closing.

23
24 **Exception:** Valves before pressure relief devices shall be installed in accordance
25 with [FC3203.2.6] FC5503.2.6.

26
27 **[3205.1.2.3.2] 5505.1.2.3.2 Shutoff valves on piping.** Shutoff valves shall be installed
28 in piping containing cryogenic fluids where needed to limit the volume of liquid
29 discharged in the event of piping or equipment failure. Pressure relief valves shall be
30 installed on all sections of piping systems where liquid is capable of being trapped (see
31 [FC3203.2] FC5503.2). Shutoff valves shall be installed so that piping components can
32 be isolated for maintenance. Check valves shall be installed on discharge lines where
33 pumps or other pressure-increasing equipment operate in parallel.

34
35 **[3205.1.2.4] 5505.1.2.4 Physical protection and support.** Piping systems shall be
36 supported and protected from physical damage. Piping passing through floors or walls shall
37 be protected from damage caused by movement of the floors or walls.

38
39 **[3205.1.2.5] 5505.1.2.5 Corrosion protection.** Aboveground piping that is subject to
40 corrosion because of exposure to corrosive atmospheres, shall be constructed of materials
41 to resist the corrosive environment or otherwise protected against corrosion. Underground
42 piping shall be protected against corrosion.

43
44 **[3205.1.2.6] 5505.1.2.6 Testing.** Piping systems shall be tested and proven free of leaks
45 after installation as required by the standards to which they were designed and constructed.
46 Test pressures shall not be less than 150 percent of the MAWP when hydraulic testing is
47 conducted or 110 percent when testing is conducted pneumatically.

1
2 **[3205.2] 5505.2 Indoor use.** Indoor use of cryogenic fluids shall comply with the material-specific
3 requirements of FC [3201.3.1] 5501.3.1 through [3201.3.3] 5501.3.3.

4
5 **[3205.3] 5505.3 Outdoor use.** Outdoor use of cryogenic fluids shall comply with the material
6 specific requirements of FC [3201.3.1] 5501.3.1, [3201.3.2] 5501.3.2, [3201.3.3] 5501.3.3,
7 [3205.3.1] 5505.3.1 and [3205.3.2] 5505.3.2.

8
9 **[3205.3.1] 5505.3.1 Separation.** Distances from property lines, buildings and exposure
10 hazards shall comply with the requirements of [FC3204.3] FC5504.3 and the material specific
11 requirements of FC [3201.3.1] 5501.3.1 through [3201.3.3] 5501.3.3.

12
13 **[3205.3.2] 5505.3.2 Emergency shutoff valves.** Approved manual or automatic emergency
14 shutoff valves shall be provided to shut off the cryogenic fluid supply in case of emergency.
15 An emergency shutoff valve shall be located at the source of supply and at the point where the
16 system enters the building.

17
18 **[3205.4] 5505.4 Filling and dispensing.** Filling and dispensing of cryogenic fluids shall comply
19 with the requirements of FC [3205.4.1] 5505.4.1 through [3205.4.4] 5505.4.4.

20
21 **[3205.4.1] 5505.4.1 Dispensing areas.** Dispensing of cryogenic fluids shall be conducted in
22 approved locations. Dispensing indoors shall be conducted in areas constructed in accordance
23 with the construction codes, including the Building Code.

24
25 **[3205.4.1.1] 5505.4.1.1 Ventilation.** Indoor areas where cryogenic fluids are dispensed
26 shall be ventilated in accordance with the Mechanical Code in a manner that captures any
27 vapor at the point of generation.

28
29 **[3205.4.1.1.1] 5505.4.1.1.1 Alarms.** Oxygen sensors equipped with an audible alarm
30 shall be provided in dispensing areas to continuously monitor the level of oxygen in
31 the area. The alarm shall actuate when oxygen concentration drops below 19.5 percent.

32
33 **[3205.4.1.2] 5505.4.1.2 Piping systems.** Piping systems utilized for filling or dispensing
34 of cryogenic fluids shall be designed and constructed in accordance with [FC3205.1.2]
35 FC5505.1.2.

36
37 **[3205.4.2] 5505.4.2 Vehicle loading and unloading areas.** Loading or unloading areas shall
38 be designed and maintained in accordance with the standards referenced in FC [3201.3.1]
39 5501.3.1 through [3201.3.3] 5501.3.3. Loading and unloading areas shall additionally comply
40 with the requirements of FC [3204.3.1] 5504.3.1 through [3204.3.1.2.5] 5504.3.1.2.5 and shall
41 be capable of withstanding the weight of the fully loaded cargo tank.

42
43 **[3205.4.2.1] 5505.4.2.1 Vehicle loading and unloading operations.** Vehicle loading and
44 unloading operations shall be conducted in an approved manner in accordance with the
45 standards referenced in FC [3201.3.1] 5501.3.1 through [3201.3.3] 5501.3.3.

1 [3205.4.3] **5505.4.3 Limit procedures.** Limit procedures shall be established to prevent
2 overfilling of stationary cryogenic containers during filling operations.

3
4 [3205.4.4] **5505.4.4 Prohibited filling of flammable cryogenic fluid.** It shall be unlawful to
5 fill cryogenic containers with flammable cryogenic fluid.

6
7 [3205.5] **5505.5 Handling.** Handling of cryogenic containers shall be in accordance with this
8 section.

9
10 [3205.5.1] **5505.5.1 Carts and hand trucks.** Cryogenic containers shall be moved using an
11 approved method. Where cryogenic containers are moved by cart, hand truck or other mobile
12 device, such carts, hand trucks or devices shall be designed for the secure movement of
13 containers, including a means of restraining the containers.

14
15 [3205.5.2] **5505.5.2 Closed cryogenic containers.** Pressurized portable cryogenic containers
16 shall be moved with all operable valves in a closed position. Cryogenic containers designed
17 for use at atmospheric conditions shall be moved with appropriate loose fitting covers in place
18 to prevent spillage.

19
20 [3205.5.3] **5505.5.3 Stationary cryogenic containers.** Stationary cryogenic containers shall
21 not be moved while containing cryogenic fluid. Handling of cryogenic containers shall be in
22 accordance with the manufacturer's instructions.

23
24 **SECTION FC [3206] 5506**
25 **LNG INSTALLATIONS AND FACILITIES**

26
27 [3206.1] **5506.1 New LNG installations and facilities.** It shall be unlawful to construct any new
28 LNG installation or facility. It shall be unlawful to operate any LNG installation or facility that
29 was not lawfully existing on the effective date of this code.

30
31 [3206.2] **5506.2 Existing LNG installations and facilities.** LNG installations and facilities
32 lawfully existing on the effective date of this code shall be designed, installed, operated and
33 maintained in accordance with this code, the rules and the regulations of the United States
34 Department of Transportation, as set forth in 49 CFR Part 193, except as otherwise provided in FC
35 102.3, 102.4 and 102.5.

36
37 [3206.2.1] **5506.2.1 Out-of-service LNG storage tanks.** Notwithstanding any other provision of
38 law, rule or regulation, any storage tank erected prior to the effective date of this code which has
39 not been used for the storage of liquefied natural gas for a period in excess of 2 years from the
40 date of completion of the construction of the tank structure shall be recertified by the various city
41 agencies in the same manner as if filing design and installation documents of a new tank before a
42 certificate of occupancy be issued if the tank is to be placed in service.

43
44 **CHAPTER 56**
45 **EXPLOSIVES, FIREWORKS AND SPECIAL EFFECTS**
46

1
2
3 **SECTION FC [3301] 5601**
4 **GENERAL**

5 **[3301.1] 5601.1 Scope.** This chapter shall govern the possession, manufacture, storage, handling,
6 use, transportation and sale of explosives, fireworks, materials used to create a special effect,
7 including pyrotechnic [material] special effects, and model and high-power rockets.
8

9 **Exceptions:**

- 10
- 11 1. Manufacture, storage, handling, use, transportation and sale of such materials by the
12 Armed Forces of the United States, Coast Guard or National Guard.
 - 13
 - 14 2. Explosives in forms prescribed by the official United States Pharmacopoeia.
 - 15
 - 16 3. Reserved.
 - 17
 - 18 4. Reserved.
 - 19
 - 20 5. The use of explosives by federal and state, law enforcement and public safety agencies
21 acting in their official capacity.
 - 22
 - 23 6. The storage, handling, use, transportation and sale of blank industrial-power load
24 cartridges when packaged in accordance with United States Department of
25 Transportation packaging regulations, except as otherwise provided in FC5606.8.
26

27 **[3301.2] 5601.2 Permits.** Permits shall be required as set forth in FC105.6.
28

29 **[3301.2.1] 5601.2.1** Reserved.

30
31 **[3301.2.2] 5601.2.2** Reserved.

32
33 **[3301.2.3] 5601.2.3 Permit restrictions.** The [commissioner,] department, as a condition to
34 the granting of a permit, may impose further restrictions on the storage, handling, use,
35 transportation or sale of an explosive, fireworks display, or material, article, or device used to
36 create a special effect [effects] that the [commissioner] department deems necessary or
37 appropriate in the interest of public safety, including further restricting the quantity of
38 materials, and designating the locations, days and times of [days] day allowed for the permitted
39 activity.
40

41 **[3301.2.4] 5601.2.4 Financial responsibility.** Applicants for a permit shall submit proof
42 satisfactory to the [commissioner] department that the applicant has obtained and will maintain
43 for the duration of the permit period a liability and casualty insurance policy, covering the
44 permit holder, its officers, employees and agents, for personal injuries and property damage
45 resulting from the permitted activity or the failure of the permit holder, its officers, employees
46 and agents, to comply with any requirement of this chapter, any rule promulgated hereunder
47 or the terms and conditions of the permit. Such insurance policy shall name the city of New

1 York as an additional insured and shall provide for notice to the [commissioner] department at
2 least ten days prior to any material change, cancellation or termination thereof. Such insurance
3 policy shall be in the following amounts, as applicable.
4

- 5 1. **High explosives.** The insurance policy for the storage or use of high explosive, including
6 any blasting operation, shall be in an amount to be determined by the [commissioner]
7 department but not less than five million dollars.
8
- 9 2. **Low explosives.** The insurance policy for the storage of low explosives, small arms
10 ammunition, primers, black powder or smokeless propellants shall be in an amount to be
11 determined by the [commissioner] department but not less than one hundred thousand
12 dollars.
13
- 14 3. **Fireworks.** The insurance policy for the discharge of fireworks, including any fireworks
15 display, shall be in an amount to be determined by the [commissioner] department but
16 not less than two million dollars.
17
- 18 4. **Special effects.** The insurance policy for the conduct of any pyrotechnic special effects,
19 including any special effects involving the storage or use of a pyrotechnic material, article
20 or device, shall be in an amount to be determined by the [commissioner] department but
21 not less than one million dollars. The insurance policy for the conduct of non-pyrotechnic
22 special effects shall be in an amount to be determined by the department.
23

24 **[3301.3] 5601.3 Prohibited materials, operations and facilities.**

25
26 **[3301.3.1] 5601.3.1 Explosives.** It shall be unlawful to:

- 27
28 1. Manufacture any explosive, including small arms ammunition, primers, black powder,
29 [and] smokeless propellants, and binary explosives, unless authorized by the department.
30
- 31 2. Store for sale or display for sale any explosive in an area that is not secured from
32 unauthorized access, including any unsecured display in an area accessible to the public.
33
- 34 3. Store, handle or use any explosive for any purpose other than one authorized by this
35 chapter or other federal, state or city law, rule or regulation.
36
- 37 4. Store, handle or use any explosive in a residential building, or within 100 feet (30 480
38 mm) thereof, except for approved blasting operations, special effects and lawful storage
39 of small arms ammunition for personal use and not for resale in accordance with
40 [FC3306] FC5606.
41
- 42 5. Store, handle or use any explosive without the permit, certificate of fitness and/or other
43 approval required by this section.
44
- 45 6. Store, handle, use or sell the following explosives:
46
47 6.1. Liquid nitroglycerin.

1
2 6.2. Dynamite containing more than 60 percent liquid explosive ingredient.
3

4 **Exception:** Gelatin dynamite used for [building] demolition or structural
5 implosions approved by the [commissioner] department.
6

7 6.3. Dynamite without an approved absorbent, or in packaging that permits leakage of
8 a liquid explosive ingredient under any conditions liable to exist during storage.
9

10 6.4. Nitrocellulose in a dry and uncompressed condition in a quantity greater than 10
11 pounds (4.54 kg) of net weight in one package.
12

13 6.5. Fulminate of mercury in a dry condition and fulminate of all other metals in any
14 condition except as a component of manufactured articles not hereinafter
15 forbidden.
16

17 6.6. Explosive compositions that ignite spontaneously or undergo marked
18 decomposition, rendering the products of their use more hazardous, when subjected
19 to a temperature of 167°F (75°C) for a continuous period of 48 hours or less.
20

21 6.7. Explosives containing an ammonium salt and a chlorate.
22

23 6.8. Explosives that have not been approved or have been forbidden in accordance with
24 the regulations of the United States Department of Transportation, as set forth in
25 49 CFR Sections 173.51 and/or 173.54.
26

27 6.9. Explosives that have not been packaged or marked in accordance with the
28 regulations of the United States Department of Transportation, as set forth in 49
29 CFR Parts 100-180, and the requirements of FC [3303] 5603 and [3306] 5606.
30

31 7. Use any high explosive that has not been approved by the [commissioner] department.
32

33 8. Operate or maintain safe havens and interchange lots for motor vehicles transporting
34 explosives as set forth in NFPA 498.
35

36 9. Store, handle, use, or sell pre-packaged products that, when mixed, constitute a binary
37 explosive, unless authorized by the department.
38

39 **[3301.3.2] 5601.3.2 Fireworks.** It shall be unlawful to:
40

41 1. Manufacture fireworks.
42

43 2. Sell fireworks, or offer or display fireworks for sale.
44

45 3. Store, handle, use or possess fireworks for any purpose other than conducting a fireworks
46 display approved in accordance with this chapter.
47

- 1 4. Store fireworks, except temporary storage incidental to a fireworks display.
- 2
- 3 5. Conduct a fireworks display indoors.
- 4
- 5 6. Conduct a fireworks display without the fireworks contractor certificate and certificates
- 6 of fitness required by this chapter.
- 7
- 8 7. Manually discharge a fireworks display, or conduct a fireworks display without an
- 9 electrical control panel.
- 10
- 11 8. Store, handle, use or sell fireworks that have not been approved or have been forbidden
- 12 in accordance with the regulations of the United States Department of Transportation, as
- 13 set forth in 49 CFR Sections 173.51 and/or 173.54.
- 14
- 15 9. Store, handle, use or sell fireworks that have not been packaged or marked in accordance
- 16 with the regulations of the United States Department of Transportation, as set forth in
- 17 CFR 49 Parts 100-180, and FC [3303] 5603 and [3306] 5606.
- 18

19 **[3301.3.3] 5601.3.3 Pyrotechnic material.** It shall be unlawful to:

- 20
- 21 1. Manufacture any pyrotechnic material, article or device, except as authorized by the
- 22 department and when conducted by a person holding a certificate of fitness for such
- 23 purpose who is employed by a pyrotechnic special effects contractor holding a company
- 24 certificate.
- 25
- 26 2. Store for sale or display for sale any pyrotechnic material, article or device in an area
- 27 that is not secured from unauthorized access, including any unsecured display in an area
- 28 accessible to the public.
- 29
- 30 3. Store, handle or use any pyrotechnic material, article or device in any residential building
- 31 or within 100 feet (30 480 mm) thereof, except as authorized by the department and when
- 32 conducted by a person holding a certificate of fitness for such purpose who is employed
- 33 by a pyrotechnic special effects contractor holding a company certificate.
- 34
- 35 4. Sell any pyrotechnic material, article or device designed to create a pyrotechnic special
- 36 effect without the pyrotechnic [supplier] contractor certificate required by this chapter.
- 37
- 38 5. Conduct any special effects using a pyrotechnic material, article or device without the
- 39 certificate of fitness required by this chapter.
- 40
- 41 6. Store, handle, use or sell pyrotechnic material that has not been approved or [have] has
- 42 been forbidden in accordance with the regulations of the United States Department of
- 43 Transportation, as set forth in 49 CFR Sections 173.51 and/or 173.54.
- 44
- 45 7. Store, handle, use or sell pyrotechnic material that has not been packed or marked in
- 46 accordance with the regulations of the United States Department of Transportation, as
- 47 set forth in 49 CFR Parts 100-180, and this chapter.

1
2 **[3301.3.4] 5601.3.4 Rocketry.** It shall be unlawful to manufacture, store, handle or use model
3 rocketry or high-power rocketry, as defined in and consistent with the scope of NFPA 1122
4 and NFPA 1127, except when authorized by the department by issuance of a special effects
5 permit.

6
7 **[3301.3.5 Smoking prohibited] 5601.3.5 Sources of ignition.** It shall be unlawful to smoke,
8 light or maintain an open flame, or conduct hot work operations within 100 feet (30 480 mm)
9 of any location:

- 10
11 1. Where explosives or fireworks are stored, handled, used or otherwise discharged.
12
13 2. Where any material, article or device of an explosive, flammable or combustible nature,
14 including pyrotechnic materials, articles and devices and fireworks, 1.4G, used to create
15 a special effect are stored, handled, used or otherwise discharged.
16

17 **[3301.3.6] 5601.3.6 Sobriety.** It shall be unlawful to be under the influence of intoxicating
18 beverages, narcotics, controlled substances, and prescription or nonprescription drugs that can
19 impair judgment as follows:

- 20
21 1. When supervising storage, or handling, or otherwise discharging or using explosives or
22 fireworks.
23
24 2. When supervising storage, or handling, or otherwise discharging or using materials,
25 articles or devices of an explosive, flammable or combustible nature, including
26 pyrotechnic materials, articles and devices and fireworks, 1.4G, used to create a special
27 effect.
28

29 **[3301.4] 5601.4 Reserved.**

30
31 **[3301.5] 5601.5 Supervision.** [The storage, handling, use and transportation of explosives,
32 fireworks and pyrotechnic materials, articles and devices designed to create a special effect,
33 including the discharge thereof, and special effects operations,] The manufacturing, storage,
34 handling, use, transportation and sale of explosives, fireworks, and pyrotechnic and other special
35 effects material, for blasting operations, fireworks displays, special effects, and any other material,
36 operation or facility regulated by this chapter, shall be supervised in accordance with FC [3301.5.1]
37 5601.5.1 through [3301.5.3] 5601.5.5.

38
39 **[3301.5.1] 5601.5.1 Explosives.** Any blasting operations or other use of high explosives shall
40 be conducted by blasting personnel employed by a company holding a blasting contractor
41 certificate [and by persons holding a certificate of fitness] in accordance with FC [3301.5.1.1]
42 5601.5.1.1 through [3301.5.1.5] 5601.5.1.4.

43
44 **[3301.5.1.1] 5601.5.1.1 Blasting contractor [certificate].** [The storage, handling,
45 discharge or other use and transportation of explosives for blasting operations shall be
46 conducted by a blasting contractor holding a blasting contractor certificate issued pursuant
47 to this section.] Only a company holding a blasting contractor certificate issued pursuant

1 to FC115 and this section is authorized to engage in blasting operations and all related
2 storage, handling, discharge or other use and transportation of explosives. Such a certificate
3 shall be issued only to a company whose owners, principals and officers demonstrate to
4 the satisfaction of the commissioner that they possess the requisite character and fitness,
5 education, experience, licenses, facilities, equipment and qualified staff to safely conduct
6 blasting operations. [The commissioner may adopt rules prescribing the requisite
7 qualifications and other requirements for the issuance of such a certificate. The blaster shall
8 be responsible for all blasting operations, and ensuring compliance with all applicable laws,
9 rules and regulations.

10
11 **3301.5.1.2 Storage of high explosives]** **5601.5.1.2 Blaster.** Blasting operations shall be
12 conducted by a blasting crew under the personal supervision of a blaster holding a
13 certificate of fitness for blasting operations. The blaster shall be in charge of and
14 responsible for all blasting operations. The blaster shall ensure compliance with all
15 applicable laws, rules, regulations, permit conditions and blasting procedures, and ensure
16 that each member of the blasting crew is trained and knowledgeable in the use of explosives
17 and holds the certificate of fitness applicable to their duties. The blaster shall prescribe the
18 blast area and check that all persons, including the blasting crew, other job site personnel,
19 pedestrians and other traffic, are outside the blast area before firing a blast. The duties of
20 the blaster may be delegated to an apprentice blaster holding a certificate of fitness for
21 apprentice blaster, except the authority to order a blast and provide access to a magazine.

22
23 **5601.5.1.3 Blasting personnel.** All handling of high explosives, including handling in
24 connection with blasting operations or other use, and handling incidental to transportation
25 (other than approved transportation to and from the job site), shall be performed by a
26 member of the blasting crew, including the blaster, an apprentice blaster holding a
27 certificate of fitness for apprentice blaster, a magazine keeper holding a certificate of
28 fitness for explosives storage, or an explosives handler holding a certificate of fitness for
29 explosives handling.

30
31 **5601.5.1.4 Magazine keeper.** The storage of high explosives shall be under the personal
32 supervision of a magazine keeper holding a certificate of fitness for explosive storage. Such
33 person shall have no duties other than safeguarding, operating and maintaining the
34 magazine and its contents, including opening and closing the magazine and locking and
35 otherwise securing the magazine from unauthorized entry and its contents from
36 unauthorized access; receiving and dispensing or returning explosives; maintaining
37 complete and accurate records of the explosives received, dispensed and returned; and
38 visually inspecting and verifying the quantity and condition of the explosives in the
39 magazine at the beginning and end of each work shift, and documenting same at the end of
40 each work shift by signing an inventory slip in the presence of the succeeding magazine
41 keeper. The unloading and loading of motor vehicles delivering explosives to the magazine
42 or removing explosives therefrom shall be under the personal supervision of the certificate
43 of fitness holder supervising the magazine.

44
45 **[3301.5.1.3 Handling of high explosives.** All handling of high explosives, including
46 handling in connection with blasting operations or other use, and handling incidental to
47 transportation (other than transportation set forth in FC2707.4), shall be performed by a

1 blaster holding a certificate of fitness for blasting operations, an assistant blaster holding a
2 certificate of fitness for blasting assistant, a magazine keeper holding a certificate of fitness
3 for explosives storage, or an explosives handler holding a certificate of fitness for
4 explosives handling.
5

6 **3301.5.1.4 Use of high explosives.** Blasting operations or other use of high explosives shall
7 be conducted under the personal supervision of a blaster holding a certificate of fitness for
8 blasting operations. The blaster shall be in charge of and responsible for all blasting
9 operations. The blaster shall ensure compliance with all applicable laws, rules, regulations,
10 permit conditions and blasting procedures, and ensure that the blasting crew is trained and
11 knowledgeable in the use of explosives. The blaster shall prescribe the blast area and
12 danger zone and check that all persons, including the blasting crew, other job site
13 personnel, pedestrians and traffic, are outside the danger zone before firing a blast. The
14 duties of the blaster, except giving the direction to initiate the blast, may be delegated to
15 an assistant blaster holding a certificate of fitness for blasting assistant.
16

17 **3301.5.1.5 Other job site personnel.** Other persons whose work causes them to be present
18 within 100 feet (30 480 mm) of the storage, handling or use of high explosives shall hold
19 a certificate of fitness for blasting job site personnel.
20

21 **3301.5.2]**

22 **5601.5.1.5 Blast monitoring specialist.** The monitoring of ground vibrations and air
23 overpressure during blasting operations shall be personally conducted by a person holding
24 a certificate of fitness for blast monitoring specialist as a blast monitoring specialist, who
25 is employed by a company holding a certificate for blast monitoring.
26

27 **5601.5.2 Fireworks.** [Fireworks displays shall be conducted by a company holding a fireworks
28 contractor certificate and persons holding a certificate of fitness for fireworks display in
29 accordance with FC 3301.5.2.1 through 3301.5.2.3.] Fireworks displays shall be conducted by
30 a pyrotechnic operator and other fireworks display personnel employed by a company holding
31 a fireworks contractor certificate in accordance with FC 5601.5.2.1 through 5601.5.2.3.
32

33 **[3301.5.2.1] 5601.5.2.1 Fireworks contractor[certificate].** [Each display or other event
34 involving the discharge or other use of fireworks shall be conducted by] Only a [fireworks
35 contractor] company holding a fireworks contractor certificate issued pursuant to FC115
36 and this section is authorized to engage in fireworks displays or other event involving the
37 discharge or other use of fireworks, and all related storage, handling, use and transportation
38 of fireworks. Such a certificate shall be issued only to a company whose owners, principals
39 and officers demonstrate to the satisfaction of the commissioner that they possess the
40 requisite character and fitness, education, experience, licenses, facilities, equipment and
41 qualified staff to safely conduct fireworks displays or other events involving the discharge
42 or other use of fireworks. [The commissioner may adopt rules prescribing the requisite
43 qualifications and other requirements for the issuance of such a certificate.] The fireworks
44 contractor shall be responsible for the safe conduct of the display or other event, in the
45 manner prescribed by the [commissioner] department, including:
46

- 1 1. Arranging for the preparation and submission of the fireworks display permit
2 application, including the fireworks display plan, and obtaining the fireworks display
3 permit.
4
- 5 2. Obtaining any necessary permit or authorization, including but not limited to any
6 permit or authorization required by the United States Coast Guard, the New York
7 City Department of Parks and Recreation, the Port Authority of New York and New
8 Jersey, and the United States Federal Aviation Administration.
9
- 10 3. Ensuring compliance with all federal, state and local laws, rules and regulations
11 governing the transportation of explosives.
12
- 13 4. Ensuring adequate facilities, fire protection, and staffing by qualified personnel,
14 including the certificate of fitness holders required by this section.
15
- 16 5. Ensuring compliance with the directions of the department representatives.
17
- 18 6. In conjunction with the sponsor, ensuring maintenance of viewing areas at a safe
19 distance from the location of the fireworks discharge, and other appropriate safety
20 and crowd control measures, as prescribed by the commissioner.
21
- 22 7. Obtaining a liability and casualty insurance policy as set forth in [FC3301.2.4]
23 FC5601.2.4.
24
- 25 8. Conducting an inspection of the display site not more than 48 hours nor less than 24
26 hours prior to the scheduled display to determine whether there have been any
27 changes in conditions at the display site or other area encompassed by the fireworks
28 display plan (such as the presence of any new combustible or flammable material)
29 that could render the area unsafe for a fireworks display. The fireworks display
30 contractor shall notify the department of any such conditions and arrange for them to
31 be removed.
32
- 33 9. Ensuring that the site of the display or other event is left in a safe condition.
34

35 **[3301.5.2.2 Storage and handling of fireworks.** All handling of fireworks, including
36 unloading from motor vehicles, and loading and placement of mortars and fusing of shells,
37 and all temporary storage of fireworks incidental to a fireworks display shall be conducted
38 under the personal supervision of a holder of a certificate of fitness for fireworks display.
39

40 **3301.5.2.3 Use of fireworks.** The use of fireworks for a fireworks display, including the
41 discharge of fireworks during the display, shall be conducted by a person holding a
42 certificate of fitness for fireworks display. Each fireworks display or other discharge of
43 fireworks shall be under the personal supervision of at least two persons holding a
44 certificate of fitness for fireworks display. The certificate of fitness holders conducting a
45 fireworks display or other event shall be responsible for the safe handling, installation and
46 discharge of fireworks and post-display site safety measures, in compliance with the

1 requirements of this section, any rules promulgated hereunder, the terms and conditions of
2 the fireworks display permit, and all other applicable laws, rules and regulations.]

3
4 **5601.5.2.2 Pyrotechnic operator.** Fireworks displays shall be conducted under the
5 personal supervision of a pyrotechnic operator holding a certificate of fitness for that
6 purpose. Each pyrotechnic operator conducting a fireworks display shall be responsible for
7 the safe handling, installation and discharge of fireworks and post-display site safety
8 measures, in accordance with this section, the rules, the terms and conditions of the
9 fireworks display permit, and all other applicable laws, rules and regulations. The duties of
10 the pyrotechnic operator may be delegated to a pyrotechnic assistant holding a certificate
11 of fitness for that purpose, except that the authority to discharge fireworks requires the
12 pyrotechnic assistant to be in a direct line of sight with the pyrotechnic operator, who must
13 await the firing signal that only the pyrotechnic operator shall give.

14
15 **5601.5.2.3 Fireworks display personnel.** The pyrotechnic operator shall be assisted at
16 each fireworks display by at least two fireworks display personnel, each of whom shall
17 hold a certificate of fitness as a pyrotechnic assistant and carry out the duties and
18 responsibilities thereof under the personal supervision of the pyrotechnic operator.

19
20 **[3301.5.3 Special] 5601.5.3 Pyrotechnic special effects.** [The storage, handling, discharge or
21 other use and transportation of any material, article or device of an explosive, flammable or
22 combustible nature, including fireworks, 1.4G, for special effects, and any sale or offering for
23 sale of a pyrotechnic material, article or device, shall be conducted by persons holding a
24 certificate of fitness or a pyrotechnic supplier certificate] Pyrotechnic special effects shall be
25 conducted by a pyrotechnic operator and other pyrotechnic special effects personnel employed
26 by a company holding a pyrotechnic special effects contractor certificate in accordance with
27 FC[3301.5.3.1through 3301.5.3.4] 5601.5.3.1 through 5601.5.3.4.

28
29 **[3301.5.3.1 Special effects or other use of pyrotechnic materials, articles and devices.**
30 Special effects displays or other events involving the conduct of a special effect, including
31 the discharge or other use of any pyrotechnic material, article or device and fireworks,
32 1.4G, shall be conducted by a person holding a certificate of fitness for special effects
33 issued pursuant to this section. Each discharge or other use of materials, articles or devices
34 used for a special effect shall be performed by, or, if authorized by a special effects permit,
35 under the personal supervision of, such certificate of fitness holder. The certificate of
36 fitness holder conducting a special effect shall be responsible for the safe handling,
37 installation and discharge of the special effect and post-discharge site safety measures in
38 compliance with the requirements of this section, any rules promulgated hereunder, the
39 terms and conditions of the special effects , and all other applicable laws, rules and
40 regulations. A certificate of fitness for special effects shall be issued only to a person who
41 demonstrates to the satisfaction of the commissioner that he or she possesses such
42 education, training or experience in the manufacture, storage, use and display of
43 pyrotechnic materials, articles and devices and other special effects as to qualify him or her
44 to safely conduct one or more special effects. The commissioner may adopt rules
45 prescribing the requisite qualifications and other requirements for the issuance of such
46 certificate.

1 **3301.5.3.2 Storage and handling of pyrotechnic materials, articles or devices.** The
2 storage of pyrotechnic materials, articles and devices in connection with a special effects
3 display shall be under the general supervision of a certificate of fitness holder for
4 pyrotechnic special effects materials. The handling of such materials, articles and devices
5 shall be performed under the personal supervision of a certificate of fitness holder for
6 special effects operations or a certificate of fitness for pyrotechnic materials.

7 **3301.5.3.3 Storage and handling of nonpyrotechnic materials, articles and devices**
8 **used for special effects.** The storage of materials, articles and devices of a flammable or
9 combustible nature in connection with a special effects display shall be under the general
10 supervision of a certificate of fitness holder for nonpyrotechnic special effects materials.
11 The handling of such materials, articles and devices shall be performed under the personal
12 supervision of a certificate of fitness holder for special effects operations or a certificate of
13 fitness for nonpyrotechnic materials.

14 **3301.5.3.4 Pyrotechnic supplier certificate.** The sale or offering for sale of any
15 pyrotechnic material, article or device to create a special effect shall be conducted by a
16 company holding a pyrotechnic supplier certificate issued pursuant to this section. A
17 pyrotechnic supplier certificate shall be issued only to a company whose owners, principals
18 or officers demonstrate to the satisfaction of the commissioner that they possess the
19 requisite character and fitness, education, experience, licenses, facilities, equipment and
20 qualified staff to safely store, handle and transport pyrotechnic materials, articles or
21 devices, and to ensure the lawful sale of such materials, articles and devices. The
22 commissioner may adopt rules prescribing the requisite qualifications and other
23 requirements for the issuance of such certificate. The holder of a pyrotechnic supplier
24 certificate shall store, handle, transport, offer for sale, and sell pyrotechnic materials,
25 articles and devices in compliance with the requirements of this section, the rules of the
26 commissioner and all applicable federal and state laws, rules and regulations, including
27 those restricting the selling or offering for sale of such materials, articles and devices only
28 to a person holding a certificate of fitness for pyrotechnic special effects or a company
29 holding a production company special effects permit.]

30 **5601.5.3.1 Pyrotechnic special effects contractor.** Only a company holding a pyrotechnic
31 special effects contractor certificate issued pursuant to FC115 and this section is authorized
32 to engage in pyrotechnic special effects or other event involving the discharge or other use
33 of pyrotechnic and special effects materials, and all related storage, handling, use and
34 transportation of such materials. Such a certificate shall be issued only to a company whose
35 owners, principals and officers demonstrate to the satisfaction of the department that they
36 possess the requisite character and fitness, education, experience, licenses, facilities,
37 equipment and qualified staff to safely conduct special effects or other events involving the
38 discharge or other use of pyrotechnic and other special effects materials. The pyrotechnic
39 special effects contractor shall be responsible for the safe conduct of pyrotechnic special
40 effects displays, in the manner prescribed by the department.

41
42 **5601.5.3.2 Pyrotechnic operator.** Unless otherwise authorized by the department by rule
43 or special effects permit, all pyrotechnic special effects displays shall be conducted under
44 the personal supervision of a pyrotechnic operator holding a certificate of fitness for that

1 purpose. Each pyrotechnic operator conducting a pyrotechnic special effects display shall
2 be responsible for the safe handling, installation and discharge of materials, articles and
3 devices used for pyrotechnic special effects displays, in accordance with this section, the
4 rules, the terms and conditions of the fireworks display permit, and all other applicable
5 laws, rules and regulations. The duties of the pyrotechnic operator may be delegated to a
6 pyrotechnic assistant holding a certificate of fitness for that purpose, except that the
7 authority to conduct a pyrotechnic special effects display requires the pyrotechnic assistant
8 and the pyrotechnic operator to be within a direct line of sight with each other.

9
10 **5601.5.3.3 Pyrotechnic special effects personnel.** The pyrotechnic operator shall be
11 assisted at each special effects display by one or more pyrotechnic assistants, each of whom
12 shall hold a certificate of fitness for such purposes and carry out the duties and
13 responsibilities thereof under the personal supervision of the pyrotechnic operator.

14
15 **5601.5.3.4 Storage and handling of pyrotechnic materials, articles or devices.** The
16 storage of pyrotechnic materials, articles and devices, other than temporary storage in
17 connection with a special effects display, shall be under the general supervision of a
18 pyrotechnic operator. Unless otherwise authorized by the department by special effects
19 permit, the handling of such materials, articles and devices shall be conducted under the
20 personal supervision of a pyrotechnic operator.

21
22 **5601.5.4 Non-pyrotechnic special effects.** Only a company holding a pyrotechnic special
23 effects contractor certificate issued pursuant to FC115 and this section is authorized to engage
24 in non-pyrotechnic special effects or other event involving the discharge or other use of non-
25 pyrotechnic special effects materials, articles and devices, and all related storage, handling, use
26 and transportation of such materials.

27
28 **5601.5.4.1 Pyrotechnic operator.** Unless otherwise authorized by the department by rule
29 or special effects permit, all non-pyrotechnic special effects displays shall be conducted
30 under the personal supervision of a pyrotechnic operator holding a certificate of fitness for
31 that purpose. Each pyrotechnic operator conducting a non-pyrotechnic special effects
32 display shall be responsible for the safe handling, installation and discharge of materials,
33 articles and devices used for the special effects display, in accordance with this section, the
34 rules, the terms and conditions of the fireworks display permit, and all other applicable
35 laws, rules and regulations. The duties of the pyrotechnic operator may be delegated to a
36 pyrotechnic assistant holding a certificate of fitness for that purpose or, if authorized by
37 rule or special effects permit, other trained and knowledgeable persons, except for the
38 authority to approve the special effect and initiate its conduct.

39
40 **5601.5.4.2 Non-pyrotechnic special effects personnel.** The pyrotechnic operator shall be
41 assisted at each special effects display by one or more pyrotechnic assistants, each of whom
42 shall hold a certificate of fitness for such purposes and carry out the duties and
43 responsibilities thereof under the personal supervision of the pyrotechnic operator.

44
45 **5601.5.4.3 Storage and handling of non-pyrotechnic materials, articles or devices.** The
46 storage of non-pyrotechnic materials, articles and devices used to create a special effect,
47 other than temporary storage in connection with a special effects display, shall be under

1 the general supervision of a pyrotechnic operator, or, if there is a certificate of fitness
2 applicable to the supervision of such materials, such certificate of fitness holder. Unless
3 otherwise authorized by the department by special effects permit, the handling of such
4 materials, articles and devices shall be conducted under the personal supervision of a
5 pyrotechnic operator or other qualified person holding a certificate of fitness.
6

7 **5601.5.5. Powder-actuated tool loads.** The storage of powder-actuated tool loads shall be
8 under the general supervision of a person holding a certificate of fitness for such purpose. The
9 handling and use of powder-actuated tools shall be personally conducted by a person holding
10 a certificate of fitness for such purpose.
11

12 [3301.6] **5601.6** Reserved.
13

14 [3301.7] **5601.7** Reserved.
15

16 [3301.8] **5601.8** Reserved.
17

18 [3301.9] **5601.9 Transportation of regulated materials.** [Explosives and fireworks shall be
19 transported in accordance with FC2707.] Explosives, fireworks, pyrotechnic special effects
20 materials and non-pyrotechnic special effects materials shall be transported in accordance with
21 FC5007.6, FC5007.7, FC5007.8, FC5007.12, FC5601.9.1 and FC5601.9.2.
22

23 **5601.9.1 Transportation to storage and use locations.** Any vehicle used to transport
24 explosives, fireworks, and, when required by the department, pyrotechnic special effects
25 materials and non-pyrotechnic special effects materials, to or from a blasting job site, fireworks
26 display, special effects display or other location in New York City at which such materials are
27 stored, handled or used:
28

- 29 1. is subject to inspection by the department to confirm that the hazardous materials are
30 being transported in compliance with all applicable laws, rules and regulations; and
31
- 32 2. is subject to escort by department firefighting apparatus in accordance with department
33 procedures.
34

35 **5601.9.2 Other transportation of high explosives and fireworks.** Any vehicle transporting
36 types and/or quantities of high explosives or fireworks restricted from crossing certain bridges
37 and tunnels into or through New York City is subject to escort in New York City by department
38 firefighting apparatus in accordance with department procedures.
39

40 [3301.10] **5601.10 Monitoring by department.** Any material, operation or facility subject to the
41 permit requirements of this chapter, including blasting operations, fireworks displays and special
42 effects operations, may be monitored by representatives of the department to ensure compliance
43 with the requirements of this chapter, the rules, and the terms and conditions of the permit. Such
44 department representatives may order the immediate discontinuance of any storage, handling or
45 use of explosives, fireworks or special effects materials, articles or devices in the interest of public
46 safety.
47

1 **[3301.11] 5601.11 Reporting of personal injury or property damage.** The owner and the
2 certificate of fitness holder responsible for the material, operation or facility shall immediately
3 report to the department any [accident] incident involving the storage, handling or use of
4 explosives, fireworks or special effects materials, articles or devices, that results in personal injury
5 or property damage.

6
7 **[3301.12] 5601.12 Photography.** The department may restrict the taking of photographs, video
8 recordings or other images at locations at which high explosives are being stored, handled and
9 used.

10
11 **SECTION FC [3302] 5602**
12 **DEFINITIONS**

13
14 **[3302.1] 5602.1 Definitions.** The following terms shall, for the purposes of this chapter and as
15 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

16
17 **[AIRBLAST.** The airborne shock wave or acoustic transient generated by an explosion.]

18
19 **AIR OVERPRESSURE.**

20
21 **AMMONIUM NITRATE.** [A chemical compound represented by the formula NH₄NO₃.]

22
23 **[ASSISTANT] APPRENTICE BLASTER.** [A person holding a certificate of fitness for blasting
24 assistant who is qualified to supervise explosives storage and handling and blasting operations,
25 sometimes referred to as a powder carrier, and who assists the blaster in performing such duties.]

26
27 **BARRICADE.** [A structure or other artificial or natural barrier constructed in connection with the
28 storage, handling and use of explosives that is designed to withstand the rapid release of energy in
29 an explosion and provides a shield from the impact of the explosion. A straight line from the top
30 of any sidewall of a building containing explosives to the eave line of any magazine or other
31 building or to a point 12 feet (3658 mm) above the center of a railway or highway shall pass
32 through such barrier.]

33
34 **Artificial barricade.** [An artificial mound or revetment, including a barrier constructed of
35 sandbags, with a minimum thickness of 3 feet (914 mm).]

36
37 **Natural barricade.** [Terrain or other natural features of the ground.]

38
39 **BARRICADED.** [Protected by a barricade.]

40
41 **BINARY EXPLOSIVE.**

42
43 **BLAST AREA.** [The blast site and surrounding area within the influence of flying rock, missiles
44 and concussion.]

45
46 **BLAST MONITORING CERTIFICATE.**

1 **BLAST MONITORING SPECIALIST.**

2
3 **BLAST SITE.** [The area in which explosives are being or have been loaded and which includes
4 all holes loaded or to be loaded for the same blast and a distance of 50 feet (15 240 mm) in all
5 directions.]

6
7 **BLASTER.** [A person holding a certificate of fitness for blasting operations, who is in charge of
8 and responsible for a blasting operation.]

9
10 **BLASTING AGENT.** [A mixture consisting of fuel and an oxidizer that is used for blasting and
11 classified by United States Department of Transportation regulations as Division 1.5, provided that
12 the finished product, as mixed for use or shipment, cannot be detonated by means of a No. 8 test
13 detonator when unconfined.]

14
15 **BLASTING CONTRACTOR CERTIFICATE.** [A written statement issued by the
16 commissioner to a company authorizing such company to conduct blasting operations, and to be
17 responsible for all storage, handling, use and transportation of explosives in connection therewith.]

18
19 **BLASTING CREW.** [Members of a work force trained and knowledgeable in the safe storage,
20 handling and use of explosives, including assistant blasters, loaders and the magazine keepers.]

21
22 **BLASTING OPERATION.** [The use of explosives in conjunction with construction or
23 demolition projects or other lawful purposes approved by the commissioner.]

24
25 **BLASTING SEISMOGRAPH.**

26
27 **BULLET RESISTANT.** [Constructed so as to resist penetration of a bullet of 150-grain M2 ball
28 ammunition having a nominal muzzle velocity of 2,700 feet per second (fps) (824 mps) when fired
29 from a 30-caliber rifle at a distance of 100 feet (30 480 mm), measured perpendicular to the target.]

30
31 **[DANGER ZONE.** The area established by the blaster, including the blast area, to be cleared of
32 all persons prior to discharging explosives.]

33
34 **DEFLAGRATION.**

35
36 **DETONATING CORD.** [A flexible cord containing a center core of high explosive designed to
37 initiate other explosives when activated.]

38
39 **DETONATION.** [An exothermic reaction with explosive effect that utilizes shock compression
40 as the principal heating mechanism and generates a shock wave in the material that establishes and
41 maintains a reaction that progresses through the material at a rate greater than the velocity of
42 sound.]

43
44 **DETONATOR.** [A device containing any initiating or primary explosive used for initiating
45 detonation that contains no more than 154.32 grains (10 grams) of total explosives by weight,
46 excluding ignition or delay charges. The term includes electric blasting caps of instantaneous and
47 delay types, blasting caps for use with safety fuses, detonating cord delay connectors, and

1 noninstantaneous and delay blasting caps which use detonating cord, shock tube or any other
2 replacement for electric leg wires.]

3
4 **DISCHARGE SITE.** [The immediate area surrounding the mortars or other devices discharging
5 fireworks for purposes of an outdoor fireworks display.]

6
7 **DISPLAY SITE.** [The area in which an outdoor fireworks display is conducted, including the
8 discharge site, the fallout area, and the required separation distance from the discharge site to
9 spectator viewing areas, but excluding spectator viewing areas.]

10
11 **EXPLOSIVE.** [A chemical compound, mixture or device, the primary or common purpose of
12 which is to function by explosion. The term includes, but is not limited to, dynamite, black powder,
13 pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord
14 and igniters. The term “explosive” includes any material determined to be within the scope of
15 Chapter 40 of Title 18 of the United States Codes, and any material classified as an explosive by
16 the hazardous materials regulations of the United States Department of Transportation, as set forth
17 in 49 CFR Section 173.52, except fireworks. Explosives are classified in accordance with the
18 following United States Department of Transportation classification and other terms in common
19 usage:]

20
21 **United States Department of Transportation Class 1 explosives.**

22
23 **Division 1.1.** [Explosives that present a mass explosion hazard.]

24
25 **Division 1.2.** [Explosives that present a projection hazard but not a mass explosion hazard.]

26
27 **Division 1.3.** [Explosives that present a fire hazard and either a minor blast hazard or a
28 minor projection hazard, or both, but not a mass explosion hazard.]

29
30 **Division 1.4.** [Explosives that present a minor explosion hazard. The explosive effects are
31 largely confined to the package and no projection of fragments of appreciable size or range
32 is to be expected. Such explosives are not subject to mass explosion when exposed to fire.]

33
34 **Division 1.5.** [Explosives that present a mass explosion hazard but which are so insensitive
35 that there is very little probability of initiation or of transition from burning to detonation
36 under normal conditions of transport.]

37
38 **Division 1.6.** [Explosives consisting of extremely insensitive articles that do not present a
39 mass explosion hazard, and present a negligible probability of accidental initiation or
40 propagation.]

41
42 **High explosive.** [Explosives, including dynamite, that, when detonated, are characterized by
43 a high rate of reaction, high pressure development, and the presence of a detonation wave, and
44 that can be caused to detonate by means of a No. 8 test blasting cap, when unconfined.]

45
46 **Low explosive.** [Explosives that will burn or deflagrate when ignited, and which are
47 characterized by a rate of reaction that is less than the speed of sound, and low pressure

1 development. Examples of low explosives include black powder, igniter cords, igniters, safety
2 fuses, small arms ammunition and primers, and propellants, 1.3C.]

3
4 **Mass-detonating explosives.** [Division 1.1, 1.2 and 1.5 explosives that, whether individually
5 or in combination, or loaded into ammunition or containers, explode virtually instantaneously
6 when a small portion is subjected to fire, concussion, impact, the impulse of an initiating agent,
7 or the effect of a considerable discharge of energy from without, with severe explosive effect,
8 including the potential for structural damage to adjacent objects, and explosive propagation to
9 other explosives stored in proximity, such that two or more quantities in proximity must be
10 considered as one for quantity-distance purposes.]

11
12 **FALLOUT AREA.** [The area over which aerial shells or other aerial fireworks are fired and
13 intended to combust, deflagrate or detonate, including the area into which debris and unexploded
14 aerial fireworks are expected to fall given the direction and strength of the wind, and the angle or
15 placement of the mortars or other devices discharging fireworks.]

16
17 **FIREWORKS.** [An article or device that does not present a mass explosion hazard, that is
18 manufactured or used to produce a visible or an audible effect for entertainment or other display
19 purposes by combustion, deflagration or detonation, and that meets the definition of 1.4G
20 fireworks or 1.3G fireworks as set forth herein.]

21
22 **Fireworks, 1.4G.** [Small fireworks devices, classified as UN 0336 by United States
23 Department of Transportation regulations, containing restricted amounts of pyrotechnic
24 materials designed primarily to produce visible or audible effects by combustion.]

25
26 **Fireworks, 1.3G.** [Large fireworks devices classified as UN0335 by the United States
27 Department of Transportation regulations, intended for use in fireworks displays and designed
28 to produce audible or visible effects by combustion, deflagration or detonation, including
29 firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial
30 shells containing more than 40 grams of pyrotechnic material, and other display pieces which
31 exceed the limits for classification as 1.4G fireworks.]

32
33 **FIREWORKS CONTRACTOR CERTIFICATE.** [A written statement issued by the
34 commissioner to a company authorizing such company to conduct a fireworks display and to be
35 responsible for all storage, handling, use and transportation of fireworks in connection therewith.]

36
37 **FIREWORKS DISPLAY.** [The discharge of fireworks for an outdoors public display.]

38
39 **FREQUENCY.**

40
41 **FUME CLASS 1.** [A classification established by the Institute of Makers of Explosives.
42 Explosives meeting the requirements of this classification will provide less than 0.16 cubic feet
43 (0.00453 m³) of poisonous gases upon detonation of 0.44 pounds (200 grams) of explosive.]

44
45 **GEOPHONE.**

46
47 **GLOBAL STRAIN METHOD.**

1
2 **Global Shear Wall Strain.**

3
4 **Global Tensile Wall Strain.**

5
6 **GROUND VIBRATION.**

7
8 **HIGHWAY.** [A public street.]

9
10 **INHABITED BUILDING.** [A building regularly occupied in whole or in part as a habitation for
11 human beings, or any house of worship, school building, railroad station, store or other structure
12 where people are accustomed to assemble.]

13
14 **INTENSITY.**

15
16 **JOB SITE.** [The construction site at which blasting operations are being conducted, including the
17 blast site and blast area.]

18
19 **LOADER.** [A person holding a certificate of fitness for explosives handling, who handles
20 explosives and performs explosives loading operations.]

21
22 **MAGAZINE.** [A building, structure or container approved for storage of explosives.]

23
24 **Indoor.** [A portable structure, such as a box, bin or other container, constructed as required for
25 Type 2, 4 or 5 magazines in accordance with NFPA 495, NFPA 1124 or the regulations of the
26 Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of
27 Justice, as set forth in 27 CFR Part 555, so as to be fire resistant and theft resistant.]

28
29 **Type 1.** [A permanent structure, such as a building or other permanent structure constructed
30 in accordance with the requirements of NFPA 495, NFPA 1124, or the regulations of the
31 Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of
32 Justice, as set forth in 27 CFR Part 555, that is bullet-resistant, fire-resistant, theft-resistant,
33 weather-resistant and ventilated.]

34
35 **Type 2.** [A portable or mobile structure, such as a box, skid-magazine, trailer or semitrailer,
36 constructed in accordance with NFPA 495, NFPA 1124 or the regulations of the Bureau of
37 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
38 forth in 27 CFR Part 555, that is fire-resistant, theft-resistant, weather-resistant and ventilated,
39 and if used outdoors, bullet resistant.]

40
41 **Type 3.** [A portable structure for the temporary storage of explosives, such as a “day box,”
42 constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of
43 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
44 forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-resistant.]

45
46 **Type 4.** [A permanent, portable or mobile structure such as a building, box, semitrailer or other
47 mobile container constructed in accordance with NFPA 495, NFPA 1124, or the regulations of

1 the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United States Department of
2 Justice, as set forth in 27 CFR Part 555, that is fire-resistant, theft-resistant and weather-
3 resistant.]
4

5 **Type 5.** [A permanent, portable or mobile structure such as a building, box, bin, tank,
6 semitrailer, bulk trailer, tank trailer, bulk truck, tank truck or other mobile container
7 constructed in accordance with NFPA 495, NFPA 1124, or the regulations of the Bureau of
8 Alcohol, Tobacco, Firearms and Explosives of the United States Department of Justice, as set
9 forth in 27 CFR Part 555, that is theft resistant.]
10

11 **MAGAZINE KEEPER.** [A person holding a certificate of fitness for explosives storage who is
12 in charge of and responsible for the storage and handling of explosives in an explosives magazine.]
13

14 **MICROPHONE.**
15

16 **MINIMUM SECURED RADIUS.** [A minimum separation distance based on the size of the
17 largest fireworks shell to be used in the display.]
18

19 **MORTAR.** [A tube or similar device in which fireworks, shells or other aerial fireworks are
20 directed and discharged into the air.]
21

22 **MUCKING.** [The removal, usually by heavy machinery, of debris or other broken material
23 resulting from a blast.]
24

25 **NET EXPLOSIVE WEIGHT (net weight).** [The weight of an explosive expressed in pounds,
26 representing the aggregate amount of explosives contained within a building or structure, including
27 a magazine, used to establish quantity-distance relationships.]
28

29 **NON-PYROTECHNIC SPECIAL EFFECT.**
30

31 **PEAK PARTICLE VELOCITY (PPV).**
32

33 **PRIMER.** [A unit, package or cartridge of explosives, including a detonator or
34 detonator/detonating cord combination, that is used to initiate a main charge of explosives or
35 blasting agents.]
36

37 **PROTECTED EXPOSURE.** [Any premises, building, structure, facility, installation, street,
38 railway, natural feature or other thing or place determined by the department to require protection
39 from a fireworks display by reason of its proximity to the discharge site and the fallout area and
40 the risk of resulting harm from aerial or other fireworks.]
41

42 **PROXIMATE AUDIENCE.** [An audience closer to pyrotechnic devices than allowed by NFPA
43 1123.]
44

45 **PYROTECHNIC.**
46

1 **PYROTECHNIC ARTICLE OR DEVICE.** [Any article or device containing a pyrotechnic
2 material.]

3
4 **PYROTECHNIC EFFECT SIMULATION.**

5
6 **PYROTECHNIC EFFECT SIMULATION EQUIPMENT.**

7
8 **PYROTECHNIC MATERIAL.** [A chemical mixture consisting predominantly of solids that,
9 upon ignition, are capable of producing a controlled, self-sustaining, and self-contained
10 exothermic reaction, that functions without external oxygen, resulting in a visible or audible effect
11 by combustion, deflagration, or detonation.]

12
13 **PYROTECHNIC SPECIAL EFFECT.**

14
15 **PYROTECHNIC SPECIAL EFFECTS CONTRACTOR CERTIFICATE.**

16
17 **[PYROTECHNIC SUPPLIER CERTIFICATE.** A written statement issued by the
18 commissioner to a company authorizing such company to engage in the business of selling any
19 pyrotechnic material, article or device designed for the purpose of creating a special effect.]

20
21 **RAILWAY.** [A subway, railroad, railway or other similar means of transportation.]

22
23 **READY BOX.** [A container with a self-closing cover that is of a material and construction
24 sufficient to protect fireworks from burning debris and from precipitation or other weather
25 conditions. A tarpaulin structure shall not be deemed sufficient for use as a ready box.]

26
27 **SEPARATION DISTANCE.** [The distance that is to be maintained during the fireworks display
28 from the outer perimeter of the discharge area to each viewing area or protected area. The
29 separation distance represents the distance determined by the department to be necessary and
30 sufficient to secure viewing areas and protected areas from hazards associated with a fireworks
31 display, including but not limited to blast, fire, fallout and noise hazards.]

32
33 **SMALL ARMS AMMUNITION.** [A shotgun, rifle or pistol cartridge, and any cartridge for
34 propellant-actuated devices, excluding ammunition containing bursting charges or incendiary,
35 trace, spotting or pyrotechnic projectiles.]

36
37 **SMALL ARMS [AMMUNITION] PRIMERS.** [Small percussion-sensitive explosive charges,
38 encased in a cap, used to ignite propellant powder.]

39
40 **SMOKELESS PROPELLANTS.** [Solid propellants, commonly referred to as smokeless
41 powders, used in small arms ammunition, cannons, rockets, propellant-actuated devices and
42 similar articles.]

43
44 **SPECIAL EFFECT.** [A visible or audible effect used for entertainment or other display purposes,
45 created by any material, article or device of an explosive, flammable or combustible nature,
46 including pyrotechnic materials, articles and devices and fireworks, 1.4G, but excluding fireworks,
47 1.3G.]

1
2 **SPECIAL INDUSTRIAL EXPLOSIVE DEVICE.** [An explosive power pack containing an
3 explosive charge in the form of a cartridge or construction device, including, but not limited to,
4 explosive rivets, explosive bolts, explosive charges for driving pins or studs, cartridges for
5 explosive-actuated power tools and charges of explosives used in automotive air bag inflators, jet
6 tapping of open hearth furnaces and jet perforation of oil well casings.]
7

8 **SPONSOR.** [The person that has retained a fireworks contractor to conduct a fireworks display,
9 and to whom the fireworks display permit is issued.]
10

11 **STRAIN.**
12

13 **TNT EQUIVALENT.** [A measurement of the quantity of an explosive calculated by reference to
14 the quantity of trinitrotoluene that contains the equivalent explosive energy.]
15

16 **THEFT RESISTANT.** [Construction designed to deter unauthorized entry into magazines or
17 other explosives storage facilities, so as to prevent unauthorized access to stored explosives.]
18

19 **VENDOR.** [Any person engaged in the transportation and storage of explosives in connection
20 with the sale of such explosives for blasting operations.]
21

22 **VIEWING AREA.** [Areas designated for viewing a fireworks display, to which spectators are
23 restricted.]
24

25 **SECTION FC [3303] 5603**
26 **EXPLOSIVES RECORDKEEPING AND REPORTING**
27

28 **[3303.1] 5603.1 General.** Vendors providing high explosives to job sites and/or storage facilities
29 in New York City and blasting contractors conducting blasting operations in New York City shall
30 comply with the regulations of the United States Department of Justice, Bureau of Alcohol,
31 Tobacco, Firearms and Explosives, and DOTn, with respect the preparation, maintenance and
32 retention of records of the storage, handling and transportation of such explosives. Records shall
33 be maintained of the storage, handling and use of high explosives, detonators, blasting agents,
34 emulsion explosives, including the receipt and disposal of such explosives and the reporting of
35 accidents, loss or theft of explosives, or unauthorized activities in accordance with this section.
36

37 **[3303.2] 5603.2 Transaction record.** Vendors of high explosives and blasting contractors shall
38 maintain, on forms prescribed by the commissioner, a record of all transactions involving the
39 receipt, removal, use or disposal of high explosives, including the date and time, name and
40 certificate of fitness number of the magazine keeper, type of high explosives, total amounts
41 deposited and withdrawn, and department serial numbers. These records shall be signed by the
42 blaster, [assistant] apprentice blaster and magazine keeper. Such records shall be [maintained for
43 a period of 5 years, and] submitted to the department in accordance with department procedures.
44

45 **[3303.2.1] 5603.2.1 Records of vendors.** Vendors of high explosives shall maintain the
46 following records:
47

- 1 1. A weekly record of high explosives delivered from outside New York City to any vendor
2 facility located within New York City.
- 3
- 4 2. A daily record of high explosives removed from a vendor's facility, delivered to and/or
5 returned from a job site.
- 6
- 7 3. A daily record of high explosives delivered in and removed from an explosives vehicle
8 at each job site.
- 9

10 **[3303.2.2] 5603.2.2 Records of blasting contractors.** Blasting contractors shall maintain the
11 following records:

- 12
- 13 1. A daily record of high explosives, including the department's serial number codes,
14 delivered by a vendor to each job site.
- 15
- 16 2. A daily record of high explosives, including the department's serial number codes,
17 received at and removed from each job site magazine.
- 18
- 19 3. A daily shot record indicating the amount of high explosives received from job site
20 magazines, the date and time of each blast, the amount of high explosives used and the
21 disposition of any unused high explosives.
- 22

23 **[3303.2.3] 5603.2.3 Submission to the department.** The following records shall be submitted
24 to the department on a daily basis:

- 25
- 26 1. A magazine inventory slip with an entry for each shift indicating the quantity and
27 condition of the high explosives stored therein.
- 28
- 29 2. A daily shot record.
- 30
- 31 3. [Central station company documentation] Documentation from an approved central
32 station company of each entry into a Class I magazine, when such monitoring is required
33 by this chapter.
- 34
- 35 4. Blast monitoring reports in accordance with FC5607.19.4.
- 36

37 **[3303.3] 5603.3 Loss, theft or unauthorized removal.** The loss, theft or unauthorized removal
38 of blasting agents, detonators, emulsion explosives or high explosives from a magazine or
39 permitted facility shall be reported to the department, and all other law enforcement authorities
40 requiring such reporting, including the United States Federal Bureau of Investigation and Bureau
41 of Alcohol, Tobacco, Firearms and Explosives, immediately upon discovery of such loss, theft or
42 unauthorized removal.

43
44 **[3303.4] 5603.4 Reserved.**

1 **[3303.5] 5603.5 Misfires.** The blaster shall keep a record of all charges that fail to detonate, and
2 notify the department in accordance with FC5607.18. The blaster shall not re-wire or discharge
3 the misfired explosives without prior department approval.

4
5 **[3303.6 Hazard communication.** Vendors shall maintain records of chemicals, chemical
6 compounds and mixtures required by the United States Department of Labor regulations as set
7 forth in 29 CFR Section 1910.1200.] **5603.6 Safety data sheets.** Safety data sheets for each
8 explosive being stored, handled or used on any premises shall be maintained at such premises in
9 accordance with FC5003.4.

10
11 **[3303.7] 5603.7 Safety rules.** Safety rules covering the operation of magazines, as described in
12 [FC3304.7] FC5604.7, shall be posted on the interior of the magazine in a visible location.

13
14 **[3303.8] 5603.8 Marking of explosives for blasting.** Explosives to be stored, handled, used,
15 transported or sold for blasting purposes shall be marked in accordance with FC [3308.1] 5603.8.1
16 through [3308.4] 5603.8.4.

17
18 **[3303.8.1] 5603.8.1 High explosives.** High explosives packaging shall be conspicuously
19 marked with:

- 20
21 1. The manufacturer's name, brand name, date shift code, and classification code.
- 22
23 2. The words "HIGH EXPLOSIVES – DANGEROUS – HANDLE CAREFULLY" on
24 the top.
- 25
26 3. The actual number of cartridges within the package, cartridge dimensions, the case
27 weight and any storage instructions.
- 28
29 4. The department's ten-digit serial number code.

30
31 **[3303.8.2] 5603.8.2 High explosives cartridges.** High explosive cartridges, sticks, tubes,
32 wrappers, bags, casts, or other forms of packaged high explosives shall be of vermilion in
33 color, unless otherwise approved, and marked with:

- 34
35 1. The manufacturer's name, date shift code and brand of explosive.
- 36
37 2. The words "HIGH EXPLOSIVES – DANGEROUS – HANDLE CAREFULLY."
- 38
39 3. The department's ten-digit serial number code on both ends of the cartridge, unless
40 otherwise authorized by the department.

41
42 **[3303.8.3] 5603.8.3 Detonator packaging.** Detonator packaging shall be marked with:

- 43
44 1. The manufacturer's name, brand name and date shift code.
- 45
46 2. The words "DETONATORS – DANGEROUS – HANDLE CAREFULLY" on two
47 sides.

3. The actual number of detonators in the package, or the number of packages and detonators per package.
4. The department's two-letter, three-digit serial numbers for each detonator or package of detonators contained therein. The first package shall be designated as AA 001 and each subsequent package numbered consecutively as AA 002 through AA 999. The second sequence shall begin with AB 001 and shall continue in the same alpha-numeric fashion for subsequent packages.
5. For tunnel blasting, the contractor's name and the job site location, or an approved abbreviation, shall be used.

[3303.8.4] 5603.8.4 Individual detonators. Individual detonators shall be marked with:

1. A shell, band or tag with the manufacturer's name and brand name.
2. The words "EXPLOSIVES – DANGEROUS – DETONATOR" or "EXPLOSIVES – DANGEROUS – BLASTING CAP," as applicable, on the shell, band or tag.
3. A tag or sticker bearing the department's two-letter/three-digit serial number, the delay period, and date shift code.

SECTION FC [3304] 5604 EXPLOSIVES STORAGE AND HANDLING

[3304.1] 5604.1 General. All explosives, including black powder, propellant-actuated cartridges, small arms ammunition and small arms primers, and smokeless propellants, shall be stored, handled, used and sold in accordance with this chapter and NFPA 495. Unclassified detonable organic peroxide, detonable pyrophoric materials, detonable unstable (reactive) materials and detonable water-reactive materials shall additionally comply with the requirements of other chapters of this code applicable to such materials.

[3304.1.1] 5604.1.1 Calculation of quantity of explosives. The quantity of explosives stored at any location and the distance from such storage to protected exposures shall be in accordance with the quantity-distance tables in [FC3304.5] FC5604.5. The net explosive weight of the explosives shall be determined in accordance with FC [3304.1.1.1] 5604.1.1.1 through [3304.1.1.6] 5604.1.1.6.

[3304.1.1.1] 5604.1.1.1 Mass explosion hazard explosives. For Division 1.1, 1.2 or 1.5 explosives, the total net explosive weight of all such explosives, or the TNT equivalent, shall be used for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(2)] 5604.5.2(2).

[3304.1.1.2] 5604.1.1.2 Non-mass explosion hazard explosives, except Division 1.4.

1. For Division 1.3 propellants, the total weight of the propellants alone shall be the net explosive weight for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(3)] 5604.5.2(3).
2. The sum of the net weights of metal powders and pyrotechnic materials shall be the net explosive weight for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(3)] 5604.5.2(3).

[3304.1.1.3] 5604.1.1.3 Combination of mass explosion hazard and non-mass explosion hazard explosives, except Division 1.4.

1. When Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity considered first as if the total quantity were in Division 1.1 and then as if the total quantity were in Division 1.2. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.2 explosive is known, the TNT equivalent weight of the Division 1.2 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(2)] 5604.5.2(2).
2. When Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as if the total quantity were in Division 1.1 and then as if the total quantity were in Division 1.3. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.3 explosives is known, the TNT equivalent weight of the Division 1.3 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(2)] 5604.5.2(2) or [3304.5.2(3)] 5604.5.2(3), as appropriate.
3. When Division 1.1, 1.2 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as if the total quantity were in Division 1.1, next as if the total quantity were in Division 1.2 and finally as if the total quantity were in Division 1.3. The required distance is the greatest of the three. When the Division 1.1 requirements are controlling and the TNT equivalent of the Division 1.2 and Division 1.3 explosives are known, the TNT equivalent weight of the Division 1.2 and Division 1.3 explosives shall be added to the total explosive weight of Division 1.1 explosives to determine the net explosive weight for the Division 1.1 distance determination, for purposes of quantity-distance requirements in accordance with FC Table [3304.5.2(2)] 5604.5.2(2).
4. For any composite pyrotechnic material and Division 1.1 or Division 1.3 explosives, the sum of the net weights of the pyrotechnic material and the explosives shall be used for the distance determination, for purposes of quantity-distance requirements in accordance with FC Tables [3304.5.2 (2)] 5604.5.2(2) and [3304.5.2(3)] 5604.5.2(3).

1
2 **[3304.1.1.4] 5604.1.1.4 Division 1.4 explosives.** For Division 1.4 explosives, the total
3 weight of the explosive alone is the net weight for the distance determination, for purposes
4 of quantity-distance requirements in accordance with FC Table [3304.5.2(4)] 5604.5.2(4).

5
6 **[3304.1.1.5] 5604.1.1.5 Detonating cord.** Detonating cord of 50 grains per foot shall be
7 calculated as equivalent to 8 pounds (4 kg) of high explosives per 1,000 feet (304 800 mm),
8 for purposes of quantity-distance requirements. Heavier or lighter core loads shall be rated
9 proportionally.

10
11 **[3304.1.1.6] 5604.1.1.6 Detonators.** All types of detonators in strengths through No. 8 cap
12 shall be rated at 1½ pounds (0.68 kg) of explosives per 1,000 caps, for purposes of quantity-
13 distance requirements. Detonators in strengths higher than No. 8 cap shall be rated as
14 prescribed by the manufacturer.

15
16 **[3304.2] 5604.2 Storage facility locations.** High explosives may only be stored for use in blasting
17 operations conducted in New York City, and only in a magazine or other approved storage facility
18 at a vendor's facility or job site. High explosives to be used in New York City shall [first] be
19 delivered to a vendor's facility located within New York City, unless otherwise authorized by the
20 department. [Thereafter, high explosives may be transported from such vendor's facility to
21 approved storage facilities at job sites located in New York City.] Explosives shall be delivered to
22 and removed from the job site in accordance with this section and the rules. No explosives shall
23 be delivered to any job site without the prior authorization of the [Department] department. [The
24 commissioner shall promulgate rules governing the delivery and removal of explosives to and from
25 the job site.]

26
27 **[3304.3] 5604.3 Magazines.** The storage of explosives in magazines shall comply with the
28 requirements of FC [3304.3.1] 5604.3.1 through [3304.3.4.1] 5604.3.4 and FC Table [3304.3]
29 5604.3. Explosives shall be stored in magazines constructed, installed, operated and maintained in
30 accordance with the requirements of this section, NFPA 495, NFPA 1124 and, except for portable
31 or mobile magazines not exceeding 120 square feet (11 m²) in area, the construction codes
32 including the Building Code.

33
34 **[3304.3.1] 5604.3.1 High explosives.** Explosives classified as Division 1.1 or 1.2 shall be
35 stored in a Type 1[,] or Type 2 [or 3 magazines] magazine, or temporarily in a Type 3 magazine
36 if such magazine is under personal supervision of an appropriate holder of a certificate of
37 fitness.

38
39 **Exceptions:**

- 40
41 1. Black powder shall be stored in a Type 1, 2, 3 or 4 magazine.
42
43 2. Cap-sensitive explosives that are demonstrated not to be bullet sensitive shall be
44 stored in a Type 1, 2, 3, 4 or 5 magazine.

45
46 **[3304.3.1.1] 5604.3.1.1 Barricades.** All magazines storing high explosives shall be
47 barricaded in an approved manner.

1
2 **[3304.3.1.2 Classes of high explosives magazines.** Magazines for high explosives shall
3 be classified based upon the maximum quantity of high explosives stored as follows:
4

- 5 1. First class magazines. High explosives magazines containing not more than 1,000
6 pounds (454 kg) of explosives.
7
- 8 2. Second class magazines. High explosives magazines containing not more than 500
9 pounds (227 kg) of explosives.
10
- 11 3. Third class magazines. High explosives magazines containing not more than 250
12 pounds (113.5 kg) of explosives.
13

14 **3304.3.1.3] 5604.3.1.2 Detonator magazines.** No more than 20,000 detonators may be
15 stored in a single magazine. Only [first class] Type 1 magazines may be used for storage
16 of 1,000 detonators or more.
17

18 **[3304.3.2] 5604.3.2 Low explosives.** Explosives that are not cap sensitive shall be stored in a
19 Type 1, 2, 3, 4 or 5 magazine.
20

21 **[3304.3.3] 5604.3.3** Reserved.
22

23 **[3304.3.4] 5604.3.4 Access.** The owner or operator of a magazine shall restrict access to the
24 magazine[and only allow entry by], and the keys thereto, to the blaster and magazine keeper
25 [and], provided, however, that other blasting contractor personnel [or] and/or vendor personnel
26 [whose] may enter the magazine when authorized and accompanied by the blaster or magazine
27 keeper, if such other personnel require access to carry out their duties and responsibilities in
28 connection with the storage, handling, use or transportation of explosives [require that they
29 enter the magazine. Access to the keys to the magazine shall be restricted to the blaster, the
30 powder carrier and the magazine keeper]. The granting of access to the magazine to such other
31 personnel is subject to restrictions imposed by [The] the department [may restrict the personnel
32 authorized to enter the magazine] for purposes of ensuring compliance with the requirements
33 of this section. This provision shall not be construed to restrict department access to magazines.
34

35 **[3304.4] 5604.4 Prohibited storage.** Detonators shall be stored in a separate magazine that does
36 not contain other explosives. Black powder, blasting powder, and smokeless propellant shall be
37 stored in a separate magazine that does not contain detonators or other explosives.
38

39 **FC TABLE [3304.3] 5604.3**
40 **STORAGE AMOUNTS AND MAGAZINE REQUIREMENTS FOR EXPLOSIVES**
41 **MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA**

NEW UN/ DOTn DIVISION	OLD DOTn CLASS	ATF/OSH A CLASS	INDOOR ^a (pounds)				OUTDOORS (pounds)	MAGAZINE TYPE ALLOWED				
			Unprotected	Cabinet	Sprinklers	Sprinklers & cabinet		1	2	3	4	5
1.1	A	High	0	0	0	0	0	X	X	X	—	—
1.2	A	High	0	0	1	2	0	X	X	X	—	—
1.2	B	Low	0	0	1	2	0	X	X	X	X	—
1.3 ^b	B	Low	0	0	5	10	0	X	X	X	X	—
1.4	B	Low	0	0	50	100	0	X	X	X	X	—
1.5	C	Low	0	0	1	2	0	X	X	X	X	—
1.5	Blasting	Blasting	0	0	1	2	0	X	X	X	X	X

	Agent	Agent										
1.6	N/A	N/A	0	0	1	2	0	X	X	X	X	X

For SI: 1 pound = 0.454 kg, 1 pound per gallon = 0.12 kg per liter, 1 ounce = 28.35 g.

a. A factor of 10 pounds per gallon shall be used for converting pounds (solid) to gallons (liquid) in accordance with [FC2703.1.2] FC5003.1.2.

b. Black powder shall be stored in a Type 1, 2, 3 or 4 magazine as provided for in [FC3304.3.1] FC5604.3.1.

[3304.5] 5604.5 Location. Magazines for storage of explosives shall be maintained and operated in accordance with FC [3304.5.1] 5604.5.1 through [3304.5.3.3] 5604.5.3.3.

[3304.5.1] 5604.5.1 Indoor magazines. It shall be unlawful to maintain or operate a magazine indoors for the storage of Division 1.1 explosives except as authorized by FC5606.5.2. Indoor magazines may be maintained and operated for the storage of explosives, other than those classified as Division 1.1, in accordance with this section.

[3304.5.1.1] 5604.5.1.1 Occupancies. Indoor magazines for storage of explosives shall be maintained and operated only in Group F, H, M or S occupancies, when approved. It shall be unlawful to maintain or operate an indoor magazine in any building containing a Group R occupancy.

[3304.5.1.2] 5604.5.1.2 Construction. Indoor magazines shall be designed and installed in compliance with the following requirements:

1. The magazine shall be fire resistant and theft resistant.
2. The exterior of the magazine shall be painted red.
3. The base of the magazine shall be fitted with wheels, casters or rollers to facilitate removal from the building in an emergency.
4. The lid or door of the magazine shall be marked with conspicuous white lettering not less than 3 inches (76 mm) high and minimum ½-inch (12.7-mm) stroke, reading “EXPLOSIVES — KEEP FIRE AWAY — NO SMOKING.”
5. The least horizontal dimension of the magazine shall not exceed the clear width of the entrance door.

[3304.5.1.3] 5604.5.1.3 Quantity limit. Not more than 50 pounds (23 kg) of explosives shall be stored in an indoor magazine.

[3304.5.1.4] 5604.5.1.4 Reserved.

[3304.5.1.5] 5604.5.1.5 Location. Indoor magazines shall be located within 10 feet (3048 mm) of a means of egress and only on floors at or having ramp access to the outdoors at grade level.

[3304.5.1.6] 5604.5.1.6 Limitation on number. Only one indoor magazine shall be maintained or operated in a single building or structure.

1 [3304.5.2] **5604.5.2 Outdoor magazines.** Outdoor magazines shall be maintained and
2 operated in accordance with this section.

3
4 [3304.5.2.1] **5604.5.2.1 Location.** All outdoor magazines, other than Type 3 magazines,
5 shall be located so as to be in accordance with FC Table [3304.5.2(2)] 5604.5.2(2),
6 [3304.5.2(3)] 5604.5.2(3) or [3304.5.2(4)] 5604.5.2(4) as set forth in FC Table
7 [3304.5.2(1)] 5604.5.2(1).

8
9 [3304.5.2.2] **5604.5.2.2 Detonator storage.** Magazines storing detonators, including
10 magazines on drill boats, shall be located 100 feet (30 480 mm) from magazines storing
11 high explosives, except as otherwise approved by the department. Where the magazine is
12 barricaded the distance between magazines may be reduced as set forth in FC Table
13 [3304.5.2(2)] 5604.5.2(2).

14
15 [3304.5.2.3] **5604.5.2.3 Tunnel or under-decking.** When a suitable aboveground storage
16 site is unavailable, barricaded magazines, located in the excavation below decking in
17 compliance with the distance requirements as set forth in FC Table [3304.5.2(2)]
18 5604.5.2(2), may be approved. The blasting contractor for the job site shall submit to the
19 department a plan detailing the load carrying capacity of the decking above the magazine
20 location. For deep underground excavations, the use of a gated coyote hole with overnight
21 storage may be approved for a magazine that is constructed to [first class] Type 1 magazine
22 requirements.

23
24 [3304.5.3] **5604.5.3 Additional requirements for Type 3 magazines.** Type 3 magazines shall
25 comply with the requirements of FC [3304.5.3.1] 5604.5.3.1 through [3304.5.3.3] 5604.5.3.3.

26
27 [3304.5.3.1] **5604.5.3.1 Location.** Wherever practicable, Type 3 magazines shall be
28 located away from neighboring inhabited buildings, railways, public streets, and other
29 magazines in accordance with FC Table [3304.5.2(2)] 5604.5.2(2), [3304.5.2(3)]
30 5604.5.2(3) or [3304.5.2(4)] 5604.5.2(4) as applicable.

31
32 [3304.5.3.2] **5604.5.3.2 Storage of explosives.** Explosives shall be removed from Type 3
33 magazines to appropriate storage magazines at the end of the work day, unless approved.

34
35 [3304.5.3.3] **5604.5.3.3 Limitation on number.** Not more than two Type 3 magazines
36 shall be located at the same blast site, unless approved. Where two or more Type 3
37 magazines are located at the same blast site, one magazine shall be used solely for the
38 storage of detonators.

39
40
41
FC TABLE [3304.5.2(1)] 5604.5.2(1)
APPLICATION OF SEPARATION DISTANCE TABLE^a

DOTn DIVISION	AMERICAN TABLE OF DISTANCES FOR STORAGE OF EXPLOSIVES [3304.5.2(2)] <u>5604.5.2(2)</u> (DOJ 27 CFR Part 555.218)	TABLE OF SEPARATION DISTANCES FOR LOW EXPLOSIVES [3304.5.2(3)] <u>5604.5.2(3)</u> (DOJ 27 CFR Part 555.219)	TABLE OF DISTANCES FOR OUTDOOR MAGAZINES OR BUILDINGS CONTAINING EXPLOSIVES DIVISION 1.4 [3304.5.2(4)] <u>5604.5.2(4)</u>
1.1	X	—	—
1.2	X	—	—
1.3	—	X	—
1.4G or 1.4S	—	—	X

1.4B or 1.4S detonators	—	—	X
1.5	X	—	—
1.6	Not Applicable	Not Applicable	Not Applicable

a. Where adjacent magazines contain different classes of explosives the separation between magazines shall be as prescribed by FC Table [3304.5.2(2)] 5604.5.2(2).

**FC TABLE [3304.5.2(2)] 5604.5.2(2)
AMERICAN TABLE OF DISTANCES FOR STORAGE OF EXPLOSIVES (AS REVISED JUNE 1991)^a**

QUANTITY OF EXPLOSIVES ^{b,e}		DISTANCES IN FEET							
		Inhabited buildings		Public highways with traffic volume less than 3,000 vehicles per day		Public highways with traffic volume greater than 3,000 vehicles per day and passenger railways		Separation of magazines ^d	
		Pounds over	Pounds not over	Barricaded	Unbarricaded	Barricaded	Unbarricaded	Barricaded	Unbarricaded
0	5	70	140	30	60	51	102	6	12
5	10	90	180	35	70	64	128	8	16
10	20	110	220	45	90	81	162	10	20
20	30	125	250	50	100	93	186	11	22
30	40	140	280	55	110	103	206	12	24
40	50	150	300	60	120	110	220	14	28
50	75	170	340	70	140	127	254	15	30
75	100	190	380	75	150	139	278	16	32
100	125	200	400	80	160	150	300	18	36
125	150	215	430	85	170	159	318	19	38
150	200	235	470	95	190	175	350	21	42
200	250	255	510	105	210	189	378	23	46
250	300	270	540	110	220	201	402	24	48
300	400	295	590	120	240	221	442	27	54
400	500	320	640	130	260	238	476	29	58
500	600	240	480	135	270	253	506	31	62
600	700	355	710	145	290	266	532	32	64
700	800	375	750	150	300	278	556	33	66
800	900	390	780	155	310	289	578	35	70
900	1,000	400	800	160	320	300	600	36	72

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. This table applies to the storage of explosives, except for temporary storage incidental to transportation.

b. Storage of explosives in a quantity exceeding 1,000 pounds in one magazine is prohibited.

c. Reserved.

d. Where two or more storage magazines are located on the same property, each magazine shall comply with the minimum distance specified from inhabited buildings, railways and highways, and, in addition, they should be separated from each other by not less than the distances shown for separation of magazines, except that the quantity of explosives in detonator magazines shall govern in regard to the spacing of said detonator magazines from magazines containing other explosives. Where any two or more magazines are separated from each other by less than the specified separation of magazine distances, then two or more such magazines, as a group, shall be considered as one magazine, and the total quantity of explosives stored in such group shall be treated as if stored in a single magazine located on the site of any magazine in the group and shall comply with the minimum distances specified from other magazines, inhabited buildings, railways and highways.

e. The quantity of explosives refers to pounds of trinitrotoluene (TNT), or for other type explosives, the quantity of TNT with the equivalent explosive energy.

**FC TABLE [3304.5.2(3)] 5604.5.2(3)
TABLE OF DISTANCES FOR OUTDOOR MAGAZINES OR BUILDINGS
CONTAINING EXPLOSIVES—DIVISION 1.3—MASS-FIRE HAZARD^{a,b,c}**

QUANTITY OF DIVISION 1.3 EXPLOSIVES		DISTANCES IN FEET	
Pounds over	Pounds not over	Inhabited buildings, railways and public highways	Magazines
0	1,000	75	50

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. Black powder, when stored in magazines, is defined as low explosive by the Bureau of Alcohol, Tobacco and Firearms (BATF).

b. For quantities less than 1,000 pounds, the required distances are those specified for 1,000 pounds. The commissioner may authorize storage of such explosives in quantities less than 1,000 pounds at lesser distances from protected exposures.

c. No more than 50 pounds of explosives may be stored in a building.

**FC TABLE [3304.5.2(4)] 5604.5.2(4)
TABLE OF DISTANCES FOR OUTDOOR MAGAZINES OR BUILDINGS**

CONTAINING EXPLOSIVES - DIVISION 1.4^{c,d}

QUANTITY OF DIVISION 1.4 EXPLOSIVES		DISTANCES IN FEET		
Pounds Over	Pounds Not Over	From Inhabited Building	From Public Railroad and Highway	From Aboveground Magazine and Operating Buildings ^{a, b}
50	1,000	100	100	50

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. A separation distance of 100 feet is required for buildings of other than Type I or Type II construction as defined in the Building Code.

b. For earth-covered magazines, no specified separation is required.

(1) Earth cover material used for magazines shall be relatively cohesive. Solid or wet clay and similar types of soil are too cohesive and shall not be used. Soil shall be free from unsanitary organic matter, trash, debris and stones heavier than 10 pounds or larger than 6 inches in diameter. Compaction and surface preparation shall be provided, as necessary, to maintain structural integrity and avoid erosion. Where cohesive material cannot be used, as in sandy soil, the earth cover over magazines shall be finished with a suitable material to ensure structural integrity.

(2) The earth fill or earth cover between earth-covered magazines shall be either solid or sloped, in accordance with the requirements of other construction features, but a minimum of 2 feet of earth cover shall be maintained over the top of each magazine. To reduce erosion and facilitate maintenance operations, the cover shall have a slope of 2 horizontal to 1 vertical.

c. Restricted to articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpacked articles used in process operations that do not propagate a detonation [of] or deflagration between articles.

d. No more than 50 pounds of explosives may be stored in a building.

[3304.6] 5604.6 Installation. Magazines shall be designed and installed in accordance with FC [3304.6.1] 5604.6.1 through [3304.6.8] 5604.6.8.

[3304.6.1] 5604.6.1 Drainage. The ground around a magazine shall be graded so that water drains away from the magazine.

[3304.6.2] 5604.6.2 Heating. Magazines requiring heat shall be heated as prescribed in NFPA 495 by either hot water radiant heating within the magazine or by indirect warm air heating.

[3304.6.3] 5604.6.3 Lighting. All electric lights, electric safety flashlights or electric safety lanterns used in a magazine shall be listed as intrinsically safe or otherwise suitable for use in hazardous locations and shall comply with the requirements of NFPA 495.

[3304.6.4] 5604.6.4 Nonsparking materials. It shall be unlawful to maintain or operate a magazine, other than a Type 5 magazine, with exposed ferrous metal on any interior surface.

[3304.6.5] 5604.6.5 Warning signs. Any premises upon which explosives are stored in magazines shall have signs posted in accordance with FC [3304.6.5.1] 5604.6.5.1 and [3304.6.5.2] 5604.6.5.2. Signs shall be durable, weather resistant and of contrasting colors with a minimum letter height of 3 inches (76 mm) with a minimum brush stroke of 1/2 inch (12.7 mm).

[3304.6.5.1] 5604.6.5.1 Job sites. The owner shall conspicuously post on the exterior of the construction fence or other exterior wall of the premises the following sign at approved locations:

DANGER!
NEVER FIGHT EXPLOSIVES FIRES—CALL 911.
EXPLOSIVES ARE STORED ON THIS SITE

[3304.6.5.2] 5604.6.5.2 Vendor facilities. Signs complying with the requirements of [FC3304.6.5.1] FC5604.6.5.1 shall be conspicuously posted at approved locations at vendor facilities.

1 [3304.6.5.3] **5604.6.5.3 Placards.** Type 5 magazines containing Division 1.5 blasting
2 agents shall be prominently placarded as required during transportation by the regulations
3 of the United States Department of Transportation, as set forth in 49 CFR Part 172 and the
4 regulations of the Bureau of Alcohol, Tobacco, Firearms and Explosives of the United
5 States Department of Justice, as set forth in 27 CFR Part 555.
6

7 [3304.6.6] **5604.6.6 Security for magazines at vendor facilities.** Vendor magazines shall be
8 provided with the following security measures:
9

- 10 1. A magazine keeper shall be present on the premises and continuously monitor the
11 magazine at all times.
12
- 13 2. A suitable shelter for the magazine keeper shall be provided.
14
- 15 3. The magazine and surrounding area shall be illuminated at night.
16
- 17 4. [A dedicated, non-coin-operated telephone] A telephone not requiring a coin to operate
18 or other approved means to communicate an emergency shall be provided inside the
19 shelter for the use of the magazine keeper.
20
- 21 5. A door alarm and holdup alarm, monitored by an approved central station company,
22 shall be provided. The central station company shall not have the capability to shut off
23 the alarms. The central station shall:
 - 24 5.1. Record all openings and closings of the magazine doors.
25
 - 26 5.2. Notify the department of any unusual occurrences and outages.
27
 - 28 5.3. Provide written procedures concerning the opening and closing of magazine doors.
29
- 30 6. An audible and visible alarm system shall be provided that is activated by opening the
31 magazine door, and that is continuously monitored at an approved location on the
32 premises.
33
- 34 7. A local perimeter intrusion alarm shall be provided that is capable of being deactivated
35 during normal delivery hours.
36
- 37 8. [First class] Type 1 magazines shall additionally comply with the following installation
38 requirements:
39
 - 40 8.1. Circuits used for the doors and holdup alarm shall be dedicated and use fire alarm
41 wiring and wiring methods as set forth in the construction codes, including the
42 Building Code and the Electrical Code. The door and holdup alarm shall use an
43 approved transmitter, operate on alternating current, be provided with battery
44 backup, and be monitored by an approved central station company. There shall be
45 no control on the premises for shutting down the alarm transmission to the central
46 station company other than disconnecting all power to the alarm system.
47

1
2 8.2. Electrical wiring on the premises from the magazine doors to the central station
3 company and the magazine keeper's shelter shall be protected by rigid conduit.
4 Overhead wiring shall use a weatherhead fitting and have a minimum 15 feet (4572
5 mm) clearance from the ground. Underground wiring shall be protected in
6 galvanized conduit, buried at a minimum depth of 18 inches (457 mm) or 12 inches
7 (305 mm) deep with 6 inches (152 mm) concrete cover.
8

9 8.3. Overhead telephone lines feeding the magazine keeper's shelter shall be protected
10 for a distance of 15 feet (4572 mm) in height by a conduit service pipe suitably
11 braced for strain. Underground telephone lines shall be protected in galvanized
12 conduit, buried 18 inches (457 mm) minimum or 12 inches (305 mm) deep with 6
13 inches (152 mm) concrete cover.
14

15 **[3304.6.7] 5604.6.7 Security for magazines.** All [first class] Type 1 magazines at job sites
16 and all other magazines storing high explosives overnight shall comply with the requirements
17 of [FC3304.6.6] FC5604.6.6.
18

19 **[3304.6.8] 5604.6.8 Magazine cars.** Approved magazine cars shall be used to transport
20 explosives through tunnels to working headings.
21

22 **[3304.7] 5604.7 Operation.** Magazines shall be operated in accordance with FC [3304.7.1]
23 5604.7.1 through [3304.7.9] 5604.7.9.
24

25 **[3304.7.1] 5604.7.1 Security.** Magazines shall be kept locked and otherwise secured in the
26 manner prescribed in NFPA 495 at all times except during delivery or removal of explosives
27 or during inspection.
28

29 **[3304.7.2] 5604.7.2 Open flames and lights.** Smoking, matches, hot work, flame-producing
30 devices, open flames, firearms and firearms cartridges shall not be allowed inside of or within
31 100 feet (30 480 mm) of portable or permanent magazines in which explosives are stored.
32

33 **[3304.7.2.1] 5604.7.2.1 Capping and primers.** No cartridge shall be capped or primer
34 readied within 100 feet (30 480 mm) of a magazine.
35

36 **[3304.7.3] 5604.7.3 Vegetation and combustible waste.** The area located around a magazine
37 shall be kept clear of brush, grass, vines, weeds, rubbish and other combustible waste for a
38 distance of 25 feet (7620 mm).
39

40 **[3304.7.4] 5604.7.4 Combustible material storage.** Combustible materials shall not be stored
41 within 100 feet (30 480 mm) of magazines.
42

43 **[3304.7.5] 5604.7.5 Unpacking and repacking explosives.** Containers of explosives, except
44 fiberboard containers, and packages of damaged or deteriorated explosives shall not be
45 unpacked or repacked inside or within 50 feet (15 240 mm) of a magazine or in close proximity
46 to other explosives.
47

1 [3304.7.5.1] 5604.7.5.1 **Storage of opened packages.** Packages of explosives that have
2 been opened shall be closed before being placed in a magazine.

3
4 [3304.7.5.2] 5604.7.5.2 **Nonsparking tools.** Tools used for the opening and closing of
5 packages of explosives, other than metal slitters for opening paper, plastic or fiberboard
6 containers, shall be made of nonsparking materials.

7
8 [3304.7.5.3] 5604.7.5.3 **Disposal of packaging.** Empty containers and paper and fiber
9 packaging materials that previously contained explosives shall be disposed of or reused in
10 an approved manner.

11
12 [3304.7.6] 5604.7.6 **Tools and equipment.** Metal tools, other than nonferrous transfer
13 conveyors and ferrous metal conveyor stands protected by a coat of paint, shall not be stored
14 or used in a magazine containing explosives.

15
16 [3304.7.7] 5604.7.7 **Contents.** Magazines shall be used exclusively for the storage of
17 explosives.

18
19 [3304.7.8] 5604.7.8 **Compatibility.** Corresponding grades and brands of explosives shall be
20 stored together and in such a manner that the grade and brand marks are visible. The inventory
21 of explosives shall be stored in a manner that allows ready access for counting and checking
22 its condition. Packages of explosives shall be stacked in a stable manner not exceeding 8 feet
23 (2438 mm) in height.

24
25 [3304.7.9] 5604.7.9 **Stock rotation.** When explosives are removed from a magazine for use,
26 the oldest usable stock shall be removed first.

27
28 [3304.8] 5604.8 **Maintenance.** Maintenance of magazines shall comply with the requirements of
29 FC [3304.8.1] 5604.8.1 through [3304.8.3] 5604.8.3.

30
31 [3304.8.1] 5604.8.1 **Housekeeping.** Magazine floors shall be regularly swept and be kept
32 clean, dry and free of grit, paper, empty packages and rubbish. Brooms and other cleaning
33 utensils shall not have any spark-producing metal parts. Sweepings from magazine floors shall
34 be removed from the premises and disposed of lawfully.

35
36 [3304.8.2] 5604.8.2 **Repairs.** Explosives shall be removed from the magazine before repairs
37 are made to the interior of a magazine. Explosives shall be removed from the magazine before
38 repairs are made to the exterior of the magazine when there is a possibility of causing a fire.
39 Explosives removed from a magazine under repair shall either be placed in another magazine
40 or placed a safe distance from the magazine, where they shall be properly guarded and
41 protected until repairs have been completed. Upon completion of repairs, the explosives shall
42 be promptly returned to the magazine. Floors shall be cleaned before and after repairs. Under
43 no circumstances shall explosives be stored outside the magazine overnight.

44
45 [3304.8.3] 5604.8.3 **Floors.** Magazine floors stained with liquid from explosives shall be
46 cleaned or replaced in accordance with the explosives manufacturer instructions.

1 **[3304.9] 5604.9 Inspection.** Magazines storing explosives shall be opened and inspected daily.
2 The magazine keeper shall lock and otherwise secure the magazine from unauthorized entry and
3 its contents from unauthorized access; receive and dispense explosives; and maintain complete
4 and accurate records of the explosives received and dispensed. The magazine keeper shall
5 personally supervise the unloading and loading of motor vehicles delivering explosives to the
6 magazine or removing explosives therefrom. At the beginning and end of each work shift, the
7 magazine keeper shall visually inspect and verify the quantity and condition of the explosives in
8 the magazine, determine whether there has been an unauthorized or attempted entry into the
9 magazine or an unauthorized removal, and document same at the end of each work shift by signing
10 an inventory slip in the presence of the succeeding magazine keeper. [The magazine keeper shall
11 personally supervise the unloading and loading of motor vehicles delivering explosives to the
12 magazine or removing explosives therefrom.]

13
14 **[3304.10] 5604.10 Disposal of explosives.** Explosives shall be disposed of in accordance with FC
15 [3304.10.1] 5604.10.1 through [3304.10.5] 5604.10.5.

16
17 **[3304.10.1] 5604.10.1 Notification.** The department shall be notified immediately when
18 explosives are determined to be deteriorated or leaking or otherwise unstable or in need of
19 disposal.

20
21 **[3304.10.2] 5604.10.2 Deteriorated explosives.** When an explosive has deteriorated to an
22 extent that it is in an unstable or dangerous condition, or when a liquid has leaked from an
23 explosive, the person in possession of such explosives shall immediately contact the
24 manufacturer to obtain handling and disposal instructions.

25
26 **[3304.10.3] 5604.10.3 Destruction of explosives.** Unused explosives may be destroyed at the
27 job site only when approved. When approved, such destruction of explosives shall be
28 conducted by a qualified person at an approved location under the supervision of department
29 representatives. It shall be unlawful to dispose of explosives by burning.

30
31 **[3304.10.4] 5604.10.4 Storage of misfires.** Explosives that fail to detonate during blasting
32 operations shall be handled in accordance with [FC3307.15] FC5607.18 and other approved
33 procedures until the blaster has determined the proper method for disposal in consultation with
34 the department.

35
36 **[3304.10.5] 5604.10.5 Unused high explosives.** High explosives in storage at a job site at the
37 completion of blasting operations, or which are not otherwise to be used at the job site, shall
38 be removed from the job site and transported to a vendor's facility. The vendor may store and
39 supply for use unopened cases of high explosives. The vendor may not supply open cases of
40 high explosives for use unless the explosives are packaged in an approved manner, and their
41 condition certified in writing in an approved manner by the magazine keeper previously
42 responsible for their storage.

43
44 **SECTION FC [3305] 5605**
45 **RESERVED**

46
47 **SECTION FC [3306] 5606**

1 **SMALL ARMS AMMUNITION, POWDER-ACTUATED TOOL LOADS, BLACK**
2 **POWDER AND SMOKELESS PROPELLANTS**
3

4 **[3306.1] 5606.1 General.** Indoor storage and display of small arms ammunition, powder-actuated
5 tool loads, black powder and smokeless propellants shall comply with the requirements of this
6 section and NFPA 495.
7

8 **[3306.2] 5606.2 Storage.** The storage and display of small arms ammunition and small arms
9 primers, black powder and smokeless propellants shall be as set forth in FC [3306.2.1] 5606.2.1
10 through [3306.7] 5606.8.

11 **[3306.2.1] 5606.2.1 Occupancy restrictions.** It shall be unlawful to store small arms
12 ammunition and small arms primers, powder-actuated tool loads, black powder and smokeless
13 propellants in any premises, building, structure or facility, except as authorized by this section.
14

15 **[3306.2.2] 5606.2.2 Quantity restrictions.** It shall be unlawful to store small arms ammunition
16 and small arms primers, powder-actuated tool loads, black powder or smokeless propellants in
17 quantities exceeding the following:
18

- 19 1. Three hundred thousand loaded shells containing shot for shotguns not exceeding No. 8
20 gauge;
- 21 2. One million cartridges for pistols and powder-actuated tool loads;
- 22 3. Five hundred thousand cartridges for rifles of a caliber not larger than 0.45 inch (11.4
23 mm);
- 24 4. Ten thousand cartridges for rifles of a caliber not larger than ½ inch (12.7 mm);
- 25 5. Five thousand cartridges for rifles of a caliber between ½ inch (12.7 mm) and 0.58 inch
26 (14.7 mm);
- 27 6. Five thousand blank cartridges of a caliber not larger than 0.45 inch (11.4 mm);
- 28 7. Three million primers for [central fire] centerfire ammunition;
- 29 8. Six million percussion caps, or primers, without anvils;
- 30 9. Fifty pounds (23 kg) aggregate of black powder or smokeless propellant;
- 31 10. Any storage in excess of the amounts authorized by permit.
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42

43 **[3306.2.3] 5606.2.3 Flammable and combustible liquid.** It shall be unlawful to store small
44 arms ammunition and small arms primers, black powder and smokeless propellant in any
45 premises, building or structure wherein flammable or combustible liquids, flammable solids,
46 oxidizing materials, or other flammable materials are manufactured, stored, handled or used.
47

1 [3306.2.4] **5606.2.4 Small arms ammunition and small arms primers.** It shall be unlawful
2 to store small arms ammunition and small arms primers with Division 1.1, Division 1.2 or
3 Division 1.3 explosives, unless approved.
4

5 [3306.3] **5606.3 Packaging and repackaging.** It shall be unlawful to package or repackage small
6 arms ammunition and small arms primers, powder-actuated tool loads, black powder and
7 smokeless propellants, except as approved by the department [commissioner].
8

9 [3306.4] **5606.4 Storage in Group R-3 occupancies.** Where small arms ammunition and small
10 arms primers are stored together in Group R-3 occupancies, it shall be unlawful to store a combined
11 quantity of more than 200, counting each round of ammunition and each primer separately.
12

13 [3306.5] **5606.5 Storage and display in Group M occupancies.** The storage and display of small
14 arms ammunition and small arms primers, powder-actuated tool loads, black powder and
15 smokeless propellants in Group M occupancies shall be in accordance with FC [3305.1] 5606.5.1
16 and [3306.5.2] 5606.5.2.
17

18 [3306.5.1] **5606.5.1 Display.** The display of small arms ammunition and small arms primers,
19 powder-actuated tool loads, black powder or smokeless propellants in Group M occupancies
20 shall comply with the requirements of FC [3306.5.1.1] 5606.5.1.1 through [3306.5.1.4]
21 5606.5.1.4
22

23 [3306.5.1.1] **5606.5.1.1 Smokeless propellant.** It shall be unlawful to display smokeless
24 propellant.
25

26 [3306.5.1.2] **5606.5.1.2 Black powder.** It shall be unlawful to display black powder.
27

28 [3306.5.1.3] **5606.5.1.3 Small arms ammunition and small arms primers.** Where small
29 arms ammunition and small arms primers are displayed together in areas accessible to the
30 public, a combined quantity of not more than 10,000 may be displayed, counting each
31 round of ammunition and each primer separately. Such ammunition and primers shall be
32 secured from direct access from the public.
33

34 [3306.5.1.4] **5606.5.1.4 Powder-actuated tool loads.** [A combined quantity of not] No
35 more than ten thousand powder-actuated tool loads may be displayed. Powder-actuated
36 tool loads shall be located in an area that is secured from direct access from the public,
37 such as by placement in a locked glass showcase or metal cabinet.
38

39 [3306.5.2] **5606.5.2 Storage.** The storage of small arms ammunition and small arms primers,
40 powder-actuated tool loads, black powder and smokeless propellant shall comply with the
41 requirements of FC [3306.5.2.1] 5606.5.2.1 through [3306.5.2.4] 5606.5.2.4.
42

43 [3306.5.2.1] **5606.5.2.1 Smokeless propellant.** It shall be unlawful to store smokeless
44 propellants in quantities exceeding 250 pounds (113 kg). Smokeless propellants in smaller
45 amounts may be stored only if approved. Such storage shall be as follows:
46

1. Smokeless propellant in quantities not exceeding 100 pounds (45 kg), shall be stored in a Type 2 or Type 4 magazine.
2. Smokeless propellant in quantities exceeding 100 pounds (45 kg), shall be stored in a Type 1 magazine.
3. Storage of any quantity indoors shall be in areas not accessible to the public.

[3306.5.2.2] 5606.5.2.2 Black powder. It shall be unlawful to store black powder in quantities exceeding 250 pounds (113 kg). Black powder may be stored in smaller amounts only if approved. Black powder in quantities less than 50 pounds (23 kg), when such storage is approved, shall be stored in a Type 2 or Type 4 indoor or outdoor magazine. Black powder in quantities of 50 pounds (23 kg) or greater, when such storage is approved, shall be stored in an outdoor Type 1 or Type 2 magazine. When black powder is stored with smokeless propellants in the same magazine, the total quantity shall not exceed that allowed for black powder.

[3306.5.2.3] 5606.5.2.3 Small arms ammunition and small arms primers. Small arms ammunition and small arms primers shall be stored as follows.

1. Reserved.
2. Where small arms ammunition and small arms primers are stored in a building, a combined quantity of not more than 100,000 may be stored, counting each round of ammunition and each primer separately. Such storage shall be in compliance with the following requirements.
 - 2.1. The storage shall be in areas not accessible to the public.
 - 2.2. Small arms ammunition and small arms primers shall be stored in nonportable storage cabinets having walls at least 1 inch (25 mm) nominal thickness.
 - 2.3. Shelves in cabinets shall have vertical separation of at least 2 feet (610 mm).
 - 2.4. Cabinets shall be located against a building exterior wall with not less than 40 feet (12 192 mm) between cabinets.
 - 2.5. The minimum required separation between cabinets may be reduced to 20 feet (6096 mm) provided that barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades shall be firmly attached to the wall, and shall be constructed of steel not less than 0.25 inch thick (6.4 mm), 2-inch (51-mm) nominal thickness wood, brick, or concrete block.

[3306.5.2.4] 5606.5.2.4 Powder-actuated tool loads. [A combined quantity of not] No more than 100,000 powder-actuated tool loads may be stored and displayed in a building.

1 Quantities in excess of those authorized for display as set forth in [FC3306.5.1.4]
2 FC5606.5.1.4 shall be stored in accordance with [FC3306.5.2.3] FC5606.5.2.3.

3
4 **[3306.6] 5606.6 Blanks for salute cannon.** Blank shells or cartridges may be stored for use in
5 salute cannons only as approved.

6
7 **[3306.7] 5606.7 Sprinkler protection.** Any building or structure in which small arms ammunition
8 and small arms primers, powder-actuated tool loads, black powder or smokeless propellant are
9 stored in quantities requiring a permit shall be protected throughout by a sprinkler system.

10
11 **5606.8 Powder-actuated tool loads at construction sites.** Small arms ammunition shall be stored,
12 handled and used for powder-actuated tool loads at a construction site, as follows:

13
14 1. The main store of powder-actuated tool loads shall be kept in an approved locked metal box.

15
16 2. The powder-actuated tool load storage box shall be kept away from heat and shall not be
17 stored in the same storage area or storage facility containing compressed gases or flammable
18 liquids.

19
20 3. The storage area or storage facility in which the locked metal powder-actuated tool load box
21 is stored shall bear a permanent sign bearing the words "DANGER-AMMUNITION" in
22 2-inch (51-mm) white letters on a red background.

23
24 4. Powder-actuated tools shall not be used in an explosive atmosphere.

25
26 5. The certificate of fitness holder shall establish a safe zone behind a work area in which
27 powder-actuated tools are to be used by evacuating the area or placing a barrier constructed
28 of ½ inch (12.7 mm) steel plate.

29
30 6. At least one portable fire extinguisher having a minimum 2-A rating shall be provided in the
31 area where powder-actuated tool loads are stored.

32
33 7. Storage of powder-actuated tool loads shall comply with the requirements of NFPA 495.
34 Storage shall be limited to not more than seven hundred fifty thousand powder-actuated tool
35 loads per premises unless larger quantities are authorized by the department.

36
37 **SECTION FC [3307] 5607**
38 **BLASTING OPERATIONS**

39
40 **[3307.1] 5607.1 General.** Blasting operations shall be conducted in accordance with this chapter,
41 including this section, and NFPA 495.

42
43 **[3307.1.1] 5607.1.1 Supervision.** The storage, handling and use of explosives at a job site shall
44 be supervised as set forth in [FC3301.5] FC5601.5.

45
46 **[3307.1.2] 5607.1.2 Blasting related-construction.** All construction work necessary and
47 appropriate to ensure a safe blasting operation, including shoring and underpinning of affected

1 buildings, structures and infrastructure, shall be performed in accordance with the Building
2 Code.

3
4 **[3307.1.3] 5607.1.3 Permits.** A permit issued pursuant to FC105.6 for the use of explosives
5 for blasting operations, including excavation and demolition work, shall be issued for a period
6 of up to 9 months. Such permit may be renewed for additional periods of up to 9 months,
7 provided that the owner and blasting contractor have complied with the requirements of this
8 chapter.

9
10 **[3307.2] 5607.1.4 Manufacturer's instructions and training.** Blasting operations shall be
11 performed in accordance with the instructions of the manufacturer of the explosives being
12 used. Prior to conducting a blasting operation using explosives with which the blasting crew is
13 unfamiliar, the blasting contractor shall ensure that the manufacturer of such explosives
14 conducts an on-site training session for such crew. A record of attendance shall be kept of such
15 training session and upon completion, the manufacturer and the blasting contractor shall certify
16 that the blasting crew is qualified to use the explosives.

17
18 **5607.2. Permit applications.** Application for a permit for use of explosives for blasting operations
19 shall be made by submission of a pre-blasting survey, blasting plan, monitoring plan, and site
20 security plan. The owner and/or its general contractor or blasting contractor shall retain the services
21 of a professional engineer, licensed to practice in New York State, to conduct a pre-blasting survey
22 and prepare a blasting plan in accordance with FC 5607.2.1 and 5607.2.2, and a blast monitoring
23 specialist holding a certificate of fitness for such purpose to prepare a monitoring plan in
24 accordance with FC5607.2.3.

25
26 **5607.2.1 Pre-blasting survey.** Prior to commencement of blasting operations, a professional
27 engineer shall conduct a structural survey of all buildings, structures, and infrastructure,
28 including all landmarks and monuments, within 100 feet (30 480 mm) of the property line of
29 the job site. The pre-blasting survey shall include the names and contact information of owner
30 representatives of all affected buildings, occupancies and infrastructure.

31
32 **5607.2.1.1 Assessment of existing conditions.** The pre-blasting survey shall assess and
33 document the existing conditions of the interior and exterior of affected buildings,
34 structures and infrastructure, provided that if, after reasonable good faith efforts, access to
35 the interior of a building, structure or infrastructure cannot be obtained, it shall be sufficient
36 that such survey assess and document the condition of the exterior of such building,
37 structure or infrastructure. The pre-blasting survey report shall include photographs and/or
38 videos, documenting any pre-existing conditions that may be exacerbated by blasting
39 operations, including cracks and structural defects, and their location, length, size,
40 thickness, and type. The report shall also specify the type of structural system of each
41 affected building in a sufficient manner to allow the professional engineer to recommend
42 the appropriate vibration limits, subject to department approval, not to exceed the limits set
43 forth in FC5607.19.1. The professional engineer shall also specify whether use of the
44 global strain method in accordance with FC5607.19.1 is recommended for each affected
45 building. Where the professional engineer determines that a building has potentially unsafe
46 conditions or conditions that might become potentially unsafe as a result of blasting
47 operations, blasting operations shall not proceed before mitigation procedures are

1 performed in accordance with FC5607.9.6 and as may be otherwise required by the
2 department.

3
4 **5607.2.1.2 Updating of pre-blasting survey.** If application is made for renewal of the
5 permit for excavation or demolition blasting at a job site, the owner or the owner's blasting
6 contractor shall cause any pre-blasting survey to be updated as necessary to address any
7 change in conditions in the area to be surveyed.

8
9 **5607.2.2 Blasting plan.** Applications for a permit for use of explosives for blasting operations
10 shall include a blasting plan. The blasting plan shall be prepared by a qualified engineer or
11 blaster as set forth in the rules. The blasting plan shall take into account soil (and rock) type
12 and conditions and be designed to meet the vibration limits imposed by this section and the
13 approved monitoring plan. The blasting plan shall include the following information and
14 documentation and such other information and documentation as the department may require:

15
16 1. The nature of the blasting operation: aboveground excavation, tunneling or other
17 underground excavation, underwater blasting, demolition operation, or other blasting
18 operation.

19
20 2. The types of explosives to be used, quantities, charge weight per initiation, blast
21 sequence and pattern, and number, depth and diameter of drill holes.

22
23 3. For demolition operations:

24
25 3.1. Engineering drawings showing the height and elevation of the building or structure
26 to be demolished;

27
28 3.2. An engineering analysis of the building or other structure and the techniques that
29 will be used to cause it to implode or otherwise collapse.

30
31 3.3. An engineering analysis of the impact of the collapse of the building, including
32 ground vibration and air overpressure impacts on surrounding buildings, structures
33 and infrastructure.

34
35 3.4. Floor plans and structural details showing the exact locations at which explosive
36 charges will be placed, structural elements cut and/or other measures taken to cause
37 the structure to implode or otherwise collapse in accordance with the engineering
38 analysis.

39
40 4. The location and dimensions of the proposed blast area and other safety zones to be
41 maintained during blasting operations, including clearance to the surrounding buildings,
42 structures and infrastructure.

43
44 5. Where blasting may disrupt underlying soil or rock conditions, the blasting plan shall
45 specify the manner in which such consequences will be prevented or mitigated.
46

1 6. The applicable ground vibration limits, in accordance with FC5607.19.1, for every
2 structure in the blast area.

3
4 7. For fragile buildings or those having fragile elements potentially endangering the public,
5 limits less than those established in FC Table 5607.19.1 shall be proposed for review and
6 approval by the department.

7
8 8. Copies of all other applicable permits and approvals.
9

10 **5607.2.3 Monitoring plan and vibration limits.** A monitoring plan shall be prepared and
11 submitted for department review and approval setting forth the manner in which blast impacts
12 (ground vibrations and air overpressure) upon buildings, structures, and infrastructure will be
13 monitored. The monitoring plan shall be based upon the blasting plan and the pre-blasting
14 survey, including the findings of the engineer who conducted the survey of structural
15 conditions. The monitoring plan shall include the following information and documentation
16 and such other information and documentation as the department may require:

17
18 1. The location and elevation of vertical control points on such buildings, structures and
19 infrastructure, and shall set forth the type and location of any monitoring devices to be
20 used, including tell-tales. The department may require monitoring of water shock when
21 submarine (underwater) blasting is conducted.

22
23 2. Notification procedures to be undertaken if and when limits for ground vibration and/or
24 air overpressure are exceeded, including notifications required by FC5607.19.4.1.

25
26 3. Actions to be taken in response to limits for ground vibration and/or air overpressure
27 being exceeded, including building inspection procedures, staffing, and use of the global
28 strain method.

29
30 4. Preparation and submission to the Department of Buildings such documentation as that
31 agency may require with respect to the continuing structural stability of affected
32 buildings and any actions that may need to be taken to protect public safety.
33

34 **5607.3 Site survey meetings.** When directed by the department, one or more site survey meetings
35 shall be conducted at the job site, as site conditions require, for the purpose of reviewing the
36 measures that the blasting contractor will be required to undertake to safeguard affected buildings,
37 structures and infrastructure. Such site survey meetings shall be attended by representatives of the
38 department, general contractor and blasting contractor and the blast monitoring specialist. The
39 department may require that the owner make all necessary notifications.
40

41 **5607.4 Notice of blasting application.** In consultation with the department, and prior to the
42 issuance of any permit for blasting operations, the owner or the owner's blasting contractor shall
43 provide written notice of the filing of the blasting permit application to the council member and
44 community board for the district or districts within which the job site and property within 100 feet
45 (30 480 mm) thereof is located. Such notice shall include the date and location of the multi-party
46 coordination meeting required by FC5607.5, which shall be scheduled not less than 21 calendar
47 days from the date of delivery or mailing of such notice. The owner or the owner's blasting

1 contractor shall also deliver or mail such notice to such federal, state and city officials and agencies
2 and other affected stakeholders as may be invited to participate in the multi-party coordination
3 meeting. Proof of delivery or mailing of such notice shall be filed with the department.
4

5 **5607.5 Multi-party coordination meeting.** A multi-party coordination meeting shall be
6 conducted for the purpose of reviewing the proposed blasting operations and the measures that the
7 blasting contractor will be required to undertake to safeguard affected buildings, structures and
8 infrastructure. The owner or the owner’s blasting contractor shall invite the participation of owners
9 of affected buildings, structures and infrastructure as determined by the department to be
10 appropriate, and shall in addition notify the Department of Buildings of the meeting. The
11 department may also request the participation of other federal, state and city officials and agencies,
12 including the New York City Department of Emergency Management, Department of
13 Environmental Protection, Metropolitan Transportation Authority, United States Coast Guard and
14 United States Army Corps of Engineers, as appropriate.
15

16 **5607.5.1 Supporting documentation.** Prior to the multi-party coordination meeting, the
17 owner or the owner’s blasting contractor shall prepare and submit to the Department of
18 Buildings such documentation as that agency may require.
19

20 **5607.5.2 Utility coordination and notification.** Public utilities and other owners of electrical,
21 natural gas, water and other utility infrastructure shall provide information to the department
22 and the blasting contractor, including the location, depth, size, construction, condition and age
23 of such infrastructure, including location of isolation valves, and any other information that
24 the department may require to determine the measures that the blasting contractor will be
25 required to undertake to safeguard such infrastructure during blasting operations. Such
26 information shall be provided to the department upon request prior to approval of blasting
27 operations and be readily available for the duration of blasting operations.
28

29 **5607.5.3 Minimizing impact of blasting operations on surrounding buildings.** The blasting
30 contractor shall conduct blasting operations in a manner that minimizes its impact on
31 surrounding buildings and protects public safety. Good faith measures, such as scheduling
32 blasting at those times when students in affected schools are not arriving, departing or outdoors
33 and when services are not being held at houses of worship, shall be taken, especially in
34 congested areas. Appropriate procedures for such coordination shall be established at the
35 multi-party coordination meeting.
36

37 **5607.6 Final review and approval of permit application.** After the multi-party coordination
38 meeting, the owner and/or its general contractor or blasting contractor shall submit to the
39 department for review and approval such additional information and documentation as may be
40 necessary to complete the permit application. Thereafter, the department may conduct one or more
41 additional site survey meetings to confirm the adequacy of the blasting, blast monitoring and
42 security plans and/or identify additional measures needed to assure safe blasting operations, such
43 that the department can approve the application.
44

45 **5607.7 Notice of the commencement of blasting operations.** Not less than 2 calendar days nor
46 more than 5 calendar days prior to the commencement of blasting operations, the owner or the
47 owner’s blasting contractor shall provide written notice of same to each council member and

1 community board whose respective districts include the job site or property within 100 feet
2 (30 480 mm) thereof, and the local fire company. Such notice shall contain the anticipated dates
3 of issuance and expiration of the blasting permit, the dates on which blasting operations are
4 anticipated to take place, and the telephone numbers for the blasting contractor and the department
5 to which complaints and inquiries about the blasting operations may be made. The owner or the
6 owner's blasting contractor shall in addition forward a copy of the written notice to the owners of
7 all buildings within 100 feet (30 480 mm) of the job site. Owners of such buildings shall post such
8 notice at a conspicuous location within each such building in a manner prescribed by the
9 department to ensure adequate visibility. If blasting operations continue for a period of more than
10 1 month, additional notice shall be given to owners of such buildings and posted by such owners
11 on a monthly basis for any month in which blasting operations are to be conducted.

12
13 **5607.8 Permit issuance.** When it is satisfied that the owners and/or its general contractor and
14 blasting contractor have met all requirements for blasting operations, the department may issue a
15 permit for blasting operations. The permit may be issued on the day blasting is scheduled to
16 commence.

17
18 **[3307.3] 5607.9 Blasting safety.** Blasting operations shall be conducted in accordance with FC
19 [3307.3.1] 5607.9.1 through [3307.3.4] 5607.9.11.

20
21 **5607.9.1 Designation of blast area and blast site.** The department shall approve the size of
22 the blast area, which shall be not less than 500 feet (152 400 mm) in diameter, and the size of
23 blast site, which shall be a minimum of 50 feet (15 240 mm) in all directions from the perimeter
24 of the area in which explosives are being or have been loaded, including all holes loaded or to
25 be loaded for the same blast.

26
27 **[3307.3.1] 5607.9.2 Safety precautions.** The following safety precautions and procedures
28 shall be observed at a blast site:

- 29
30 1. Only explosives approved by the commissioner may be used for blasting operations.
31 Ammonium nitrate shall not be used as a blasting agent, except when approved for a
32 specific blasting operation.
33
34 2. The quantity of explosives used in a blast shall be no more than necessary to accomplish
35 the task and shall be approved by the department.
36
37 3. Blasting and job site personnel shall not fight fires in close proximity to explosives. All
38 persons shall be removed to a safe area, the area affected by the fire shall be secured from
39 entry, and the department shall be notified immediately.
40
41 4. Primers shall be made only at the blast site, as needed. They shall be kept separate from
42 all other explosives at all times until placed into the boreholes.
43
44 5. Loading operations shall not take place on a cut or heading within 25 feet (7620 mm) of
45 drilling or mucking operations.
46
47 6. When tunnel blasting is to be performed:

- 1
2 6.1. Advance or probe drilling shall be used to determine the nature of face ahead. Face
3 shall be removed by the blaster using the smallest quantity of explosive necessary
4 to achieve the desired blast.
5
6 6.2. Only the blasters, assistant blasters and loaders may transport explosives from the
7 magazine to the blast site.
8
9 6.3. When blasting under compressed air is to be performed, detonators and high
10 explosives shall be taken separately through the air lock with no other equipment
11 to the pressure working chamber and immediately loaded. Unused explosives shall
12 be returned to magazines before engaging the blasting circuit.
13
14 6.4. Before firing an underground blast, the blaster shall have guards posted to all
15 entrances to the danger zone, including any drift, raise, or other opening that may
16 be expected to hole through.
17
18 6.5. Only high explosives of Fume Class 1 shall be used in shaft, tunnel or under
19 decking blasting operations.
20
21 7. When demolition blasting is to be performed, the building to be demolished, as well as
22 adjacent buildings within the blast area, shall be searched just prior to the blast to ensure
23 that they are unoccupied.
24
25 8. When submarine (underwater) blasting is to be performed:
26
27 8.1. The drill boat shall be moored outside of navigation channels at night, equipped
28 with a hose reel line capable of reaching any point on the deck for protection against
29 fires, and durable "NO SMOKING" signs in compliance with the requirements of
30 FC310 shall be conspicuously posted at approved locations on the boat. A red flag
31 shall be flown during the day and approved United States Coast Guard warning
32 lights shall be lit at night to indicate explosives storage aboard the drill boat.
33
34 8.2. Warning buoys shall be positioned to indicate areas blasting operations are being
35 conducted.
36
37 8.3. Blasting operations shall cease while any marine traffic or divers are within a
38 1,500 ft. (457 200 mm) radius of the drill boat.
39
40 9. Prior to the commencement of excavation blasting at a job site, and at such other time
41 as the department may require, the blaster shall review with a department representative
42 the blasting patterns to be utilized in connection with such blasting operations.
43

44 **5607.9.3 Blasting operations near or adjacent to natural gas utility infrastructure. For**
45 **blasting operations near or adjacent to a natural gas utility infrastructure, the utility company**
46 **may require access to the job site so that a leak survey may be conducted prior and subsequent**

1 to blasting operations. The blasting contractor shall provide the utility company access to the
2 job site for such purpose.

3
4 **5607.9.4 Demolition blasting.** For demolition blasting, the blasting contractor shall coordinate
5 with and provide access to the utility company to disconnect all power lines within 100 feet
6 (30 480 mm) of the structure to be demolished, and sever physically from the main street lines,
7 and cap as close to the main as possible, all services extending into the structure. Blasting shall
8 not be conducted unless existing utility service street lines are cut and capped.

9
10 **5607.9.5 Submarine (underwater) blasting.** For submarine (underwater) blasting, the utility
11 companies shall provide the department and blasting contractor with the locations of any and
12 all underwater infrastructure within 1 mile (1.6 km) of the blast site.

13
14 **[3307.3.2] 5607.9.6 Blasting in congested areas.** When blasting is conducted in a congested
15 area or in close proximity to buildings, structures or infrastructure that may be [damaged]
16 subjected to blast-induced ground vibrations or air overpressure, or whose use and occupancy
17 may otherwise be seriously affected by blasting operations, the blaster shall schedule the
18 timing of each blast and take appropriate precautions in its loading, confinement and initiation,
19 so as to minimize the effect of the blast upon surrounding uses and occupancies, as set forth in
20 FC5607.5.3, and to control the ground vibrations and [airblast] air overpressure effects.
21 Shoring or other means approved by the commissioner of buildings shall be used to reinforce
22 buildings, retaining walls and other structures and infrastructure that are susceptible to damage
23 from vibration and [airblast] air overpressure effects, and weak rock shall be manually
24 removed by gads, picks or crowbars, without the use of explosives. When blasting is
25 unavoidable in the vicinity of such buildings, structures and infrastructure, only light face
26 blasts with short lines of resistance and small charges shall be used.

27
28 **[3307.3.3] 5607.9.7 Weather conditions.** The blasting contractor shall monitor weather
29 conditions to alert the blaster at the job site of approaching electrical storms. The commissioner
30 may require that the blasting contractor use an approved device for such purpose.

31
32 **[3307.3.3.1] 5607.9.7.1 Electrical storms.** During an electrical storm, the handling and
33 use of explosives, including loading, shall cease and the following procedures shall be
34 observed:

- 35
36 1. All unused explosives at the blast site shall be immediately returned to their proper
37 magazines.
38
39 2. Electrical blasting cap leg wires and lead lines shall be shunted.
40
41 3. The danger zone shall be cleared of all persons until the storm has passed.
42

43 **[3307.3.4] 5607.9.8 Unsafe conditions and complaints.** The blasting contractor shall
44 immediately suspend blasting operations and immediately notify the department should any
45 condition arise from blasting operations that involves the structural integrity of a building,
46 structure or infrastructure or that otherwise threatens the safety of the general public. The
47 blasting contractor shall also immediately notify the Department of Buildings of any condition

1 that involves the structural integrity of a building, structure or infrastructure. Blasting
2 operations shall not resume until authorized by the department. The blasting contractor shall
3 notify the department [within 24 hours] of all other complaints on the day which they are
4 received, including complaints of noise and minor damage.

5
6 **[3307.4] 5607.9.9 Hours of operation.** Blasting operations shall be conducted [between the
7 hours of] within the confines of sunrise to sunset, but in any event no earlier than 7:00 am
8 (0700 hours) and no later than 7:00 pm (1900 hours), Monday through Saturday. The written
9 authorization of the [commissioner] department shall be required in order to conduct blasting
10 operations at any other times, or on Sunday, and may be granted or revoked by the
11 [commissioner] department in the interest of public safety.

12
13 **[3307.5 Notifications and permit survey meeting.** Prior to the issuance of any permit for the use
14 of explosives for blasting operations, a permit survey meeting shall be arranged by the owner or
15 the owner's blasting contractor and conducted at the job site at which blasting operations are to
16 occur, for the purpose of reviewing the measures that the blasting contractor will be required to
17 undertake to safeguard affected buildings, structures and infrastructure. Such permit survey
18 meeting shall be attended by representatives of the department, general contractor and blasting
19 contractor. The owner or the owner's blasting contractor shall invite the participation of owners of
20 affected buildings, structures and infrastructure as determined by the department to be appropriate,
21 and shall in addition notify the Department of Buildings of the meeting. The commissioner may
22 also require notification of and coordination with other federal, state and city officials and
23 agencies, including the Department of Environmental Protection, Office of Emergency
24 Management, Metropolitan Transportation Authority, United States Coast Guard and United
25 States Army Corps of Engineers, as appropriate.

26
27 **3307.5.1 Utility coordination and notification.** Owners of electrical, natural gas, water and
28 other utility infrastructure shall provide information to the department and the blasting
29 contractor, including the location, depth, size, construction, condition and age of such
30 infrastructure, including location of isolation valves, and any other information that the
31 department may require to determine the measures that the blasting contractor will be required
32 to undertake to safeguard such infrastructure during blasting operations. Such information shall
33 be readily available for the duration of blasting operations.

34
35 **3307.5.1.1 Blasting operations near or adjacent to natural gas utility infrastructure.**

36 For blasting operations near or adjacent to a natural gas utility infrastructure, the utility
37 company may require access to the job site so that a leak survey may be conducted prior
38 and subsequent to blasting operations. The blasting contractor shall provide the utility
39 company with access to the job site for such purpose.

40
41 **3307.5.1.2 Demolition blasting.** For demolition blasting, the blasting contractor shall
42 coordinate with and provide access to the utility company to disconnect all power lines
43 within 100 feet (30 480 mm) of the structure to be demolished, and sever physically from
44 the main street lines, and cap as close to the main as possible, all services extending into
45 the structure. Blasting shall not be conducted unless existing utility service street lines are
46 cut and capped.

1 **3307.5.1.3 Submarine (underwater) blasting.** For submarine (underwater) blasting, the
2 utility companies shall provide the department and blasting contractor with the locations
3 of any and all underwater infrastructure within 1 mile (1.6 km) of the blast site.
4

5 **3307.5.2 Affected uses and occupancies coordination and notification.** The blasting
6 contractor shall conduct blasting operations in a manner that minimizes the impact of such
7 blasting operation on public safety. Good faith measures shall be made to schedule blasting at
8 those times when students in affected schools are not arriving, departing or outdoors, and when
9 services are not being held at houses of worship, and to otherwise coordinate the timing of
10 blasting operations to minimize the impact on affected uses and occupancies. Appropriate
11 procedures for coordination and notification shall be established at the permit survey meeting.
12

13 **3307.5.3 Notice of permit issuance.** Within 5 calendar days of issuance of a permit for the
14 use of explosives for demolition or excavation work, the owner or the owner's blasting
15 contractor shall provide written notice to each council member and community board whose
16 respective district includes the job site or property within 100 feet (30 480 mm) thereof, and
17 the local fire company. Such notice shall contain the effective and expiration dates of the
18 permit. Proof of the delivery or mailing of such notice shall be filed with the department.
19

20 **3307.5.4 Notice of the commencement of blasting operations.** Not less than 2 calendar days
21 nor more than 5 calendar days prior to the commencement of blasting operations, the owner or
22 the owner's blasting contractor shall provide written notice of same to each council member
23 and community board whose respective districts include the job site or property within 100
24 feet (30 480 mm) thereof, and the local fire company. Such notice shall contain the date or
25 dates on which blasting operations are anticipated to take place and telephone numbers for the
26 blasting contractor and the department to which complaints and inquiries about the blasting
27 operations may be made. The owner or the owner's blasting contractor shall in addition
28 forward a copy of the written notice to the owners of all buildings within 100 feet (30 480 mm)
29 of the job site. Owners of such buildings shall post such notice at a conspicuous location within
30 each such building in a manner prescribed by the department to ensure adequate visibility. If
31 blasting operations continue for a period of more than 1 month, additional notice shall be given
32 to owners of such buildings and posted by such owners on a monthly basis for any month in
33 which blasting operations are to be conducted.
34

35 **3307.5.5] 5607.9.10 Fire company [notification] access and inspection.** [The blasting
36 contractor shall provide advance notification of blasting operations to the fire company in
37 whose administrative district the job site is located.] Except where overnight storage of
38 explosives is approved and except as may be approved for underground job sites, [after the
39 final blast has been fired for the day,] the blasting contractor shall arrange [with such] an
40 inspection by the fire company [for an inspection of] in whose administrative district the job
41 site [to confirm removal of] explosives [as required by this chapter] is located, to be conducted
42 after the final blast of the day is fired, for the purpose of verifying that have been removed
43 from the job site. During each such inspection, the blasting contractor shall open and latch back
44 each empty magazine door and verify that the magazine doors or other openings are oriented
45 toward the job site entrance.
46

1 **[3307.5.6] 5607.9.11 Demolition projects notification.** If a demolition project is in proximity
2 to blasting operations, the blasting contractor shall advise the demolition contractor of the
3 blasting contractor's warning signals.
4

5 **[3307.6] 5607.10 Detonator safety.** Detonators shall be stored, handled and used in accordance
6 with FC [3307.6.1] 5607.10.1 through [3307.6.3] 5607.10.3.
7

8 **[3307.6.1] 5607.10.1 Prohibited detonators.** It shall be unlawful to fire explosives by means
9 of a timer or a slow burning or safety fuse.
10

11 **[3307.6.2] 5607.10.2 Approved detonators.** Only approved electric and nonelectric
12 detonators shall be used.
13

14 **[3307.6.3] 5607.10.3 Safety precautions.** Detonators shall be stored, handled and used in
15 accordance with the following safety precautions:
16

- 17 1. Detonators used in a single blast shall be of the same manufacture, style and function to
18 ensure compatibility.
19
- 20 2. Signs reading "DANGER—BLASTING AREA—NO RADIO TRANSMITTING"
21 shall be conspicuously posted on the street side of the job site or on the drill boat.
22
- 23 3. Prior to loading explosives, the blast site shall be tested for any stray currents. Such
24 currents shall be eliminated before loading explosives.
25
- 26 4. Care shall be taken in the selection of the blasting circuit and an adequate energy source
27 for initiation, and in making electrical connections. Circuits shall be tested to ensure the
28 current is 50 mA or less, and only with a blaster's galvanometer or blaster's multimeter.
29
- 30 5. Detonators shall be shunted or short circuited until wired into the blasting circuit. The
31 lead line shall also be shunted, unless testing the blasting circuit or preparing to fire.
32
- 33 6. Precautions shall be taken to prevent accidental discharge of electric detonators from
34 currents induced by radar and radio station transmitters, adjacent power lines,
35 substations, third rails, dust, lightening and snowstorms, or other stray electrical currents.
36
- 37 7. No radio transmission with any handie-talkies, CB radios, cell phones or other devices
38 shall be allowed within 100 feet (30 480 mm) of electric detonators.
39
- 40 8. For tunnel blasting, only an approved type of loading light shall be used. All regular
41 light and power circuits shall be disconnected and removed to a location at least 100 feet
42 (30 480 mm) from where explosives are being loaded. The only circuit allowed within
43 100 feet (30 480 mm) of the blast site shall be the one being used to fire the charges.
44
- 45 9. Detonators and explosives shall not be transported together on the job site, except in
46 magazine cars and carry boxes in which the detonators and explosives are kept in separate
47 approved containers or compartments.

1
2 10. During compressed air operations, all metal pipes, rails, air-locks and steel tunnel-
3 lining shall be electrically bonded and grounded at or near the portal or shaft, and shall
4 be cross-bonded at 1,000 feet (304 800 mm) intervals throughout the length of the
5 tunnel. In addition, each low air supply pipe shall be grounded at its delivery point.
6

7 [3307.7 Reserved.]
8

9 [3307.8] **5607.11 Security.** Security shall be maintained at the job site in accordance with the site
10 security plan pursuant to FC5607.2.4. The blasting crew shall be trained in the safe storage,
11 handling and use of explosives. During the time that holes are being loaded or are loaded with
12 explosives, blasting agents or detonators, only authorized persons engaged in drilling and loading
13 operations and department representatives shall be allowed at the blast site. The blaster may
14 authorize other persons to enter the blast site but such persons shall remain under the personal
15 supervision of the blaster at all times. When necessary to ensure that the [danger zone] blast area
16 is and remains clear, the blaster shall post blasting contractor personnel with red flags at the
17 perimeter of the [danger zone] blast area to prevent pedestrians and traffic from entering. The job
18 site shall be barricaded, and the assistance of law enforcement personnel requested, as necessary,
19 to ensure compliance with these requirements. Job site security shall be maintained until the post-
20 blast procedures have been completed.
21

22 [3307.9] **5607.12 Drill holes.** Holes drilled for the loading of explosive charges shall be of a
23 diameter sufficient to insert explosives to the bottom of the borehole without forcing or ramming.
24 The following drilling precautions shall be observed:
25

- 26 1. Only poles made of wood or plastic that have no metal parts shall be used for loading or
27 tamping explosives.
28
- 29 2. Explosives shall be set in place or pressed in place by steady, even pressure with the tamping
30 pole, avoiding forceful blows.
31

32 [3307.9.1] **5607.12.1 Protective covering.** Blasting mats or other approved protective
33 measures shall be used to prevent the ejection of projectiles in accordance with FC [3307.9.1.1]
34 5607.12.1.1 through [3307.9.1.4] 5607.12.1.4.
35

36 [3307.9.1.1] **5607.12.1.1 Open cut and under-decking blasting.** Before firing explosives,
37 blasting mats or other approved protective measures, made of woven matting rope, rubber
38 tire, steel cable or other approved material, shall be placed as necessary to prevent the
39 ejection of projectiles. The type, amount and manner of application of the protective
40 covering is subject to approval.
41

42 [3307.9.1.2] **5607.12.1.2 Tunnel blasting.** Blasting mats or other approved protective
43 measures may not be required when the heading to be blasted is situated more than 100
44 feet (30 480 mm) from the mouth or opening of a tunnel and is at least 10 feet (3048 mm)
45 below the outer surface of the surrounding rock.
46

1 [3307.9.1.3] **5607.12.1.3 Shaft blasting.** When shaft blasting, approved shaft covers shall
2 be used.

3
4 [3307.9.1.4] **5607.12.1.4 Demolition blasting.** The [commissioner] department may waive
5 the requirements of blasting mats or other approved covering in connection with demolition
6 blasting upon a determination that the use of such mats would not provide protection from
7 the blast. The blasting contractor shall take precautions to protect subsurface infrastructure
8 from blast damage, including protecting manholes, transformers and sewer grades or
9 covers with metal plates, timber and/or soil. The blasting contractor shall take such other
10 precautions as the [commissioner] department may prescribe in the interest of public safety.

11
12 [3307.10] **5607.13 Removal of excess explosives.** After loading for a blast is completed and before
13 firing, excess explosives shall be removed from the area and returned to the proper storage
14 facilities.

15
16 [3307.11] **5607.14 Initiation.** The initiation of blasts shall be by means conforming to the
17 provisions of NFPA 495.

18
19 [3307.12] **5607.15 Connections.** The blaster shall supervise the connecting of the blastholes and
20 the connection of the lead line to the power source or initiation point. Connections shall be made
21 progressively from the blasthole back to the initiation point. Blasting machines and all other
22 equipment used to fire blasts shall be under the personal supervision of the blaster. Blasting lead
23 lines shall remain shunted or short circuited and shall not be connected to the blasting machine or
24 other source of current until the blast is to be fired.

25
26 [3307.13] **5607.16 Firing control.** No blast shall be fired until the blaster has made certain that all
27 excess explosives are in a safe location in accordance with [FC3307.10] FC5607.13, all persons
28 and equipment are at a safe distance or under sufficient cover, and that an adequate warning signal
29 has been given. The blaster shall be the last person to leave the [danger zone] blast area. The blaster
30 shall fire each shot or designate the [assistant] apprentice blaster to do so, provided the [assistant]
31 apprentice blaster is in a direct line of sight of the blaster and awaits the firing signal which only
32 the blaster shall give.

33
34 [3307.13.1] **5607.16.1 Blast warning signal system.** A shot shall be fired as soon as possible
35 after loading is complete. An audible warning signal made by an air whistle, air horn or other
36 similar device shall sound before each shot is fired. All personnel working in or near the blast
37 area shall be familiar with the warning signal system. Signs describing the warning signal
38 system shall be posted at conspicuous locations at the job site, as approved by the department.
39 The following audible warning signal system shall be used:

- 40
41 1. One long signal—Preparing to blast, (clear the blast area [and danger zone]).
42
43 2. Two short signals—Ready to blast, (after the blaster checks that the blast area [and
44 danger zone are] is clear).
45
46 3. Three short signals—All clear, (after the blaster completes post-blast procedures).
47

1 **[3307.14] 5607.17 Post-blasting procedures.** After the blast, the following procedures shall be
2 observed:

- 3
- 4 1. Immediately after the blast has been fired, the firing line on electrically initiated shots shall
5 be disconnected from the blasting machine. No person shall return to the blast area until
6 allowed to do so by the blaster.
7
- 8 2. The blaster shall allow 20 minutes time for smoke and fumes to dissipate and for dust to
9 settle before returning to or approaching the blast area.
10
- 11 3. The blaster shall inspect the entire blast area for misfires before allowing other personnel to
12 return to the blast area. No mucking or drilling operations shall take place until all misfires
13 are rendered safe in accordance with [FC3307.15] FC5607.18. Once mucking commences,
14 the blasting crew shall continuously check for undetonated cartridges, wrappers, caps and
15 cap wires, which shall be removed from the muck pile prior to haulage to rock dumps, and
16 handled in accordance with [FC3304.10] FC5604.10.
17
- 18 4. In demolition blasting, the muck pile shall be wetted down and the blasting crew shall make
19 a second search for undetonated explosives as set forth in [FC3307.14(3)] FC5607.17(3).
20 The blasting contractor shall restore adjacent buildings and structures to their pre-existing
21 condition by removing all dust, dirt and debris caused by blasting operations.
22
- 23 5. If blast impacts exceed the permissible limits in FC5607.19.1, as determined by the blast
24 monitoring specialist, blasting shall cease immediately and the blaster and/or other trained
25 and knowledgeable representatives of the blasting contractor shall immediately investigate
26 whether there is any damage to the affected buildings or structures.
27

28 **[3307.15] 5607.18 Misfires.** Where a misfire is suspected, all initiating circuits shall be traced and
29 a search made for unexploded charges. Where a misfire is found, the blaster shall immediately
30 implement safeguards in compliance with the following requirements:

- 31
- 32 1. Cordon off and otherwise secure the blast area from entry.
33
- 34 2. Report the misfire to the department in accordance with FC5603.5.
35
- 36 3. No other work shall be performed except that necessary to remove the hazard of the misfire.
37
- 38 4. No attempt shall be made to extract explosives from any charged or misfired hole; a new
39 primer shall be loaded and the hole reblasted, if such action does not present a hazard. If
40 refiring of the misfired hole presents a hazard, the explosives may be removed by washing
41 out with water or blown out with air.
42
- 43 5. No drilling, digging, or picking shall be allowed until all missed holes have been detonated
44 or the blaster determines that work can proceed, but no drilling shall be conducted into a
45 previously fired hole.
46

1 6. All misfires and the disposition of explosives involved shall be recorded on forms prescribed
2 by the commissioner.
3

4 **[3307.16 Pre-blasting survey, post-blasting survey and blasting plan.** The owner or the owner's
5 blasting contractor shall retain the services of a professional engineer, licensed to practice in New
6 York State, to conduct a pre-blasting survey and, where applicable, to prepare a blasting plan, and
7 conduct a post-blasting survey, as set forth in FC 3307.16.1 through 3307.16.3.
8

9 **3307.16.1 Pre-blasting survey.** Prior to commencement of blasting operations, such
10 professional engineer shall conduct a structural survey of all buildings, structures, and
11 infrastructure, including all landmarks and monuments, within 100 feet (30 480 mm) of the
12 property line of the job site. The pre-blasting survey shall determine and document the existing
13 structural condition of the interior and exterior of such buildings, structures and infrastructure,
14 provided that if, after reasonable good faith efforts, access to the interior of a building, structure
15 or infrastructure cannot be gained, it shall be sufficient that such survey determine and
16 document the condition of the exterior of such building, structure or infrastructure. The report
17 of such pre-blasting survey shall include photographs and/or videotapes, documenting any pre-
18 existing conditions that may be exacerbated by blasting operations, including cracks and
19 structural defects, and their location, length, size, thickness, and type. Where demolition
20 blasting is to be conducted, the pre-blasting survey report shall identify the location and
21 elevation of vertical control points on such buildings, structures and infrastructure, and shall
22 set forth the type and location of any monitoring devices to be used, including tell-tales. If
23 application is made for renewal of the permit for excavation or demolition blasting at a job
24 site, the owner or the owner's blasting contractor shall cause any pre-blasting survey to be
25 updated as necessary to address any change in conditions in the area to be surveyed.
26

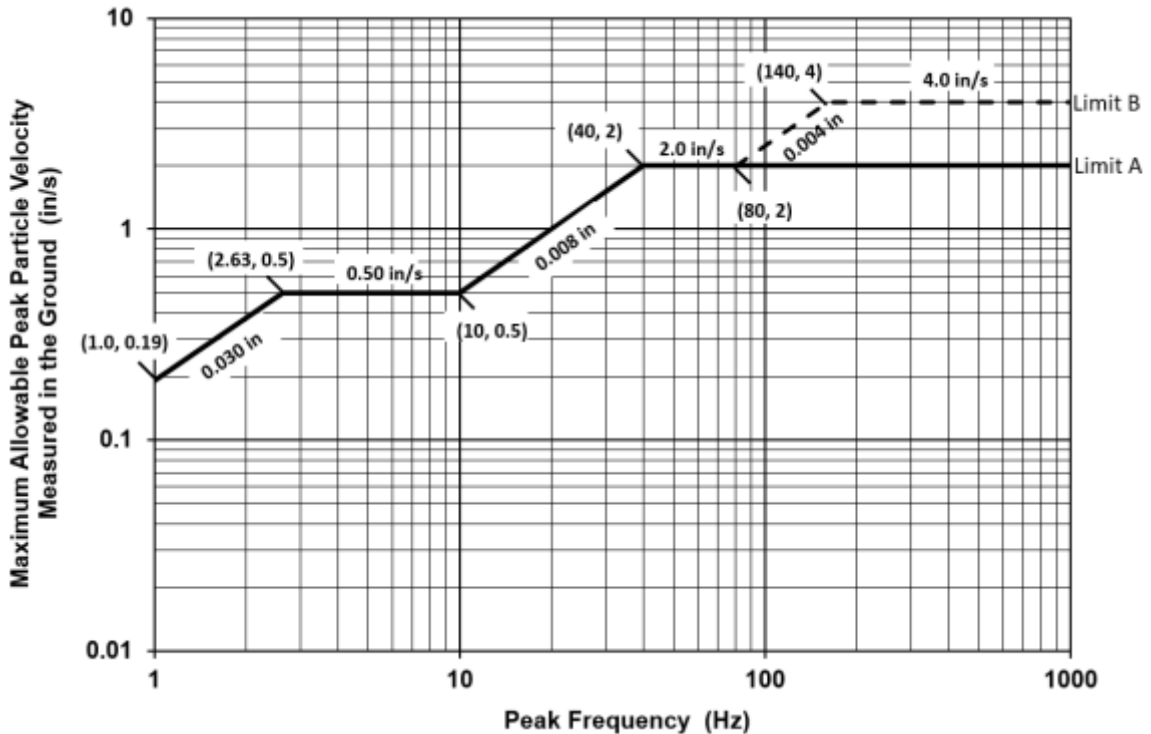
27 **3307.16.2 Blasting plan for demolition blasting.** Applications for a permit for use of
28 explosives in connection with demolition work shall include a blasting plan. The blasting plan
29 shall include the following information:
30

- 31 1. The location and dimensions of the safety zone to be maintained during blasting,
32 including clearance to the surrounding buildings, structures and infrastructure.
33
- 34 2. Construction plans detailing the location of the main bearing supports of the structure
35 which will be utilized in the demolition.
36
- 37 3. The types of explosives to be used, quantities, charge weight per initiation, blast
38 sequence and pattern, and number, depth and diameter of drill holes.]
39

40 **5607.19 Monitoring blast impacts.** The owner or the owner's blasting contractor shall retain a
41 seismic services consultant holding a blast monitoring certificate to monitor ground vibrations and
42 air overpressure during blasting operations. Measurements of ground vibrations and air
43 overpressure shall be taken each time explosives are detonated. Such monitoring and recording
44 shall be personally conducted by a blast monitoring specialist holding a certificate of fitness
45 operations in accordance with this section, the rules and the approved blast monitoring plan
46 required by FC5607.2.3.
47

1 **5607.19.1 Limits.** The limits for ground vibrations and air overpressure and other impacts
 2 associated with blasting operations shall be as set forth in FC 5607.19.1.1 through 5607.19.1.4.
 3
 4
 5
 6

FC TABLE 5607.19.1
MAXIMUM ALLOWABLE GROUND VIBRATIONS FROM BLASTING OPERATIONS



—	Limit A:	Maximum allowable PPV for any building or structure, except those subject to the higher Limit B or in a fragile or vibration-sensitive condition determined to require a lower limit.
- - -	Limit B:	Maximum allowable PPV for all buildings and structures four stories or taller in height, except those with landmark or historical status or in a fragile or vibration-sensitive condition.

7
 8
 9
 10 **5607.19.1.1 Ground vibrations.** Ground vibrations, measured in terms of peak particle
 11 velocity (PPV), shall not exceed the limits set forth in FC Table 5607.19.1. The maximum
 12 acceptable level diverges above 80 Hertz depending on the construction type of the most
 13 vulnerable building or other structure that will be affected by the blast.
 14

15 **5607.19.1.2 Maximum allowable global tensile wall strain.** Unless otherwise authorized
 16 by the department, the blast monitoring specialist shall ensure that appropriate equipment
 17 is utilized, in accordance with the rules, to enable the calculation of global tensile wall
 18 strain after each blast. If peak particle velocity (PPV) limits set forth in FC Table 5607.19.1
 19 are exceeded, then measurements obtained from structure-mounted geophones shall be
 20 used to compute global shear wall strain and subsequently the maximum global tensile wall
 21 strain over the entire height of the building or structure for each of two perpendicular
 22 structure walls closest to the blast. Global tensile wall strain, computed from the maximum
 23 time-correlated differential displacement time histories measured between the upper and
 24 lower portions of the building or structure, shall not exceed:

1
2 1. 25 μ -strains in any one of two conjoined walls closest to the blast for structures
3 consisting of fragile aged interior plaster and other vibration-sensitive materials, and
4 landmark structures; and

5
6 2. 50 μ -strains for buildings constructed of modern drywall in or after 1950.
7

8 **5607.19.1.3 Air overpressure.** Air overpressure shall be measured by one or more
9 overpressure microphones mounted at multiple outdoor locations selected by the blast
10 monitoring specialist to monitor the impact of air overpressure, including the closest
11 building or structure, vulnerable buildings or other areas of concern, and other suitable
12 locations. Additionally, in all cases where air overpressure upon structures of concern is
13 required to be monitored, including demolition, tunnel blasting, and underwater blasting,
14 structure-mounted geophones shall be utilized as required by the rules.

15
16 **5607.19.1.3.1 Maximum air overpressure.** Air overpressure, as measured on the
17 building or other structure nearest the blast, shall not exceed 0.0146 psi (134 dBL).
18

19 **5607.19.1.3.2 Calculation of global tensile wall strain.** Unless otherwise authorized
20 by the department, if the maximum air overpressure specified in FC5607.19.1.3.1 is
21 exceeded, global tensile wall strain shall be calculated in accordance with
22 FC5607.19.1.2 and the limits specified therein shall apply.
23

24 **5607.19.1.4 Noise.** Vibration and noise shall not exceed the limits established by the
25 Metropolitan Transit Authority, Department of Environmental Protection, Department of
26 Transportation and Department of Buildings and other agencies responsible for ensuring
27 the structural integrity of affected buildings, structures and infrastructure.
28

29 **5607.19.2 Ordering discontinuance of blasting operations.** The blast monitoring specialist
30 shall have the authority to order the blasting contractor and blaster to discontinue blasting
31 operations upon a determination that a blast has exceeded the limits in FC5607.19.1. If a blast
32 exceeds permissible limits, the blast monitoring specialist shall immediately notify the blaster
33 and/or other representative of the blasting contractor with authority to halt blasting operations.
34 Upon such notification, the blaster and/or other blasting contractor representative shall
35 immediately discontinue all blasting operations, notify the department in accordance with
36 FC5607.19.4.1, and initiate an investigation in accordance with the blasting plan into whether
37 there is any damage to the affected buildings or structures. Where the investigation identifies
38 any unsafe conditions or conditions that further blasting might cause to become unsafe,
39 blasting operations shall not resume until approved mitigation measures have been
40 implemented in accordance with FC5607.9.6 and as otherwise required by the department.

41
42 **5607.19.3 Equipment.** When measuring ground vibrations and air overpressure, a blast
43 monitoring specialist shall utilize one or more blasting seismographs and a sufficient number
44 of geophones and microphones to monitor the impact of blasting operations on buildings,
45 structures and infrastructure of concern, in accordance with the rules. Such equipment shall
46 meet the standards set forth in the rules.
47

1 **5607.19.4 Reporting.** A blast monitoring specialist shall comply with reporting requirements
2 in accordance with FC5607.19.4.1 through FC5607.19.4.4.
3

4 **5607.19.4.1 Immediate notification.** When a blast produces air overpressure, peak
5 particle velocity, or global tensile wall strain in excess of the permissible limits set forth in
6 FC5607.19.1, the blast monitoring specialist shall order blasting operations to cease in
7 accordance with FC5607.19.2 and immediately notify the department.
8

9 **5607.19.4.2 Daily reporting.** The blast monitoring specialist shall ensure that the
10 department receives real-time and other reporting as required by the department on a daily
11 basis during blasting operations.
12

13 **5607.20 Recordkeeping.** A copy of the pre-blasting survey, the blasting plan for demolition
14 blasting, the blasting patterns utilized for excavation blasting operations, and the vibration and air
15 overpressure measurements required by this section, shall be maintained at the job site until the
16 completion of blasting operations, and, together with any post-blasting survey required by
17 FC5607.22, shall thereafter be kept by the owner or the owner's blasting contractor for a period of
18 3 years from the completion of blasting operations at the job site. Such records shall be made
19 available for inspection by any representative of the department and the Department of Buildings.
20

21 **5607.20.1 Blasting seismograph data.** The event files recorded by blasting seismographs shall
22 be made available to the department for inspection upon request.
23

24 **5607.21 Interagency coordination.** The department shall develop and establish a protocol with
25 the Department of Buildings, Department of Emergency Management and such other agencies as
26 the department determines to be necessary and appropriate, by which notification of blasting
27 operations and reporting of unsafe conditions and complaints is to be coordinated.
28

29 [3307.16.3] **5607.22 Post-blasting survey.** [A post-blasting survey shall be prepared when
30 required by FC 3307.16.3.1 and 3307.16.3.2.] The owner and/or its general contractor or blasting
31 contractor shall retain the services of a professional engineer, licensed to practice in New York
32 State, to conduct a post-blasting survey in accordance with 5607.22.1 through 5607.22.2.
33

34 [3307.16.3.1] **5607.22.1 Demolition blasting.** Whenever demolition blasting is conducted,
35 such professional engineer shall, upon the completion of the blasting operations at the job site,
36 conduct a structural survey of all of the buildings, structures and infrastructure previously
37 surveyed and submit to the department a report documenting the elevations of the vertical
38 control points and the absence of any observable changes in the pre-existing condition of such
39 buildings, structures and infrastructure, or identifying any changes and the conclusions to be
40 drawn therefrom. Elevations of the control points shall again be measured by such professional
41 engineer at intervals of 1 and 6 months after the completion of the demolition work, and a
42 report containing this data, and conclusions to be drawn therefrom, shall be promptly submitted
43 to the department as an addendum to the original post-blasting survey.
44

45 [3307.16.3.2] **5607.22.2 Excavation blasting.** The [commissioner] department may require
46 the owner, the owner's general contractor, or the owner's blasting contractor to retain such a
47 professional engineer to conduct a post-blasting survey at any time during or upon the

1 completion of blasting operations upon a determination that such a survey is necessary or
2 appropriate as a result of ground vibration levels exceeding the reporting level set by the
3 department, or other good cause.

4
5 **[3307.16.4 Recordkeeping.** A copy of the pre-blasting survey, the blasting plan for demolition
6 blasting, the blasting patterns utilized for excavation blasting operations, and the vibration and
7 airblast measurements required by this section, shall be maintained at the job site until the
8 completion of blasting operations, and, together with any post-blasting survey required by
9 FC3307.16.3, shall thereafter be kept by the owner or the owner’s blasting contractor for a
10 period of 3 years from the completion of blasting operations at the job site. Such records shall
11 be made available for inspection by any representative of the department and the Department
12 of Buildings.

13
14 **3307.17 Vibrations and airblast.** The owner or the owner’s blasting contractor shall retain a
15 seismic services consultant to measure and record ground vibration and airblast overpressure levels
16 at specified locations. Such measurements shall be taken every time explosives are detonated
17 during blasting operations. A copy of such measurements shall be filed with the department on a
18 schedule to be established by the department, but not less frequently than once per week.
19 Throughout blasting operations, locations for the monitoring equipment shall be selected by the
20 blasting contractor and the seismic consultant in consultation with the department and subject to
21 department approval. The commissioner may require monitoring of water shock when submarine
22 blasting is conducted.

23
24 **3307.17.1 Limits.** The limit for ground vibration peak particle velocity is 2.0 ips (50.8 mm/s)
25 for frequencies from 40 Hz to 100 Hz. For frequencies below 40 Hz, vibration limits are 0.75
26 ips (19.1 mm/s) and 0.5 ips (12.7 mm/s), with graphical data transition lines equivalent to
27 constant displacements. Airblast overpressure shall be limited to 134 dB. Vibration and noise
28 shall not exceed the limits established by the Metropolitan Transit Authority, Department of
29 Environmental Protection, Department of Transportation and Department of Buildings and
30 other agencies responsible for ensuring the structural integrity of affected buildings, structures
31 and infrastructure.

32
33 **3307.17.2 Report.** The seismic consultant shall prepare a report of all required measurements
34 and data, acceptance criteria and analysis. In the event that readings exceed the acceptance
35 criteria, the department shall be immediately notified, and the blasting contractor shall propose
36 revised drilling and blasting patterns, charge weight per initiation and other measures to reduce
37 the ground vibration and/or airblast overpressure, as appropriate.

38
39 **3307.18 Interagency coordination.** The department shall develop and establish a protocol with
40 the Department of Buildings, and such other agencies as the department determines to be necessary
41 and appropriate, by which notification of blasting operations and reporting of unsafe conditions
42 and complaints is to be coordinated.]

43
44 **SECTION FC [3308] 5608**
45 **FIREWORKS DISPLAYS**
46

1 **[3308.1] 5608.1 Scope.** The discharge or other use of fireworks shall comply with the requirements
2 of the New York State Penal Law Article 405, this chapter, the rules, NFPA 1123, and all other
3 applicable laws, rules and regulations.
4

5 **[3308.2] 5608.2 Permits.** Permits shall be required as set forth in FC105.6.
6

7 **[3308.2.1] 5608.2.1 Fireworks display sponsor.** A fireworks display permit shall be obtained
8 for each display or other event involving the discharge or other use of fireworks. The sponsor of
9 such display or other event shall retain a company holding a fireworks contractor certificate issued
10 pursuant to this chapter to apply for and obtain the fireworks display permit and to conduct the
11 fireworks display or other event.
12

13 **[3308.2.2] 5608.2.2 Fireworks display permit conditions.** A fireworks display permit shall be
14 issued in the name of the sponsor of the display or other event and shall specify the date, time and
15 location of the display or other event, the amount and types of fireworks to be discharged, and
16 such other terms and conditions as the commissioner may prescribe as necessary or appropriate
17 for the safe conduct of the display or other event.
18

19 **[3308.2.3] 5608.2.3 Permit applications.** Applications for a fireworks display permit shall be
20 submitted to the department at least 30 calendar days prior to the requested date for the fireworks
21 display permit. Applications shall be in the form specified by the department and shall be signed
22 by the sponsor and the fireworks contractor conducting the fireworks display. The [commissioner]
23 department shall review each application for a fireworks display permit and shall grant such
24 application only if the commissioner is satisfied that the display or other event can be safely
25 conducted. Permit applications shall contain the following information, and such other
26 information and documentation as the commissioner may prescribe:
27

- 28 1. The name, address, telephone number and [fax number] email address of the sponsor.
- 29
- 30 2. The name, address, telephone number and [fax number] email address of the fireworks
31 display contractor.
- 32
- 33 3. The date, rain date, time, and exact location proposed for the fireworks display and its
34 approximate duration.
- 35
- 36 4. The number and size of the fireworks to be discharged or otherwise used or stored for use
37 for the display or other event.
- 38
- 39 5. The written authorization of the sponsor of the display or other event.
- 40
- 41 6. The name of all persons personally supervising the discharge or other use of fireworks and
42 the number of each person's certificate of fitness. There shall be not less than two such
43 persons for any fireworks display.
- 44
- 45 7. The number, size, type, and approval number of the fireworks to be discharged. The
46 approval number shall be the EX-number issued by the United States Department of
47 Transportation.

1
2 8. For onshore displays, a dimensional diagram of the display site containing the following
3 information:

4
5 8.1. The location where the fireworks are to be stored.

6
7 8.2. The discharge site.

8
9 8.3. The location of all buildings, structures, infrastructure, streets, piers, bridges,
10 railways, parking lots, utility lines and bulk plants and terminals within 1,500 feet
11 (457 200 mm) of the discharge site, and, as determined by the department, other
12 protected exposures within such distance, the occupancy thereof, the use, and the
13 distance from the outer perimeter of the discharge site to such buildings, structures,
14 infrastructure, streets, piers, bridges, railways, parking lots, utility lines, bulk plants
15 and terminals or other protected exposures.

16
17 8.4. The location of any trees and overhead obstructions within 1,000 feet (304 800
18 mm) of the discharge site, including the distance to such locations from the outer
19 perimeter of the discharge site.

20
21 8.5. The viewing areas to which all observers will be restricted, including the distance
22 to such locations from the outer perimeter of the discharge site.

23
24 9. For offshore displays, a dimensional diagram of the display site containing the following
25 information:

26
27 9.1. The discharge site, by reference to the shorelines and nearby structures, indicating
28 the distances thereto.

29
30 9.2. The layout of the barge, including the discharge site and the location of the control
31 panel, all safety barriers and structures, and fireworks storage.

32
33 9.3. The location of all buildings, structures, infrastructure, streets, piers, bridges,
34 railways, parking lots, utility lines and bulk plants and terminals within 1,500 feet
35 (457 200 mm) of the discharge site, and, as determined by the department, other
36 protected exposures within such distance, the use or occupancy thereof, and the
37 distance from the outer perimeter of the discharge site to such buildings, structures,
38 infrastructure, streets, piers, bridges, railways, parking lots, utility lines, bulk plants
39 and terminals or other protected exposures.

40
41 9.4. All viewing areas at or near the shorelines, including the distance to such locations
42 from the outer perimeter of the discharge site.

43
44 **[3308.2.4] 5608.2.4 Site inspection.** The department may conduct an inspection of the display
45 site and its surroundings, including the command post, viewing areas, and protected exposures,
46 prior to issuance of a permit and/or prior to the fireworks display. Representatives of the
47 fireworks contractor and the sponsor shall attend any such site inspection and cooperate with

1 the department in determining the suitability of the site for the proposed fireworks display, and
2 appropriate separation distances and other safety measures. The fireworks contractor or the
3 sponsor shall arrange for access by department representatives to the display site, command
4 post and all other areas, for purposes of the site inspection and monitoring pre-display
5 operations, post-display operations, and [during] the fireworks display.
6

7 **[3308.2.5] 5608.2.5 Permit denial.** An application for a fireworks display permit shall be
8 denied if the department determines that the display cannot be safely conducted. The
9 department may take into consideration the time and place of the display or event for which a
10 permit is sought, other scheduled events, and the ability of the department to effectively
11 monitor such display or event, in determining whether to grant or deny such application. The
12 department may also deny an application if it is incomplete or for lack of cooperation by the
13 fireworks contractor or the sponsor.
14

15 **[3308.2.6] 5608.2.6 Permit conditions.** The fireworks display permit shall be issued to the
16 sponsor. The permit shall specify the exact location of the display, the date and approximate
17 time of commencement of the display, and such other conditions as the department may
18 prescribe to ensure the safe conduct of the display. The fireworks display permit shall be
19 deemed to incorporate the terms and conditions set forth on the fireworks display plan
20 approved by the department, including the separation distances required by the department.
21 Firework displays shall be scheduled to commence no later than 9:30 pm (2130 hours).
22

23 **[3308.2.7] 5608.2.7 Penalty for noncompliance.** The fireworks display shall be conducted in
24 accordance with the fireworks display permit and the directions of department representatives.
25 Failure to conduct a display in accordance with the terms of the permit or such directions may
26 result in denial of future applications for such permits, suspension or revocation of the
27 fireworks contractor certificate, suspension or revocation of the certificate of fitness, and such
28 other penalties as may be provided by law, rule or regulation.
29

30 **[3308.3] 5608.3 Approved fireworks.** Fireworks displays shall be conducted using 1.3G, 1.4G,
31 and 1.4S fireworks. The fireworks shall be arranged, located and discharged in a manner that will
32 not endanger any person or damage any property.
33

34 **[3308.3.1] 5608.3.1 Shell size restrictions.** Aerial shells or other aerial fireworks shall not exceed
35 [12] 10 inches ([305] 254 mm) in diameter and salute shells shall not exceed 3 inches (76.2 mm)
36 in diameter or length unless authorized by the fireworks display permit. Such authorization shall
37 only be granted if the applicant can demonstrate to the satisfaction of the department special
38 circumstances warranting the use of such oversize shell and that such shell can safely be
39 discharged within the confines of the display site. No such request shall be considered on the day
40 of the fireworks display.
41

42 **[3308.4] 5608.4 Clearance requirements.** Viewing areas, parking areas, and dwellings, buildings
43 or structures shall not be located within the display site. The required distances shall be maintained
44 from the display site to the viewing areas and all protected exposures, including the minimum
45 secured radius as set forth in FC Tables [3308.4.1] 5608.4.1 and [3308.4.2] 5608.4.2, any
46 additional distance necessary to accommodate the fallout area, as calculated by the fireworks

1 contractor and approved by the department, and any protected exposures as set forth in
2 [FC3308.4.3] FC5608.4.3, or as determined by the department.

3
4 **[3308.4.1] 5608.4.1 Onshore displays.** For an onshore display, the display site shall be of a
5 size sufficient to allow the applicable minimum secured radius set forth in FC Table [3308.4.1]
6 5608.4.1.

7
8 **FC TABLE [3308.4.1] 5608.4.1**
9 **ONSHORE DISPLAYS**

Size of Largest Mortar (inches)	Minimum Secured Radius (feet)
<3	300
4	400
5	500
6	600
7	700
8	800
10	1,000
12	1,200

10
11 **[3308.4.2] 5608.4.2 Offshore displays.** For an offshore display, the display site shall be of a
12 size sufficient to allow the applicable minimum secured radius set forth in FC Table [3308.4.2]
13 5608.4.2.

14
15 **FC TABLE [3308.4.2] 5608.4.2**
16 **OFFSHORE DISPLAYS**

Size of Largest Mortar (inches)	Minimum Secured Radius (feet)
Up to 10	1,000
12	1,200

17
18 **[3308.4.3] 5608.4.3 Protected exposure distance separation.** The minimum secured radius
19 to the property line of any bulk plant or terminal, or facility for combustible, flammable,
20 explosive, or toxic materials, or any institutional occupancy, shall be twice the distance
21 specified in FC Table [3308.4.1] 5608.4.1 or [3308.4.2] 5608.4.2, as applicable, but in no case
22 less than 1,000 feet (304 800 mm). The commissioner may prescribe a clearance requirement
23 for any other protected exposure.

24
25 **[3308.5] 5608.5 Incidental storage of fireworks at display site.** The storage of fireworks at the
26 display site shall comply with the requirements of this section and NFPA 1123. [Fireworks may
27 be delivered and stored at the display site not earlier than 12 hours before the permitted display.]
28 Only fireworks to be used for the permitted display may be stored at the display site.

29
30 **5608.5.1 Delivery and unloading.** Fireworks may be delivered and stored at the display site
31 not earlier than 12 hours before the permitted display, unless otherwise authorized by the
32 department. Fireworks may not be unloaded from the delivery vehicle except in the presence
33 of a department representative.

34
35 **[3308.5.1] 5608.5.2 Supervision.** Fireworks shall not be left unattended at the display site, but
36 shall be under the personal supervision of a certificate of fitness holder for fireworks display.

37
38 **[3308.5.2] 5608.5.3 Weather protection.** Fireworks shall be stored in weatherproof
39 containers, under a waterproof cover or otherwise kept dry at the display site, prior to the
40 fireworks display.

1
2 [3308.5.3] **5608.5.4 Inspection.** Shells and other fireworks shall be inspected by the certificate
3 of fitness holder for fireworks display at the display site.

4
5 [3308.5.4] **5608.5.5.** Reserved.
6

7 [3308.5.5] **5608.5.6 Ready boxes.** Any shells and other fireworks that are not to be used during
8 a fireworks display, including fireworks that are defective or damaged, shall be temporarily
9 stored during the fireworks display in ready boxes placed in a delivery vehicle located upwind
10 and at least 25 feet (7620 mm) from the mortar placement.

11
12 [3308.6] **5608.6 Discharge of fireworks.** Fireworks displays and any other discharge or use of
13 fireworks shall be conducted outdoors, except that fireworks, 1.4G, may be discharged indoors in
14 connection with the conduct of a special effect for which a special effects permit has been issued
15 pursuant to [FC3309] FC5609.

16
17 **5608.6.1 Mortar construction and size.** Mortars shall be constructed of steel or high-density
18 polyethylene. The size of the mortar shall be sufficient to safely discharge the shells placed in
19 it.

20
21 [3308.6.1] **5608.6.2 Mortar placement.** Mortars shall be positioned and discharged as
22 follows:

- 23
24 1. Mortars shall not be set up during night hours (between sunset and sunrise).
- 25
26 2. Mortars shall be of sufficient strength and shall be arranged and positioned so that the
27 shells may be safely discharged.
- 28
29 3. Mortars shall be placed in as near a vertical position as possible. Mortars and other
30 devices used to discharge fireworks shall be installed in accordance with NFPA 1123 and
31 shall be positioned such that the shells are projected in a direction that ensures that they
32 combust, deflagrate or detonate above the fallout area and all unexploded fireworks fall
33 into the fallout area. Under no circumstances shall mortars be angled toward the viewing
34 area.
- 35
36 4. Mortars shall be of sufficient length to cause aerial shells to be projected to safe heights.
- 37
38 5. Mortars more than six inches (152 mm) but not more than 10 inches (254 mm) in
39 diameter shall be placed in sand-filled steel drums or heavy plastic drums [no] not less
40 than 32 gallons (121 L) in capacity, or metal racks approved by the department. Wood
41 racks or wood troughs, filled with sand, may also be used [in lieu of drums for firing
42 barrages or finales] for mortars six inches (152 mm) or less in diameter.
- 43
44 6. Except for mortars placed in wood racks, mortars shall be buried to a depth of between
45 two-thirds to three-quarters of their length.
46

1 7. Except for mortars placed in wood racks and as may otherwise be provided in this
2 section, mortars shall be separated from adjacent mortars by a distance of at least 2 inches
3 (51 mm) or the diameter of the larger mortar, whichever is greater.
4

5 8. Except as otherwise provided in this section, there shall be a separation distance of at
6 least 2 inches (51 mm) or one-half of the diameter of the mortar, whichever is greater,
7 between the mortar and the wall of the drum or trough.
8

9 9. Prior to placement, mortars shall be inspected for defects, such as dents, bent ends,
10 damaged interiors and damaged plugs. Defective mortars shall not be used. Any scale
11 found on the inside surface of the mortars shall be removed prior to placement.
12

13 10. Wood racks. Wood racks, which may be used in conjunction with firework displays
14 only for mortars six inches (152 mm) or less in diameter, shall be designed and operated
15 as follows:
16

17 10.1. Wood racks shall be of sufficient strength to prevent adjacent mortars from being
18 repositioned in the event that a shell detonates in a mortar, causing the mortar to
19 burst.
20

21 10.2. The use of wood racks shall be limited to single break shells not exceeding 6
22 inches (152 mm) in diameter.
23

24 10.3. [Wood racks with chain fused mortars 3 inches (76 mm) or less in diameter shall
25 be limited to a maximum of 15 mortars per unit. Racks containing mortars 4 inches
26 (102 mm) in diameter shall be limited to a maximum of 12 mortars. Racks
27 containing mortars 5 inches (127 mm) to 6 inches (152 mm) in diameter shall be
28 limited to a maximum of 10 mortars.
29

30 10.4.] Mortars placed in wood racks shall not be reloaded during the display.
31

32 **[3308.6.2] 5608.6.3 Mortar loading.** Mortars shall be loaded as follows:
33

34 1. Mortars shall be loaded during daylight hours (between sunrise and sunset). Mortars
35 shall not be loaded during night hours (between sunset and sunrise).
36

37 2. All unloading of fireworks from the delivery vehicle and loading and fusing of the
38 fireworks shall be conducted under the supervision of a certificate of fitness holder in the
39 presence of a department representative.
40

41 3. All shells shall be inspected by a certificate of fitness holder for fireworks display
42 immediately prior to placement. Any shells that are torn, leaking, show signs of having
43 been wet or have broken fuses shall not be used.
44

45 4. [The certificate of fitness holder for fireworks display shall verify that the proper lifting
46 charge has been attached to each shell to ensure the safe control of discharge height.
47

1 5.] When loading into mortars, shells shall be held by their lowering cords (if provided) or
2 their fuses (if no lowering cord is provided).
3

4 [6] 5. Shells shall be lowered carefully into the mortar, such that they are properly seated
5 in, and flush with, the bottom of the mortar. Shells shall never be forced into a mortar.
6

7 [7] 6. No person shall place any part of his or her body over the mortar during its loading.
8

9 **[3308.6.3] 5608.6.4 Control panel for firework displays.** Control panels used to conduct
10 firework displays shall be designed, installed and operated as follows:
11

12 1. The control panel and all related equipment, including any junction boxes, shall be
13 located within the display site, at least 50 feet (15 240 mm) from the discharge site, with
14 a clear line of sight to the discharge site.
15

16 2. A protective barrier capable of withstanding the impact of falling debris or a misfired
17 shell and made of or covered with a fire-retardant material shall be provided between the
18 control panel and the discharge site and above the control panel. Such protective barrier
19 shall be of sufficient size to protect the control panel and all persons who will be
20 positioned at the control panel during the fireworks display, including at least one
21 department representative.
22

23 3. The control panel shall be provided with a double safety switch to prevent premature
24 activation of current to the shells, such as combination of keys or single throw switches
25 connected in series, both of which must be activated for current to flow.
26

27 4. Each switch on the control panel, including testing and firing controls, shall be clearly
28 marked to indicate its function. The control panel shall be equipped with an indicator,
29 such as a light, a sound device, or both, to indicate when the control panel is armed for
30 firing.
31

32 5. If the control panel has a built-in test circuit, the unit shall be designed to limit the test
33 current to 0.05 ampere or to 20 percent of the no-fire current of the electric match being
34 used, whichever is less.
35

36 6. Multi-testers, such as volt-ohm meters, shall not be used for testing electric matches
37 unless the tester's maximum current delivery potential has been measured to be not more
38 than 0.05 ampere or 20 percent of the no-fire current of the electric match being used,
39 whichever is less.
40

41 7. Control panels shall be powered by batteries or isolated power supplies used for firing
42 purposes only. If batteries are used, they shall be self-contained in the firing unit or
43 otherwise covered or protected to prevent accidental contact with wires leading to the
44 fireworks. Control panels powered by commercial power may be used, provided that an
45 isolation transformer is used. The transformer shall be located within the firing unit or
46 elsewhere in the firing system.
47

1 **[3308.6.4] 5608.6.5 Ground display pieces.** Ground display pieces shall be positioned and
2 discharged in compliance with the following requirements:
3

- 4 1. Combustible materials located beneath ground display pieces shall be wet down before
5 the display. Vegetation within 50 feet (15 240 mm) shall be removed as set forth in
6 FC304.1.2.
7
- 8 2. Poles for ground display pieces shall be securely placed and braced so that they maintain
9 the proper position when fireworks are displayed.
10

11 **[3308.6.5] 5608.6.6 Fireworks discharge.** The discharge of fireworks shall be conducted in
12 compliance with the following requirements:
13

- 14 1. All persons conducting the fireworks display shall wear clothing and protective gear in
15 compliance with the requirements of the regulations of the United States Department of
16 Labor, as set forth in 29 CFR Part 1910.
17
- 18 2. Communication shall be maintained at all times between the certificate of fitness holders
19 for fireworks display and the command post.
20
- 21 3. No fireworks shall be discharged if any person is at an unsafe distance from the point of
22 discharge. The certificate of fitness holders for firework displays shall ensure that all
23 persons have moved a safe distance away from such mortar or ground display piece
24 before firing it.
25
- 26 4. No more than one hundred shells may be ignited by a single fuse.
27
- 28 5. Control panel operation.
29
- 30 5.1. The control panel and all cables, junctions, and attached electric matches shall be
31 visually inspected immediately prior to the display. The control panel shall not be
32 in “test” status or “arm” status during this inspection.
33
- 34 5.2. Mortars shall be connected to the control panel and the circuit tested only after all
35 the shells have been loaded into the mortars and all electric matches are connected
36 to the fuses. Ground display pieces shall be connected to the control panel and the
37 circuit tested only after the fireworks have been loaded onto the display.
38
- 39 5.3. No person shall be in the discharge site when any circuit testing is performed.
40
- 41 5.4. If the testing of the circuits indicates a problem, the certificate of fitness holder for
42 fireworks display shall reinspect any cables, connections, or electric matches and
43 correct the problem. This reinspection shall be performed only after the control
44 panel has been switched off or disconnected from the power source.
45

1 5.5. Only such fireworks contractor personnel as are necessary for the proper and safe
2 operation of the display and department representatives shall be allowed at the
3 control panel when fireworks are being discharged.
4

5 5.6. No person shall be in the discharge site when fireworks are being discharged. The
6 certificate of fitness holder conducting an electrically-fired display shall personally
7 visually check the discharge site prior to commencing a display to ensure that the
8 area is clear of all persons, and shall not commence the display, or shall discontinue
9 it, at any time persons are observed within such area.
10

11 5.7. The control panel shall be switched off and all cables disconnected after the
12 conclusion of the display, prior to any cleanup or other work in the discharge site.
13

14 **[3308.6.6] 5608.6.7 Offshore displays.** Offshore firework displays shall be conducted in
15 compliance with the following requirements:
16

- 17 1. Offshore firework displays shall be conducted in accordance with the requirements of
18 this chapter except as they may be inconsistent with this section.
19
- 20 2. Offshore firework displays shall be conducted from a barge maintained at a fixed
21 position, as designated on the firework display permit. No fireworks shall be discharged
22 from any tugboat or other vessel or platform.
23
- 24 3. Only fireworks to be discharged during the display shall be allowed on the fireworks
25 barges. Storage of excess fireworks on the barges is prohibited.
26
- 27 4. Fireworks to be used in an offshore fireworks display shall be installed, loaded and fused
28 on a barge moored at a lawful and safe location approved by the department in New York
29 City, or, when authorized by the department, outside of New York City, and in the
30 presence of department representatives. [while the barge is moored at a lawful and safe
31 location in New York City acceptable to the department. The department may authorize
32 such installation, loading and fusing at a mooring outside of New York City at a location
33 acceptable to the department.] No installation, loading or fusing shall be conducted on
34 the barge after the barge departs from its mooring. Department representatives shall
35 accompany the barge from its mooring to the display site.
36
- 37 5. The fireworks display barge shall be towed into position by a tugboat authorized to
38 operate in New York City. The tugboat shall be under power at all times during the
39 display, so that all necessary maneuvering of the barge can be effected. The tugboat shall
40 be equipped with an instrument to measure the distance to the shore to enable the tugboat
41 to ascertain and maintain its position.
42
- 43 6. Barge design and construction. Barges used in conjunction with firework displays shall
44 be designed, constructed and maintained in compliance with the following requirements:
45
 - 46 6.1. Only steel barges acceptable to the United States Coast Guard shall be used as
47 fireworks display barges.

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6.2. Fireworks display barges shall bear durable signs on both sides reading "Fireworks—Stay Clear". The lettering shall be at least 18 inches (457 mm) high in red on a white background.

6.3. The control panel shall be located on the fireworks display barge.

6.4. Fireworks display barges shall be provided with suitable barriers constructed and arranged so as to protect the control panel, persons at the control panel, and the tugboat from misfired shells, fireworks and falling debris.

6.5. Railings shall be provided around the control panel area to prevent persons from falling overboard.

7. All personnel on board the fireworks barge or tugboat shall wear United States Coast Guard approved flotation devices.

8. Department representatives shall be present on the fireworks barge and the tugboat at all times during a fireworks display.

9. Conduct of the display. Offshore firework displays shall be conducted in compliance with the following requirements:

9.1. All fireworks shall be discharged and directed in such a manner that any falling debris, sparks or embers will not land upon the shore, or a wharf, pier, bulkhead or other structure.

9.2. Reloading of mortars during the display is prohibited.

9.3. Communication shall be maintained at all times between the certificate of fitness holders for fireworks display conducting the display, the tugboat pilot and the command post.

9.4. One certificate of fitness holder for fireworks display shall be responsible for monitoring the position of the barge and the trajectory of the fireworks and the fireworks debris, and communicating to department representatives any change in wind direction or other condition requiring repositioning of the barge or other safety measure. Such certificate of fitness holder shall have no other duties during the display.

[3308.7] 5608.7 Handling. Aerial shells shall be carried to mortars by the shell body. Shells shall never be held by their fuses except when they are being loaded into mortars. For the purpose of loading mortars, aerial shells shall be held by the thick portion of the fuse and carefully loaded into mortars.

[3308.8] 5608.8 Supervision and department monitoring. Fireworks displays shall be conducted by a company holding a fireworks contractor certificate, and under the personal

1 supervision of two certificate of fitness holders for firework displays as set forth in [FC3301.5.2]
2 FC5601.5.2, and shall be subject to monitoring by the department as set forth in this section.

3
4 **[3308.8.1] 5608.8.1 Department monitoring.** The commissioner may require department
5 personnel and equipment to monitor the delivery, unloading, loading, and discharge of
6 fireworks, and post-display site safety measures upon a determination that the presence of such
7 monitoring is in the interest of public safety.

8
9 **[3308.8.1.1] 5608.8.1.1 Loading and unloading.** Fireworks displays, including all
10 unloading of transport vehicles, loading and fusing of mortars and ground display pieces,
11 and discharging of fireworks, shall be conducted in the presence of one or more
12 representatives of the department.

13
14 **[3308.8.1.2] 5608.8.1.2 On scene directions.** The fireworks contractor's personnel, the
15 certificate of fitness holders conducting the display, and all other persons at the display site
16 shall comply with the directions of department representatives, including any requirement
17 different from or in addition to those set forth in the fireworks display permit, when, in the
18 judgment of the department representative, such different or additional requirement is
19 necessitated by a change in site or weather conditions or is otherwise necessary to ensure
20 the safe conduct of the display.

21
22 **[3308.8.1.3] 5608.8.1.3 Delays and cancellations.** No fireworks display shall commence
23 until approval has been given by the department representatives on the scene. Department
24 representatives may delay commencement of the display, or suspend or cancel the display,
25 upon a determination that such action is in the interest of public safety, by reason of weather
26 or other site conditions, the use of unapproved equipment or shells, the improper
27 installation or unsafe operation of the display, the presence of any unauthorized person
28 within the discharge site, the failure of any person to comply with the directions of the
29 department representatives, or other good cause. In no case shall a display commence or
30 continue when wind velocity exceeds 30 miles per hour (48.28 km per hour) as determined
31 by the department.

32
33 **[3308.8.1.4] 5608.8.1.4 Command post.** The representative of the fireworks contractor
34 overseeing the conduct of the display shall provide a command post from which the
35 fireworks display may be monitored by department representatives and a representative of
36 the fireworks contractor responsible for the conduct of the display. Such command post
37 shall be located onshore, in an area acceptable to the department that is outside of the
38 discharge site, display site and viewing areas, and that has an unobstructed line of sight to
39 such areas.

40
41 **[3308.8.1.5] 5608.8.1.5 Communication.** The representatives of the fireworks contractor
42 overseeing the conduct of the display shall be present at the command post prior to the
43 scheduled time of the fireworks discharge, and shall be in radio or telephone contact with
44 the certificate of fitness holders conducting the display, the spotter, and for offshore
45 displays, the tugboat pilot. Such representative shall relay to such personnel or pilot any
46 directions of department representatives concerning the fireworks display, including

1 authorization to commence the display. No fireworks display shall be authorized to
2 commence until such representative is present at the command post.
3

4 **[3308.8.2] 5608.8.2 Spotter.** At least one fireworks contractor employee shall be designated
5 as the spotter, whose sole responsibility during the display shall be to watch the flight and
6 behavior of the shells and to notify department representatives of any dangerous conditions
7 occurring during the display, such as hazardous debris falling into the audience. The spotter
8 shall be in direct radio or telephone communication with the command post.
9

10 **[3308.8.3] 5608.8.3 Discharge height.** The maximum height of discharge shall be determined
11 by the United States Federal Aviation Administration for each display. In no case shall any
12 shell break at a height greater than 1,200 feet (365 760 mm) above sea level.
13

14 **[3308.9] 5608.9 Post-display site safety measures.** Immediately upon conclusion of the fireworks
15 display, the certificate of fitness holders shall conduct an inspection of the display site, including
16 each mortar or other device used to discharge fireworks, for the purpose of locating unexploded
17 fireworks. This inspection shall be conducted before public access to the site is permitted.
18 Certificate of fitness holders conducting a nighttime display shall conduct a daylight search of the
19 display site at the next sunrise. The certificate of fitness holder shall keep a record of all aerial
20 shells that fail to fire.
21

22 **[3308.9.1] 5608.9.1 Post-display inspection affidavit.** The certificate of fitness holders
23 conducting any fireworks display shall, within 24 hours of the completion of the display,
24 submit to the department a notarized post-display affidavit attesting to the fact that the area
25 was found to be free and clear of any fireworks or other explosive materials or devices.
26

27 **[3308.10] 5608.10 Disposal.** Any fireworks found during the inspection required in [FC3308.9]
28 FC5608.9 shall not be handled until at least 15 minutes have elapsed from the time the fireworks
29 were fired. The fireworks shall then be doused with water and allowed to remain for at least 5
30 additional minutes before being placed in a plastic bucket or fiberboard box and disposed of
31 lawfully in accordance with the manufacturer's instructions or the directions of the department.
32

33 **[3308.11] 5608.11** Reserved.
34

35 **[3308.12] 5608.12 Fees.** Fees for firework displays shall be as set forth in FC Appendix A.
36

- 37 1. The department shall bill the fireworks contractor for the time spent by department
38 representatives inspecting or monitoring the fireworks display, including the unloading,
39 installation, loading and discharge of the fireworks, post-display site safety measures, and
40 any travel time and expenses associated with such inspection and monitoring at a mooring
41 outside of New York City.
42
- 43 2. The department shall bill the sponsor after a fireworks display for the assignment of any
44 department firefighting apparatus.
45

46 **SECTION FC [3309] 5609**
47 **SPECIAL EFFECTS**

1
2 **[3309.1] 5609.1 Scope.** The storage, handling and discharge or other use of any material, article
3 or device of an explosive, flammable, [or] combustible or otherwise dangerous nature used to
4 create a special effect, including any pyrotechnic material, article or device, fireworks, 1.4G, and
5 open flames, shall be in accordance with this section, the rules and NFPA 1126.

6
7 **[3309.2] 5609.2 Prohibited conduct.** It shall be unlawful to:

- 8
9 1. Store, handle, discharge or otherwise use any material, article or device of an explosive,
10 flammable, [or] combustible, or otherwise dangerous nature used to create a special effect,
11 without a special effects permit [or production company special effects permit] issued
12 pursuant to this section.
13
14 2. Conduct a special effect indoors or other enclosed structure if the materials, articles or
15 devices used to create such special effects contain or use antimony, arsenic, cadmium,
16 chromium, lead, mercury, naphthalene, nickel, selenium, or zinc, in amounts greater than
17 trace quantities.

18
19 **[3309.3] 5609.3 General requirements.** Materials used to create a special effect shall be stored,
20 handled and used in accordance with FC [3309.3.1] 5609.3.1 through [3309.3.7] 5609.3.7.

21
22 **[3309.3.1] 5609.3.1 Use of minimum amount necessary.** The quantity of material, article, or
23 device used in a special effect shall be no greater than necessary to produce the desired special
24 effect.

25
26 **[3309.3.2] 5609.3.2 Demonstration.** The [commissioner] department may require a
27 demonstration of the materials, articles or devices used to create a special effect.

28
29 **[3309.3.3] 5609.3.3 Monitoring.** The [commissioner] department may require department
30 personnel and apparatus to monitor the preparation and conduct of a special effect upon a
31 determination that such monitoring is in the interest of public safety.

32
33 **[3309.3.4] 5609.3.4 Limitation on quantity stored.** The [commissioner] department may
34 prescribe the maximum quantity of special effects material, article or device allowed to be
35 stored in any approved storage facility. The location and design of the storage facility shall be
36 approved by the [commissioner] department.

37
38 **[3309.3.5] 5609.3.5 Temporary storage.** For temporary storage, special effects materials,
39 articles or devices shall remain in their approved containers until required for use.

40
41 **[3309.3.6] 5609.3.6 Prompt use.** The time between removal from storage and use shall be the
42 shortest time practicable.

43
44 **[3309.3.7] 5609.3.7 Access to storage facility.** Pyrotechnic materials, articles or devices shall
45 not be left unattended, except in a secured storage facility. Unauthorized access to the storage
46 facilities shall be prevented either through the means of a locking mechanism or through
47 continuous supervision.

1
2 **[3309.4] 5609.4 Special effects permit.** [Except as otherwise provided in FC3309.5, a] A special
3 effects permit shall be obtained for each display or other event involving the conduct of a special
4 effect by the sponsor of the display or other event or, with the sponsor's written authorization, by
5 a [person holding a certificate of fitness for special effects issued pursuant to this section]
6 pyrotechnic operator employed by a special effects contractor holding a company certificate. A
7 special effects permit shall be issued in the name of the applicant and shall specify the name of the
8 sponsor, the date, time and location of the display or other event, the number and kind of
9 pyrotechnic articles or devices to be discharged or otherwise used, or other materials, articles or
10 devices used to create the special effects, and such other terms and conditions as the commissioner
11 may prescribe as necessary or appropriate for the safe conduct of the display or other event.
12

13 **[3309.4.1] 5609.4.1 Site inspection.** The department may conduct an inspection of the special
14 effects display site and its surroundings, prior to issuance of a permit and/or prior to the special
15 effects operation. Representatives of the applicant shall attend any such site inspection and
16 cooperate with the department in determining the suitability of the site for the proposed special
17 effects operation, and, if suitable, appropriate separation distances and other safety measures.
18 The applicant shall arrange for access by department representatives to the display site, for
19 purposes of the site inspection and during the special effects operation.
20

21 **[3309.4.2] 5609.4.2 Permit applications.** Application for a special effects permit shall be
22 made at least seven (7) days prior to the proposed special effects display. The [commissioner]
23 department shall review each application for a special effects permit and shall grant such
24 application only if the [commissioner] department is satisfied that the display or other event
25 can be safely conducted. Permit applications shall contain a special effects display plan,
26 including the following information and such other information and documentation as the
27 [commissioner] department may prescribe:
28

- 29 1. The name of the person, group, or organization responsible for the special effects
30 display.
- 31
- 32 2. The date, time and exact location of the display or other event.
33
- 34 3. The written [authorization] authorizations of the sponsor of the display or other event,
35 and of the owner of the premises.
36
- 37 4. A description of the special effects to be created.
38
- 39 5. The amount and types of the pyrotechnic material, articles or devices to be discharged
40 or otherwise used or stored for use, or other materials, articles or devices to be used or
41 stored for use in creating the special effects.
42
- 43 6. The name of all persons personally supervising the temporary storage, handling and
44 discharge or other use of the materials, articles or devices used to conduct the special
45 effects and their certificate of fitness numbers.
46

- 1 7. The names, ages and duties of all assistants who will be present in connection with the
2 special effects.
3
- 4 8. A dimensional diagram of the area where special effects are to be conducted that includes
5 the following information:
6
 - 7 8.1. The location at which the materials, articles or devices used for the special effects
8 are to be discharged or otherwise used and stored for use.
9
 - 10 8.2. Location of audiences, performers and support personnel in relation to the special
11 effects, and the duties of the performers and support personnel in connection with
12 the special effects.
13
 - 14 8.3. If using pyrotechnic article or device, the fallout radius for each article or device.
15
 - 16 8.4. If the special effects are displayed in front of an audience or bystanders, the lines
17 behind which the audience or bystanders shall be restrained.
18
 - 19 8.5. Such other information as the commissioner may prescribe relating to the safe
20 conduct of the display or other event.
21
- 22 9. The manner, place, and quantity of storage for the materials, articles or devices to be
23 used in creating the special effects.
24
- 25 10. [Certifications] Certification by an appropriate holder of a certificate of fitness that the
26 set, scenery, curtains, and rigging materials are inherently flame-retardant or have been
27 treated to achieve flame resistance.
28

29 **[3309.4.3] 5609.4.3 Applicant responsibility.** The applicant for a special effects permit shall
30 be responsible for the safe conduct of the display or other event including:

- 31 1. Arranging for the preparation and submission of the special effects display plan, and
32 obtaining the special effects permit.
33
- 34 2. Obtaining any necessary permit or authorization, including any permit or authorization
35 required by the United States Coast Guard, the Department of Parks and Recreation, the
36 Port Authority of New York and New Jersey, and the United States Federal Aviation
37 Administration.
38
- 39 3. Ensuring compliance with all applicable laws, rules and regulations, including the
40 federal, state and local laws, rules and regulations governing the transportation of
41 explosives and other hazardous materials, and the permit, labeling and fire protection
42 requirements thereof.
43
- 44 4. Ensuring adequate facilities, fire protection, and staffing by qualified personnel,
45 including the certificate of fitness holder required by this section.
46
47

- 1 5. In conjunction with the sponsor, ensuring maintenance of viewing areas at a safe distance
2 from the location of the special effects discharge, and other appropriate safety and crowd
3 control measures, as prescribed by the commissioner.
4
- 5 6. Ensuring compliance with the directions of department representatives.
6
- 7 7. Obtaining a liability and casualty insurance policy as set forth in [FC3301.2.4(4)]
8 FC5601.2.4(4).
9
- 10 8. Ensuring that the site of the display or other event is left in a safe condition.
11

12 **[3309.5 Production company special effects permit.** The commissioner may issue a production
13 company special effects permit to a television, motion picture or theatrical production company
14 that regularly conducts special effects at a designated location within a specific building or
15 structure in accordance with FC 3309.5.1 through 3309.5.4.
16

17 **3309.5.1 Permit limitations.** A production company special effects permit shall authorize the
18 permit holder to conduct certain special effects at one or more designated locations within a
19 specific building or structure for a specified period of time, not to exceed 1 year, without
20 obtaining special effects permits for each display or other event, and shall authorize the permit
21 holder to store in a central storage facility the materials, articles or devices used to create such
22 special effects.
23

24 **3309.5.2 Permit conditions.** A production company special effects permit shall specify the
25 number and kind of materials, articles or devices to be used and stored for use, and shall set
26 forth such other terms and conditions as the commissioner may prescribe for the safe conduct
27 of the special effects or the storage of such materials, articles or devices at such locations.
28

29 **3309.5.3 Permit applications.** The commissioner shall review each application for a
30 production company special effects permit and shall grant such application only if the
31 commissioner is satisfied that the production company can meet the requirements of this
32 section. Permit applications shall contain a special effects display plan, including the following
33 information and such other information and documentation as the commissioner may
34 prescribe:
35

- 36 1. The address of the designated building or structure and the specific location or locations
37 within such building or structure at which the special effects or other events are to be
38 conducted.
39
- 40 2. A description of the type of productions in connection with which special effects are to
41 be conducted.
42
- 43 3. A plan of the layout of each special effects location, including the arrangement of any
44 set, scenery, rigging, or equipment, and the proximity of the persons conducting the
45 special effects and any assistants, performers, or audience.
46
- 47 4. A description of the special effect to be created.

- 1
- 2 5. The amount and types of the pyrotechnic material, articles or devices to be discharged
- 3 or otherwise used or stored for use, or other materials, articles or devices to be used or
- 4 stored for use in creating the special effects.
- 5
- 6 6. The frequency with which the special effects are to be conducted.
- 7
- 8 7. The names of all persons personally supervising the storage, handling and discharge or
- 9 other use of the materials, articles or devices used for the special effects and their
- 10 certificate of fitness numbers.
- 11
- 12 8. Design and installation documents for the central storage facility in which the materials,
- 13 articles or devices used to create the special effects are to be stored.
- 14

15 **3309.5.4 Permit holder responsibilities.** A production company special effects permit holder
16 shall be responsible for the safe conduct of the special effects and the safe storage and handling
17 of all materials, articles or devices used therefore, in the manner prescribed by the
18 commissioner, including:

- 19
- 20 1. The construction and maintenance of a central storage facility in compliance with all
- 21 applicable federal, state and local laws, rules and regulations, including all permit and
- 22 fire protection requirements, and ensuring adequate security of such facility.
- 23
- 24 2. Ensuring compliance with all applicable laws, rules and regulations, including the
- 25 federal, state and local laws, rules and regulations governing the transportation of all
- 26 pyrotechnic materials, articles and devices and all other materials, articles or devices of
- 27 an explosive, flammable, or combustible nature, and the permit, labeling and fire
- 28 protection requirements thereof.
- 29
- 30 3. Ensuring that all special effects are conducted by a person holding a certificate of fitness
- 31 for special effects, and all materials, articles or devices for such purpose are handled and
- 32 stored by or under the supervision of such a person, as required by this section.
- 33
- 34 4. Ensuring compliance with the directions of department representatives.
- 35
- 36 5. Obtaining a liability and casualty insurance policy as set forth in FC3301.2.4(4).
- 37

38 **3309.6 Storage permit.** Except as otherwise provided in FC3309.5, it shall be unlawful to store
39 for use in a special effects display or other event any material, article or device of an explosive,
40 flammable, or combustible nature, including any pyrotechnic material, article or device and
41 fireworks, 1.4G, without a permit issued pursuant to this section.

42
43 **3309.7 Sales pyrotechnic supplier certificate.** It shall be unlawful to sell any pyrotechnic
44 material, article or device designed to create a special effect or to exhibit any such material, article
45 or device for sale without a pyrotechnic supplier certificate issued pursuant to FC3301.5.3.4, and
46 such materials, articles and devices shall be sold or offered for sale only to a person holding a
47 certificate of fitness for pyrotechnic special effects issued pursuant to this section or to a production

1 company holding a production company special effects permit issued pursuant to this section, and
2 only in conjunction with a special effects display or other event for which a permit has been issued
3 pursuant to this section.
4

5 **3309.8] 5609.5 Supervision.** Special effects, including the storage, handling and use of
6 pyrotechnic and other special effects materials, articles and devices, shall be supervised as set forth
7 in [FC3301.5] FC5601.5.
8

9 **[3309.9] 5609.6 Fire protection requirements.** Fire protection shall be provided in connection
10 with special effects as set forth in FC [3309.9.1] 5609.6.1 through [3309.9.3] 5609.6.3.
11

12 **[3309.9.1] 5609.6.1 Portable fire extinguishers.** At least two portable fire extinguishers of
13 the proper classification and size applicable to the hazard associated, shall be readily accessible
14 while the special effects materials, articles or devices are being handled.
15

16 **[3309.9.2] 5609.6.2 Out of service.** Fire protection devices, equipment or systems shall not be
17 placed out of service for a special effects display without department approval. When the
18 conduct of a special effects display requires that a fire protection device, equipment or system
19 be placed out of service to avoid a false alarm[, the]:
20

21 1. The fire alarm system, emergency alarm system or other fire protection system shall not
22 be placed out of service except upon a written application to the department and
23 department approval conditioned on alternative fire safety measures. Where it is
24 anticipated that special effects displays will require any fire protection system to be
25 placed out of service for an entire floor, or any fire protection device, equipment or
26 system to be placed out of service on a regular basis, the owner shall file an application
27 with the department to modify the fire protection system to minimize the number of
28 system components that would need to be placed out of service to avoid false alarms
29 caused by the special effects display.
30

31 2. Individual initiating devices, such as smoke or heat detectors, not to exceed 1000 square
32 feet of coverage, may be placed out of service on a limited basis when authorized by the
33 special effects permit. The out-of-service procedures, as set forth in FC Chapter 9, shall
34 be observed. The impairment coordinator shall ensure that [the device, equipment or
35 system is] such devices are returned to normal operating condition upon completion of
36 the special effects display or as soon as the likelihood of a false alarm has passed.
37

38 **[3309.9.3] 5609.6.3 Obscuring egress.** Special effects shall not generate a quantity of smoke
39 or mist, including dry ice or chemical fogs, that would obscure the visibility of exit signs or
40 paths of egress travel.
41

42 **[3309.10] 5609.7 Product information.** The [commissioner] department may require the
43 applicant to submit the following information regarding the materials, articles and devices to be
44 used in connection with any special effects:
45

46 1. The name, address, and phone number of the manufacturer.
47

- 1 2. The name of the product and a description of its effect or use.
- 2
- 3 3. The performance characteristics, such as duration, height, and diameter of the special effects
- 4 created.
- 5
- 6 4. A [material] safety data sheet for the special effect materials.
- 7
- 8 5. If a pyrotechnic article or device is used, whether the article or device is intended for indoor
- 9 use and whether it is to be used with any cautions or special considerations and instructions
- 10 for the proper method of placing, loading, and using the device.
- 11

12 **[3309.11] 5609.8 Pyrotechnic material storage.** The storage of pyrotechnic material, articles and

13 devices shall be as set forth in FC [3309.3] 5609.3, [3309.11.1] 5609.8.1 and [3309.11.2] 5609.8.2.

14

15 **[3309.11.1] 5609.8.1 Compliance with federal regulations.** All pyrotechnic materials,

16 articles or devices shall be stored in accordance with regulations of the Bureau of Alcohol,

17 Tobacco, Firearms and Explosives of the United States Department of Justice, as set forth in

18 27 CFR Part 555, Subpart K.

19

20 **[3309.11.2] 5609.8.2 Ignition sources.** Pyrotechnic materials, articles or devices shall not be

21 stored within 50 feet (152 400 mm) of any unprotected source of heat or open flame.

22

23 **[3309.12] 5609.9 Pyrotechnic material separation distances.** If a pyrotechnic material, article

24 or device is used to create a special effect before an audience or bystanders, the distance to the

25 audience or bystanders shall be as set forth in FC [3309.12.1] 5609.9.1 through [3309.12.3]

26 5609.9.3.

27

28 **[3309.12.1] 5609.9.1 Fallout radius separation.** Each pyrotechnic material, article or device

29 discharged or otherwise used to create a special effect shall be separated from any audience or

30 bystanders by not less than twice the fallout radius of the device or 15 feet (4572 mm),

31 whichever is greater.

32

33 **[3309.12.2] 5609.9.2 Concussion mortar separation.** Concussion mortars shall be separated

34 from the audience and bystanders by a minimum of 25 feet (7620 mm).

35

36 **[3309.12.3] 5609.9.3 Flaming particle separation.** There shall be no glowing or flaming

37 particles within [10] 15 feet ([3048] 4572 mm) of the audience or bystanders.

38

39 **[3309.13] 5609.10 Special effects safety precautions.** Pre-firing safety precautions for

40 pyrotechnic materials used to create a special effect shall be in accordance with FC [3309.1.1]

41 5609.10.1 through [3309.13.9] 5609.10.9.

42

43 **[3309.13.1] 5609.10.1 Mounting.** Special effects materials, articles or devices shall be

44 mounted in a secure manner to ensure that when they are discharged or otherwise used they

45 maintain the proper position in accordance with the approved permit application.

46

1 [3309.13.2] **5609.10.2 Performer protection.** Where a special effects material, article or
2 device is placed on or in contact with a performer's body, appropriate shielding or other form
3 of protection adequate to prevent any injury to the performer shall be provided. This protection
4 shall be sufficient to protect against the normal functioning of the special effects material,
5 article or device, as well as any possible malfunction.
6

7 [3309.13.3] **5609.10.3 Security.** The area where the special effects is to occur shall be secured
8 from entry by unauthorized personal once the special effects material, article or device has
9 been placed in position.
10

11 [3309.13.4] **5609.10.4 Communication.** Special effects materials, articles or devices shall be
12 discharged or otherwise used only when the area wherein the effect is to occur is in clear view
13 of the certificate of fitness holder for such special effects or in the clear view of a trained and
14 knowledgeable assistant who is in direct communication with such certificate of fitness holder.
15 Such communication may be accomplished through the use of lights or other nonverbal signals.
16

17 [3309.13.5] **5609.10.5 Container condition.** The certificate of fitness holder shall inspect the
18 containers in which special effects materials, articles or devices have been shipped. Damaged
19 special effects materials, articles or devices shall not be used and shall be promptly removed
20 from the premises and disposed of lawfully.
21

22 [3309.13.6] **5609.10.6 Protective clothing and equipment.** All persons handling and using
23 special effects materials, articles or devices shall wear protective clothing and gear appropriate
24 to the hazard in accordance with the regulations of the United States Department of Labor.
25

26 [3309.13.7] **5609.10.7 Final inspection.** Immediately before any special effect, the certificate
27 of fitness holder shall conduct a final inspection of all components of the special effects,
28 including wiring, electrical connections and special effects materials, articles or devices, to
29 ensure that they are in proper working order and to verify that all required safety distances are
30 maintained.
31

32 [3309.13.8] **5609.10.8 Wiring placement.** Special effects materials, articles or devices shall
33 be placed and wired in a manner designed to minimize the risk of performers and others.
34

35 [3309.13.9] **5609.10.9 Disposal of unused special effects material.** All special effects
36 materials, articles and devices not needed for the conduct of the special effects shall be
37 promptly returned to the storage facility prior to the conduct of the special effects. All unused
38 special effects materials articles or devices shall be promptly returned to the storage facility
39 after the special effects display.
40

41 [3309.14] **5609.11 Pyrotechnic safety precautions.** Any special effects using a pyrotechnic
42 special effects material, article or device shall be conducted in accordance with FC [3309.13]
43 5609.10, and [3309.14.1] 5609.11.1 through [3309.14.7] 5609.11.7.
44

45 [3309.14.1] **5609.11.1 Projectile restrictions.** No pyrotechnic material, article or device shall
46 be discharged in a manner that projects an article or device or debris therefrom above the
47 audience or bystanders or causes damage to the premises.

1
2 **[3309.14.2] 5609.11.2 Mortar construction.** Mortars and flash pots shall be constructed so
3 that they are not damaged by the discharge or other use of the pyrotechnic material, article or
4 device. Damaged mortars and flash pots shall not be used. Converted electrical switch boxes,
5 lamp sockets, lamp holders, plug fuses, or other similar thin-walled, brittle devices shall not
6 be used for concussion mortars or flash pots.

7
8 **[3309.14.3] 5609.11.3 Flare placement.** Flares shall be placed so that any debris falls into a
9 safe, flame-resistant area.

10
11 **[3309.14.4] 5609.11.4 Securing of rotating devices.** Rotating pyrotechnic materials, articles
12 or devices, such as wheels and saxons, shall be mounted securely so that their rotation does
13 not cause the holder to fail.

14
15 **[3309.14.5] 5609.11.5 Securing of rockets.** Where rockets are launched before a proximate
16 audience, performers, or support personnel, the rockets shall be attached securely to a guide
17 wire or cable with both ends securely attached and placed on an impact-resistant surface
18 located at the terminal end of the guide. This guide wire or cable shall be of sufficient strength
19 and flame resistance to withstand the exhaust from the rocket. An effective arrangement to
20 stop the rocket shall be provided.

21
22 **[3309.14.6] 5609.11.6 Security.** Firing systems shall not be left unattended while connected
23 to loaded pyrotechnic materials, articles or devices, unless such systems are disconnected from
24 their power source and have a removable activator, keyswitch, or coded arming system.

25
26 **[3309.14.7] 5609.11.7 Firing safeguards.** Pyrotechnic materials, articles or devices shall be
27 discharged only from equipment specifically constructed for that purpose. All firing systems
28 shall be designed to ensure against accidental discharge by providing at least a two-step
29 interlock in which the firing circuit cannot be activated unless the operator intentionally
30 enables or arms the firing system and deliberately activates the circuit.

31
32 **[3309.15] 5609.12 Special effects post-discharge safety measures.** Safety measures shall be
33 implemented after the discharge of special effects as set forth in FC [3309.15.1] 5609.12.1 and
34 [3309.15.2] 5609.12.2.

35
36 **[3309.15.1] 5609.12.1 Post-discharge inspection.** At the earliest opportunity after the
37 discharge of special effects, the certificate of fitness holder shall verify that the pyrotechnic
38 materials, articles or devices have discharged, consumed or otherwise operated properly. Any
39 special effects materials, articles or devices that have not operated properly shall either be
40 immediately discharged or otherwise used in place, or immediately removed from the
41 performance area and disposed of lawfully.

42
43 **[3309.15.2] 5609.12.2 Final inspection.** The certificate of fitness holder shall ensure that all
44 special effects materials, articles and devices are removed from the premises after the
45 performance in which the special effects was conducted.

46
47 **[3309.16] 5609.13 Open flames.** Where approved, open flames may be used in connection with

1 theatrical performances when adequate safety precautions have been taken in accordance with
2 NFPA 160.

3
4 **[3309.17] 5609.14 Storage of other special effects materials.** A material, article or device of an
5 explosive, flammable, [or] combustible, or otherwise dangerous nature used to create special
6 effects shall be stored in compliance with the storage requirements for the particular material,
7 article or device as prescribed in this code, the rules and other applicable laws, rules and
8 regulations.

9
10 **[3309.18] 5609.15 Storage of special effects materials in television studios and other**
11 **production facilities.** The storage in television studios and other production facilities of special
12 effects materials, articles and devices, including pyrotechnic materials, articles and devices, shall
13 be in accordance with the rules.

14
15 **[3309.19 Storage for sale of pyrotechnic materials.** Pyrotechnic suppliers storing pyrotechnic
16 materials, articles and devices for sale shall store such pyrotechnic materials, articles and devices
17 in an approved facility.]

18
19
20 **CHAPTER 57**
21 **FLAMMABLE AND COMBUSTIBLE LIQUIDS**

22
23 **SECTION FC [3401] 5701**
24 **GENERAL**

25
26 **[3401.1] 5701.1 Scope.** This chapter shall govern the storage, handling and use of flammable and
27 combustible liquids, including the dispensing and mixing of such liquids, including flammable and
28 combustible liquids subject to the New York State Department of Environmental Conservation
29 regulations, as set forth in 6 NYCRR Parts [595] 596 through [614] 613.

30
31 **Exceptions[.]:** This chapter shall not apply to:

- 32
33 1. Medicines, foodstuffs, cosmetics, and commercial, institutional and industrial products
34 in the same concentration and packaging containing not more than 50 percent by volume
35 of water-miscible liquids and with the remainder of the solution not being flammable,
36 and alcoholic beverages in retail or wholesale sales or storage uses when packaged in
37 individual containers not exceeding 1.3 gallons (5 L).
38
39 2. Installation of fuel oil storage tanks and auxiliary storage tanks for oil-burning
40 equipment, except that this chapter shall apply with respect to permit requirements and
41 requirements relating to out-of-service fuel oil tanks.
42
43 3. Refrigerant liquids and oils in refrigerating systems (see FC606).
44
45 4. Storage and display of aerosol products complying with the requirements of FC Chapter
46 [28] 51.
47

- 1 5. Storage and use of liquids that have no fire point when tested in accordance with ASTM
2 D 92.
- 3
- 4 6. Liquids with a flash point greater than 95°F (35°C) in a water-miscible solution or
5 dispersion with a water and inert (noncombustible) solids content of more than 80 percent
6 by weight, which do not sustain combustion.
- 7
- 8 7. Liquids without flash points that can be flammable under some conditions, such as
9 certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons.
- 10
- 11 8. The storage of [distilled spirits and] wines in wooden barrels and casks.
- 12
- 13 9. The manufacturing, storage, handling and use of distilled spirits in distilleries in
14 accordance with FC Chapter 40.
- 15
- 16 10. Commercial cooking oil storage systems in accordance with FC610.

17
18 **[3401.2] 5701.2** Reserved.

19
20 **[3401.3] 5701.3 Design and installation documents.** The commissioner may require design and
21 installation documents, specifications and calculations in connection with the installation,
22 alteration or repair of tanks and related devices, equipment and systems pursuant to this chapter,
23 including fire protection systems.

24
25 **[3401.4] 5701.4 Permits.** Permits shall be required as set forth in FC105.6.

26
27 **[3401.5] 5701.5 Material classification.** Flammable and combustible liquids shall be classified in
28 accordance with the definitions in [FC3402.1] 5702.1.

29
30 **[3401.6] 5701.6 Supervision.** Manufacture, storage, handling and use of flammable and
31 combustible liquids, including the dispensing of such liquids, shall be supervised as set forth in
32 FC [3401.6.1] 5701.6.1 through [3401.6.3] 5701.6.3.

33
34 **[3401.6.1] 5701.6.1 Manufacture.** The manufacture of flammable and combustible liquids
35 shall be under the personal supervision of a certificate of fitness holder.

36
37 **[3401.6.2] 5701.6.2 Storage.** The storage of flammable liquids, and combustible liquids with
38 a flash point of 300°F (149°C) or less, shall be under the general supervision of a certificate of
39 fitness holder when the quantity of such stored liquids exceeds the following amounts:

- 40
- 41 1. 275 gallons (1041 L) in a closed system;
- 42
- 43 2. 275 gallons (1041 L) of alcohol-based hand rubs in consumer-product (non-bulk)
44 packaging, including sealed refills for hand dispensers, when stored for use on the
45 premises (excluding dispensers installed or placed for use);
- 46
- 47 3. 20 gallons (76 L) of combustible liquid in portable containers;

1
2 4. 10 gallons (38 L) of flammable liquid in portable containers, except alcohol-based hand
3 rubs subject to FC5701.6.2(2) and gasoline; or

4
5 5. 2½ gallons (9.5 L) of gasoline.

6
7 **[3401.6.3] 5701.6.3 Handling and use.** The handling and use of flammable liquids, and
8 combustible liquids with a flash point of 300°F (149°C) or less, shall be under the personal
9 supervision of a certificate of fitness holder when the quantity of such handled and used liquids
10 exceeds the amounts set forth in [FC3401.6.2] FC5701.6.2, except for alcohol-based hand rubs
11 subject to subject to FC5701.6.2(2).

12
13 **5701.6.4 Fleet fueling operations.** Fleet fueling operations shall be personally conducted by
14 a cargo tank operator holding a certificate of fitness for that purpose. The certificate of fitness
15 holder shall be responsible for ensuring that fleet fueling operations are conducted in
16 accordance with this section.

17
18 **[3401.7] 5701.7 Prohibitions.** It shall be unlawful to:

- 19
20 1. Manufacture, refine or distill petroleum or coal tar, or the liquid products thereof.
21
22 2. Operate a refinery.
23
24 3. Install an aboveground flammable liquid storage tank indoors.
25
26 4. Store or transport in the harbor or the city any flammable or combustible liquid, except in a
27 barge, marine vessel, or watercraft constructed, protected and operated in accordance with
28 the regulations of the United States Coast Guard.
29
30 5. Store flammable liquids in basements, cellars or other areas below grade.
31
32 6. Clean number six fuel oil tanks by heating number two fuel oil and circulating it within such
33 tanks.
34

35 **[3401.8] 5701.8 Certificate of license.** Persons who install, alter, test or repair any flammable or
36 combustible liquid storage system shall hold a certificate of license or shall be employed by and
37 perform such duties under the general supervision of a person holding such certificate.
38

39 **SECTION FC [3402] 5702**
40 **DEFINITIONS**

41
42 **[3402.1] 5702.1 Definitions.** The following terms shall, for the purposes of this chapter and as
43 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
44

45 **ALCOHOL-BASED HAND RUB.** [An alcohol-containing preparation designed for application
46 to the hands for anti microbacterial or other medicinal purpose that contains ethanol or
47 isopropanol.]

1
2 **BULK PLANT OR TERMINAL.** [Any premises upon which flammable or combustible liquids
3 are received from marine vessel, watercraft, pipeline, tank car or cargo tank and are stored or
4 blended in bulk for the purpose of distributing such liquids by marine vessel, watercraft, pipeline,
5 tank car, cargo tank or container.]
6

7 **BULK TRANSFER.** [The loading or unloading of flammable or combustible liquids from or
8 between marine vessels, watercraft, pipelines, tank cars, cargo tanks or storage tanks.]
9

10 **COMBUSTIBLE LIQUID.** [For purposes of transportation, a combustible liquid, as defined in
11 the regulations of the United States Department of Transportation, as set forth in 49 CFR Section
12 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a
13 closed cup flash point at or above 100°F (38°C), classified as follows:]
14

15 **Class II.** [Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F
16 (60°C).]
17

18 **Class IIIA.** [Liquids having a closed cup flash point at or above 140°F (60°C) and below
19 200°F (93°C).]
20

21 **Class IIIB.** [Liquids having closed cup flash points at or above 200°F (93°C).]
22

23 **FIRE POINT.** [The lowest temperature at which a liquid will ignite and achieve sustained burning
24 when exposed to a test flame in accordance with ASTM D 92.]
25

26 **FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM.** [A flammable or
27 combustible liquid storage tank and all devices, equipment and systems associated with such tank,
28 including the tank, piping, valves, fill connection, vent lines, pumps and any other ancillary
29 equipment, except liquid motor fuel storage and dispensing systems and flammable and
30 combustible liquid storage systems at a bulk plant or terminal used for bulk transfer operations.]
31

32 **FLAMMABLE LIQUID.** [For purposes of transportation, a flammable liquid defined in the
33 regulations of the United States Department of Transportation, as set forth in 49 CFR Section
34 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a
35 closed cup flash point below 100°F (38°C), classified as follows:]
36

37 **Class I.**
38

39 **Class IA.** [Liquids having a flash point below 73°F (23°C) and having a boiling point below
40 100°F (38°C).]
41

42 **Class IB.** [Liquids having a flash point below 73°F (23°C) and having a boiling point at or
43 above 100°F (38°C).]
44

45 **Class IC.** [Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).]
46

1 **FLASH POINT.** [The minimum temperature in degrees Fahrenheit at which a liquid will give off
2 sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will
3 not sustain combustion. The flash point of a liquid shall be determined by appropriate test
4 procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.]

5
6 **FLEET FUELING.**

7
8 **LIQUID STORAGE ROOM.** [A room classified as a Group H-3 occupancy used for the storage
9 of flammable or combustible liquids.]

10
11 **LIQUID STORAGE WAREHOUSE.** [A building classified as a Group H-2 or H-3 occupancy
12 used for the storage of flammable or combustible liquids in closed containers.]

13
14 **PROCESS TRANSFER.** [The transfer of flammable or combustible liquids between cargo tanks
15 or tank cars and containers, tanks piping and other equipment that is to be used in process
16 operations.]

17
18 **PROCESSING VESSEL.** [A tank or other container used in manufacturing or other process
19 operation that involves the use of a flammable or combustible liquid supplied from other than a
20 cargo tank, tank car or pipeline.]

21
22 **REFINERY.** [A plant in which flammable or combustible liquids are produced on a commercial
23 scale from crude petroleum, gasoline or other hydrocarbon sources.]

24
25 **REMOTE SOLVENT RESERVOIR.** [A liquid solvent container enclosed against evaporative
26 losses to the atmosphere during periods when the container is not being utilized, except for a
27 solvent return opening not larger than 16 square inches (10 322 mm²), which allows pump-cycled
28 used solvent to drain back into the reservoir from a separate solvent sink or work area.]

29
30 **SOLVENT DISTILLATION UNIT.** [An appliance that receives contaminated flammable or
31 combustible liquids and which distills the contents to remove contaminants and recover the
32 solvents.]

33
34 **TANK, PRIMARY.** [A listed atmospheric tank used to store liquid.]

35
36 **SECTION FC [3403] 5703**
37 **GENERAL REQUIREMENTS**

38
39 **[3403.1] 5703.1 Electrical.** Electrical wiring and equipment shall be installed and maintained in
40 accordance with the Electrical Code.

41
42 **[3403.1.1] 5703.1.1 Classified locations for flammable liquids.** Areas where flammable
43 liquids are stored, handled or used, including the dispensing or mixing of such liquids, shall be
44 in accordance with FC Table [3403.1.1] 5703.1.1 and the Electrical Code. A classified area
45 shall not extend beyond any floor, roof or other solid partition having no openings. The extent
46 of the classified area is allowed to be reduced, or eliminated, where sufficient technical

1 justification is provided to the commissioner that a concentration in the area in excess of 25
2 percent of the lower flammable limit cannot be generated.

3
4 **[3403.1.2] 5703.1.2 Classified locations for combustible liquids.** Areas where Class II or III
5 liquids are heated above their flash points shall have electrical installations in accordance with
6 [FC3403.1.1] FC5703.1.1 and the Electrical Code.

7
8 **Exception:** Solvent distillation units in accordance with [FC3405.4] FC5705.4.

9
10 **[3403.1.3] 5703.1.3 Other applications.** The commissioner may determine the extent of the
11 Class I electrical equipment and wiring location when a condition is not specifically covered
12 by these requirements or the Electrical Code.

13
14 **[3403.1.4] 5703.1.4 Tank grounding.** Tanks shall be properly grounded.

15
16 **[3403.2] 5703.2 Fire protection.** Fire protection for the storage, handling, and use of flammable
17 and combustible liquids, including the dispensing and mixing of such liquids, and on-site
18 transportation, shall be provided in accordance with this chapter and FC Chapter 9.

19
20 **[3403.2.1] 5703.2.1 Portable fire extinguishers and hose lines.** Portable fire extinguishers
21 shall be provided in accordance with FC906. Where required, hose lines shall be provided in
22 accordance with FC905.

23
24 **[3403.3] 5703.3 Site assessment.** The commissioner may require an owner or operator of a tank
25 system to conduct a site assessment upon a determination that a potential fire or explosion hazard
26 exists as a result of a spill, leak or discharge from such system. Such site assessments shall be
27 conducted to ascertain potential fire hazards and shall be completed and submitted to the
28 department within a time period established by the commissioner, not to exceed 60 calendar days.

29
30 **[3403.4] 5703.4 Spill control and secondary containment.** Where the maximum allowable
31 quantity per control area is exceeded, and when required by [FC2704.2] FC5004.2, rooms,
32 buildings or areas used for storage, handling or use of Class I, II and III-A liquids, including the
33 dispensing or mixing of such liquids, shall be provided with spill control and secondary
34 containment in accordance with [FC2704.2] FC5004.2.

35
36 **[3403.5] 5703.5 Labeling and signage.** The commissioner may require warning signs for the
37 purpose of identifying the hazards of manufacturing, storing, handling or using flammable liquids,
38 including the dispensing or mixing of such liquids. Signage for identification and warning such as
39 for the inherent hazard of flammable liquids or smoking shall be provided in accordance with this
40 chapter and FC [2703.5] 5003.5 and [2703.6] 5003.6.

41
42 **[3403.5.1] 5703.5.1 Style.** Warning signs shall be of a durable material. Signs warning of the
43 hazard of flammable liquids shall have red, black or white lettering on a contrasting
44 background and shall read: DANGER—FLAMMABLE LIQUIDS. Letters shall not be less
45 than 3 inches (76 mm) in height and ½ inch (12.7 mm) in stroke.

1 [3403.5.2] **5703.5.2 Location.** Signs shall be posted in locations as required by the
2 commissioner. Piping containing flammable liquids shall be identified in accordance with
3 ASME A13.1.

4
5 [3403.5.3] **5703.5.3 Warning labels.** Individual containers, packages and cartons shall be
6 identified, marked, labeled and placarded in accordance with federal regulations and applicable
7 state laws.

8
9 [3403.5.4] **5703.5.4 Identification.** Color coding or other approved identification means
10 consistent with the New York State Department of Environmental Conservation regulations,
11 as set forth in 6 NYCRR Section 613[.3(b)], shall be provided on each loading and unloading
12 riser for flammable or combustible liquids to identify the contents of the tank served by the
13 riser.

**FC TABLE [3403.1.1] 5703.1.1
CLASS I ELECTRICAL EQUIPMENT LOCATIONS^a**

LOCATION	GROUP D DIVISION	EXTENT OF CLASSIFIED AREA
Underground tank fill opening	1	Pits, boxes or spaces below grade level, any part of which is within the Division 1 or 2 classified area.
	2	Up to 18 inches above grade level within a horizontal radius of 10 feet from a loose-fill connection and within a horizontal radius of 5 feet from a tight-fill connection.
Vent—Discharging upward	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet of open end of vent, extending in all directions.
Drum and container filling Outdoor or indoor with adequate ventilation	1	Within 3 feet of vent and fill opening, extending in all directions.
	2	Area between 3 feet and 5 feet from vent of fill opening, extending in all directions. Also up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill opening.
Pumps, bleeders, withdrawal fittings, meters and similar devices Indoor	2	Within 5 feet of any edge of such devices, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet horizontally from any edge of such devices.
	2	Within 3 feet of any edge of such devices, extending in all directions. Also up to 18 inches horizontally from an edge of such devices.
Pits Without mechanical ventilation With mechanical ventilation Containing valves, fittings or piping, and not within a Division 1 or 2 classified area	1	Entire area within pit if any part is within a Division 1 or 2 classified area.
	2	Entire area within pit if any part is within a Division 1 or 2 classified area.
	2	Entire pit.
Drainage ditches, separators, impounding basins Indoor Outdoor	1 or 2	Same as pits.
	2	Area up to 18 inches above ditch, separator or basin. Also up to 18 inches above grade within 15 feet horizontal from any edge.
Cargo tank and tank car^b Loading through open dome Loading through bottom connections with atmospheric venting Office and restrooms	1	Within 3 feet of edge of dome, extending in all directions.
	2	Area between 3 feet and 15 feet from edge of dome, extending in all directions.
	1	Within 3 feet of point of venting to atmosphere, extending in all directions.
	2	Area between 3 feet and 15 feet from point of venting to atmosphere, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of loading connection.
	Ordinary	Where there is an opening to these rooms within the extent of an indoor classified location, the room shall be classified the same as if the wall, curb or partition did not exist.
Cargo tank and tank car^b—continued Loading through closed dome with atmospheric venting Loading through closed dome with vapor control	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 15 feet from open end of vent, extending in all directions. Also within 3 feet of edge of dome, extending in all directions.
	2	Within 3 feet of point of connection of both fill and vapor lines, extending in all directions.

Bottom loading with vapor control or any bottom unloading	2	Within 3 feet of point of connection, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of connection.
Repair garage for cargo tanks	1	Pits or spaces below floor level.
	2	Area up to 18 inches above floor or grade level for entire storage or repair garage.
Garages for other than cargo tanks	Ordinary	Where there is an opening to these rooms within the extent of an outdoor classified area, the entire room shall be classified the same as the area classification at the point of the opening.
Outdoor drum storage	Ordinary	
Indoor warehousing where there is no flammable liquid transfer	Ordinary	Where there is an opening to these rooms within the extent of an indoor classified area, the room shall be classified the same as if the wall, curb or partition did not exist.
Indoor equipment where flammable vapor/air mixtures could exist under normal operations	1	Area within 5 feet of any edge of such equipment, extending in all directions.
	2	Area between 5 feet and 8 feet of any edge of such equipment, extending in all directions. Also, area up to 3 feet above floor or grade level within 5 feet to 25 feet horizontally from any edge of such equipment. ^c
Outdoor equipment where flammable vapor/air mixtures could exist under normal operations	1	Area within 3 feet of any edge of such equipment, extending in all directions.
	2	Area between 3 feet and 8 feet of any edge of such equipment extending in all directions. Also, area up to 3 feet above floor or grade level within 3 feet to 10 feet horizontally from any edge of such equipment.
Tank—Aboveground Shell, ends or roof and dike area Vent Floating roof	1	Area inside dike where dike height is greater than the distance from the tank to the dike for more than 50 percent of the tank circumference.
	2	Area within 10 feet from shell, ends or roof of tank. Area inside dikes to level of top of dike.
	1	Area within 5 feet of open end of vent, extending in all directions.
	2	Area between 5 feet and 10 feet from open end of vent, extending in all directions.
	1	Area above the roof and within the shell.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Locations as classified in the Electrical Code.

b. When classifying extent of area, consideration shall be given to the fact that tank cars or cargo tanks can be situated at varying points. Therefore, the perimeter of the loading or unloading positions shall be used.

c. The release of Class I liquids can generate vapors to the extent that the entire building, and possibly a zone surrounding it, are considered a Class I, Division 2 location.

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2
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4
5
6
7

1 **[3403.6] 5703.6 Piping systems.** Piping systems for flammable and combustible liquids shall be
2 in accordance with this section.

3
4 **Exception:** Piping that is integral to stationary or portable engines, including engines in
5 aircraft, marine vessels, watercraft and motor vehicles, and piping associated with boilers and
6 pressure vessels regulated by the construction codes, including the Mechanical Code.

7
8 **[3403.6.1] 5703.6.1** Reserved.

9
10 **[3403.6.2] 5703.6.2 Design and manufacture of piping system components.** Piping system
11 components shall be designed and manufactured in accordance with the applicable standard
12 listed in FC Table [3403.6.2] 5703.6.2 and NFPA 30, except as modified by this section.

13
14 **FC TABLE [3403.6.2] 5703.6.2**
15 **PIPING STANDARDS**

PIPING USE	STANDARD
Power Piping	ASME B31.1
Process Piping	ASME B31.3
Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids	ASME B31.4
Building Services Piping	ASME B31.9

16
17 **[3403.6.2.1] 5703.6.2.1 Special materials.** Low-melting-point materials, such as
18 aluminum, copper or brass, that soften on fire exposure, such as nonmetallic materials, and
19 nonductile material, such as cast iron, shall be acceptable for use underground only in
20 accordance with the applicable standard listed in FC Table [3403.6.2] 5703.6.2.
21 Aboveground piping system components shall be constructed of Schedule 40 steel or a
22 higher schedule steel.

23
24 **[3403.6.3] 5703.6.3 Testing.** Unless tested in accordance with the applicable section of ASME
25 B31.9, piping, before being covered, enclosed or placed in use, shall be hydrostatically tested
26 to 150 percent of the maximum anticipated operating pressure of the system, or pneumatically
27 tested to 110 percent of the maximum anticipated pressure of the system, but not less than 15
28 pounds per square inch gauge (psig) (103.4 kPa) at the highest point of the system. This test
29 shall be maintained for a sufficient time period to complete visual inspection of joints and
30 connections. For a minimum of 60 minutes, there shall be no leakage or permanent distortion.
31 Pneumatic testing shall be conducted using an inert gas, except that air may be used if the
32 piping system does not contain flammable or combustible liquid vapors. Piping system tests
33 shall be conducted at the owner's risk by his or her representative before a representative of
34 the department. Care shall be exercised to ensure that these pressures are not applied to vented
35 storage tanks. Such storage tanks shall be tested independently from the piping.

36
37 **[3403.6.3.1] 5703.6.3.1 Existing piping.** Existing piping shall be tested in accordance with
38 this section, upon a determination by the commissioner that such piping may be leaking.
39 Piping that could contain flammable or combustible liquid vapors shall not be tested
40 pneumatically, except that vapor-recovery piping may be tested pneumatically using an
41 inert gas. Such tests shall be conducted at the owner's risk by his or her representative.
42

1 [3403.6.4] **5703.6.4 Protection from vehicles.** Posts or other approved means shall be
2 provided in accordance with FC312 to protect piping, valves, fittings or ancillary equipment
3 subject to vehicular damage.
4

5 [3403.6.5] **5703.6.5 Protection from corrosion and galvanic action.** Where subject to
6 external corrosion, piping, related fluid-handling components and supports for both
7 underground and aboveground applications shall be fabricated from noncorrosive materials,
8 coated or otherwise provided with corrosion protection. Dissimilar metallic parts that promote
9 galvanic action shall not be joined.
10

11 [3403.6.6] **5703.6.6 Valves.** Piping systems shall contain a sufficient number of manual control
12 valves and check valves to operate the system properly and to protect the facility under both
13 normal and emergency conditions. Piping systems in connection with pumps shall contain a
14 sufficient number of such valves to control properly the flow of liquids in normal operation
15 and in the event of physical damage or fire exposure.
16

17 [3403.6.6.1] **5703.6.6.1 Backflow protections.** Connections to pipelines or piping by
18 which tank cars, cargo tanks, marine vessels, watercraft or other equipment discharge
19 liquids into storage tanks shall be provided with check valves or block valves for automatic
20 protection against backflow where the piping arrangement is such that backflow from the
21 system is possible. Where loading and unloading is done through a common pipe system,
22 a check valve is not required except as required by the applicable provisions of the New
23 York State Department of Environmental Conservation regulations, as set forth in 6
24 NYCRR Section 613.[3(c)(4).] However, a block valve shall be provided which is located
25 so as to be readily accessible or remotely operable.
26

27 [3403.6.6.2] **5703.6.6.2 Manual drainage.** Manual drainage-control valves shall be
28 located at approved locations remote from the tanks, diked area, drainage system and
29 impounding basin to ensure their operation in a fire condition.
30

31 [3403.6.7] **5703.6.7 Connections.** Aboveground tanks with connections located below normal
32 liquid level shall be provided with internal or external isolation valves located as close as
33 practical to the shell of the tank. Except for liquids whose chemical characteristics are
34 incompatible with steel, such valves, when external, and their connections to the tank shall be
35 of steel.
36

37 [3403.6.8] **5703.6.8 Piping supports.** Piping systems shall be substantially supported and
38 protected from physical damage and designed to accommodate settlement, vibration,
39 expansion, contraction or exposure to fire. The supports shall be constructed of steel, concrete
40 or other approved noncombustible material.
41

42 [3403.6.9] **5703.6.9 Flexible joints.** Flexible joints shall be listed and approved and shall be
43 installed on underground liquid, vapor and vent piping at all of the following locations:
44

- 45 1. Where piping connects to underground tanks.
- 46
- 47 2. Where piping ends at pump islands and vent risers.

1
2 3. At points where differential movement in the piping can occur.
3

4 **[3403.6.9.1] 5703.6.9.1 Fiberglass-reinforced plastic piping.** Fiberglass-reinforced
5 plastic piping is not required to be provided with flexible joints in locations where both of
6 the following conditions are present:
7

- 8 1. Piping does not exceed 4 inches (102 mm) in diameter.
- 9
- 10 2. Piping has a straight run of not less than 4 feet (1219 mm) on one side of the
11 connection when such connections result in a change of direction.
12

13 **[3403.6.9.1.1] 5703.6.9.1.1 Flexible joints.** In lieu of the minimum 4-foot (1219 mm)
14 straight run length required in [FC3403.6.9.1(2)] FC5703.6.9.1(2), approved and listed
15 flexible joints are allowed to be used under dispensers and suction pumps, at submerged
16 pumps and tanks, and where vents extend aboveground.
17

18 **[3403.6.10] 5703.6.10 Pipe joints.** Joints shall be liquid-tight and shall be welded, flanged or
19 threaded except that listed flexible connectors are allowed in accordance with [FC3403.6.9]
20 FC5703.6.9. Threaded or flanged joints shall fit tightly by using approved methods and
21 materials for the type of joint. Joints in piping systems used for Class I liquids shall be welded
22 when located in concealed spaces within buildings or structures. Nonmetallic joints shall be
23 subject to the approval of the commissioner and shall be installed in accordance with the
24 manufacturer's instructions. Pipe joints that are dependent on the friction characteristics or
25 resiliency of combustible materials for liquid tightness of piping shall not be used in buildings
26 or structures. Piping shall be secured to prevent disengagement at the fitting.
27

28 **[3403.6.11] 5703.6.11 Bends.** The bending of piping and tubing shall be performed in
29 accordance with ASME B31.9.
30

31 **[3403.6.12] 5703.6.12 Contents.** Piping system components shall be documented as being
32 compatible with the liquid to which such components will be exposed. Such documentation
33 shall be approved and submitted to the department upon request.
34

35 **SECTION FC [3404] 5704** 36 **STORAGE** 37

38 **[3404.1] 5704.1 General.** Flammable and combustible liquids in containers and tanks shall be
39 stored in accordance with this section, FC Chapter [27] 50 and the New York State Department of
40 Environmental Conservation regulations, as set forth in 6 NYCRR Parts 596, 598, 599, [612,] and
41 613[and 614].
42

43 **[3404.1.1] 5704.1.1 Aboveground storage prohibited.** Except as specifically authorized in
44 [FC3406] 5706, it shall be unlawful to store flammable liquids in an aboveground storage tank.
45

46 **[3404.1.2] 5704.1.2 Tank capacity limitations.** Except at a bulk plant or terminal or as
47 otherwise specified in this chapter, the capacity of flammable and combustible liquid storage

1 tanks shall not exceed the amounts set forth in FC [3404.1.2.1] 5704.1.2.1 through [3404.1.2.4]
2 5704.1.2.4.

3
4 **[3404.1.2.1] 5704.1.2.1 Underground flammable liquid tanks.** Individual underground
5 flammable liquid storage tanks shall not exceed a capacity of 4,000 gallons (15 140 L). The
6 aggregate capacity of underground flammable liquid storage tanks at a premises shall not
7 exceed 20,000 gallons (75 700 L).
8

9 **[3404.1.2.2] 5704.1.2.2 Underground combustible liquid tanks.** Individual underground
10 combustible liquid storage tanks shall not exceed a capacity of 12,000 gallons (45 420 L).
11 The aggregate capacity of underground combustible liquid storage tanks at a premises shall
12 not exceed 40,000 gallons (151 400 L).
13

14 **[3404.1.2.3] 5704.1.2.3 Aboveground, outdoor combustible liquid tanks.** The aggregate
15 capacity of aboveground combustible liquid tanks installed outdoors at a premises shall not
16 exceed 30,000 gallons (113 550 L).
17

18 **[3404.1.2.4] 5704.1.2.4 Aboveground, indoor combustible liquid tanks.** The aggregate
19 capacity of aboveground combustible liquid tanks installed indoors shall not exceed 20,000
20 gallons (75 700 L).
21

22 **[3404.2] 5704.2 Tank storage.** The provisions of this section shall apply to:

- 23
24 1. The storage of flammable liquids in stationary aboveground tanks located outdoors and
25 underground tanks.
26
27 2. The storage of combustible liquids in stationary aboveground tanks indoors and outdoors,
28 and underground tanks.
29
30 3. Existing storage tank installations at bulk plants and terminals which have not been used for
31 the storage of flammable or combustible liquids for a period in excess of 2 years from the
32 date of completion of construction of the tank structure, if the tank is to be placed in service.
33

34 **[3404.2.1] 5704.2.1 Change of tank contents.** Tanks [subject to] that will be undergoing a
35 change in contents shall [be subject to the approval of the commissioner and] comply with the
36 design and installation requirements applicable to the type of flammable or combustible liquid
37 with which it is proposed to be filled in accordance with this chapter, including [FC3404.2.7]
38 FC5704.2.7. Prior to a change in contents, [the commissioner] notification shall be made to the
39 department, which may require submission of design and installation documents, testing of a
40 tank for leaks [and], and/or documentation of compatibility. Tanks that have previously
41 contained Class I liquids shall not be [loaded] filled with Class II or Class III liquids until such
42 tanks and all piping, pumps, hoses and meters connected thereto have been completely drained
43 and flushed. Tanks that previously contained combustible motor fuel may be used for biodiesel
44 motor fuel as set forth in FC2307. Approval of the department shall be required for a change
45 in contents to biodiesel only if the biofuel content exceeds 20 percent.
46

1 [3404.2.2] **5704.2.2 Use of transport containers as stationary storage tanks.** Cargo tanks,
2 tank cars, barges, marine vessels and watercraft shall not be used as stationary storage tanks
3 unless approved.
4

5 **Exception:** A marine vessel or watercraft moored or anchored to privately owned
6 waterfront property storing fuel oil to be used on such waterfront property, when the barge
7 or vessel is located within the bulkhead line and the riparian ownership to the bulkhead
8 line is under the same ownership as the waterfront property, the fuel oil is used only by the
9 owner of such vessel or watercraft and the fuel oil is used beyond a radius of 200 feet (60
10 960 mm) from the waterfront. Fuel oil stored shall have the specific gravity of not more
11 than 16 degrees Baume. Such marine vessels and watercraft shall be located wholly within
12 the bulkhead line and in such a position as not to constitute an encumbrance to navigation,
13 and shall be constructed, equipped and protected against fire in compliance with the
14 requirements of the commissioner.
15

16 [3404.2.3] **5704.2.3 Labeling and signs.** Labeling and signs for storage tanks and storage tank
17 areas shall comply with the requirements of FC [3404.2.3.1] 5704.2.3.1 and [3404.2.3.2]
18 5704.2.3.2.
19

20 [3404.2.3.1] **5704.2.3.1 Smoking and open flame.** Signs shall be posted in storage areas
21 prohibiting open flames and smoking. Signs shall comply with the requirements of
22 [FC3403.5] 5703.5.
23

24 [3404.2.3.2] **5704.2.3.2 Label or placard.** Tanks more than 100 gallons (379 L) in
25 capacity, which are used for the storage of Class I, II or III liquids, shall bear a label and
26 placard identifying the material therein. Placards shall be in accordance with NFPA 704.
27

28 **Exception:** Tanks located underground.
29

30 [3404.2.4] **5704.2.4 Sources of ignition.** Open flames are prohibited in storage areas in
31 accordance with [FC2703.7] FC5003.7.
32

33 [3404.2.5] **5704.2.5 Explosion control.** Explosion control shall be provided in accordance
34 with FC911.
35

36 [3404.2.6] **5704.2.6 Separation from incompatible materials.** Flammable and combustible
37 liquids shall be stored separated from incompatible materials, in accordance with [FC2703.9.8]
38 FC5003.9.8.
39

40 [3404.2.7] **5704.2.7 Design and installation requirements for tanks.** Tanks shall be
41 designed, constructed and installed in accordance with NFPA 30. Each tank shall bear a
42 permanent nameplate or marking indicating the standard used as the basis of design.
43

44 [3404.2.7.1] **5704.2.7.1 Materials used in tank construction.** The materials used in tank
45 construction shall be in accordance with NFPA 30.
46

1 [3404.2.7.2] **5704.2.7.2 Pressure limitations for tanks.** Tanks shall be designed for the
2 pressures to which they will be subjected in accordance with NFPA 30.

3
4 [3404.2.7.3] **5704.2.7.3 Tank vents for normal venting.** Tank vents for normal venting
5 shall be installed and maintained in accordance with FC [3404.2.7.3.1] 5704.2.7.3.1
6 through [3404.2.7.3.6] 5704.2.7.3.5.

7
8 [3404.2.7.3.1] **5704.2.7.3.1 Vent lines.** Vent lines from tanks shall not be used for
9 purposes other than venting unless approved.

10
11 [3404.2.7.3.2] **5704.2.7.3.2 Vent-line flame arresters and venting devices.** Listed or
12 approved flame arresters or Pressure-vacuum (PV) vents that remain closed unless
13 venting under pressure or vacuum conditions shall be installed in normal vents of tanks
14 containing Class IB and IC liquids. Vent-line flame arresters [and venting devices] shall
15 be installed in accordance with their listings or API 2000 and maintained in accordance
16 with NFPA 30 or API 2000. [Use of] In-line flame arresters in piping systems shall be
17 installed and maintained in accordance with their listing or API 2028. Pressure-vacuum
18 vents shall be installed in accordance with NFPA 30 or API 2000 and maintained in
19 accordance with NFPA 30 or API 2000.

20
21 **Exception:** Where the department determines that the use of such devices can result
22 in damage to the tank.

23
24 [3404.2.7.3.3] **5704.2.7.3.3 Vent pipe outlets.** Vent pipe outlets shall be located such
25 that the vapors are released at a safe point outdoors and not less than 15 feet (4572 mm)
26 above the adjacent ground level. Vapors shall be discharged upward or horizontally
27 away from adjacent walls to assist in vapor dispersion. Vent outlets shall be located
28 such that flammable or combustible vapors will not be trapped by eaves or other
29 obstructions and shall be at least 10 feet (3048 mm) from building openings.

30
31 [3404.2.7.3.4] **5704.2.7.3.4 Installation of vent piping.** Vent piping shall be designed,
32 sized, constructed and installed in accordance with [FC3403.6] FC5703.6. Vent pipes
33 shall be installed such that they will drain toward the tank without sags or traps in which
34 liquid can collect. Vent pipes shall be installed in such a manner so as not to be subject
35 to physical damage or vibration.

36
37 [3404.2.7.3.5] **5704.2.7.3.5 Manifolding.** Tank vent piping shall not be manifolded
38 unless required for special purposes such as vapor recovery, vapor conservation or air
39 pollution control.

40
41 [3404.2.7.3.5.1] **5704.2.7.3.5.1 Aboveground tanks.** For aboveground tanks,
42 manifolded vent pipes shall be adequately sized to prevent system pressure limits
43 from being exceeded when manifolded tanks are subject to the same fire exposure.

44
45 [3404.2.7.3.5.2] **5704.2.7.3.5.2 Underground tanks.** For underground tanks,
46 manifolded vent pipes shall be sized to prevent system pressure limits from being
47 exceeded when manifolded tanks are filled simultaneously.

1
2 **[3404.2.7.3.5.3] 5704.2.7.3.5.3 Tanks storing Class I liquids.** Vent piping for
3 tanks storing Class I liquids shall not be manifolded with vent piping for tanks
4 storing Class II and III liquids unless positive means are provided to prevent the
5 vapors from Class I liquids from entering tanks storing Class II and III liquids, to
6 prevent contamination and possible change in classification of less volatile liquid.
7

8 **[3404.2.7.3.6 Tank venting for tanks and pressure vessels storing Class IB and IC**
9 **liquids.** Tanks and pressure vessels storing Class IB or IC liquids shall be equipped
10 with venting devices which shall remain closed except when venting under pressure or
11 vacuum conditions, or with listed flame arresters. The vents shall be installed and
12 maintained in accordance with NFPA 30 or API 2000.
13

14 **3404.2.7.4] 5704.2.7.4 Emergency venting.** Aboveground tanks shall be equipped with
15 additional venting that will relieve excessive internal pressure caused by exposure to fires.
16 Emergency vents shall not discharge indoors. The venting shall be installed and maintained
17 in accordance with NFPA 30.
18

19 **Exception:** Tanks storing Class IIIB liquids that are larger than 12,000 gallons (45 420
20 L) in capacity, located outdoors and not within the diked area or the drainage path of
21 Class I or II liquids, do not require emergency relief venting.
22

23 **[3404.2.7.5] 5704.2.7.5 Tank openings other than vents.** Tank openings for other than
24 vents shall comply with the requirements of FC [3404.2.7.5.1] 5704.2.7.5.1 through
25 [3404.2.7.5.8] 5704.2.7.5.8.
26

27 **[3404.2.7.5.1] 5704.2.7.5.1 Connections below liquid level.** Connections for tank
28 openings below the liquid level shall be liquid-tight.
29

30 **[3404.2.7.5.2] 5704.2.7.5.2 Filling, emptying and vapor recovery connections.**
31 Filling, emptying and vapor recovery connections to tanks shall be located outdoors at
32 a location free from sources of ignition and not less than 10 feet (3048 mm) away from
33 building openings. Such openings shall be provided with a liquid-tight cap which shall
34 be closed when not in use and properly identified.
35

36 **[3404.2.7.5.3] 5704.2.7.5.3 Piping, connections and fittings.** Piping, connections,
37 fittings and other appurtenances shall be installed in accordance with [FC3403.6]
38 FC5703.6.
39

40 **[3404.2.7.5.4] 5704.2.7.5.4 Manual gauging.** Openings for manual gauging, if
41 independent of the fill pipe, shall be provided with a liquid-tight cap or cover. Covers
42 shall be kept closed when not gauging. Openings for manual gauging shall not be
43 allowed for tanks installed indoors.
44

45 **[3404.2.7.5.5] 5704.2.7.5.5 Fill pipes and discharge lines.** For top-loaded tanks, a
46 metallic fill pipe shall be designed and installed to minimize the generation of static

1 electricity by terminating the pipe within 6 inches (152 mm) of the bottom of the tank,
2 and it shall be installed in a manner which avoids excessive vibration.

3
4 **[3404.2.7.5.5.1] 5704.2.7.5.5.1 Class I liquids.** For Class I liquids other than crude
5 oil, gasoline and asphalt, the fill pipe shall be designed and installed in a manner
6 which will minimize the possibility of generating static electricity by terminating
7 within 6 inches (152 mm) of the bottom of the tank.

8
9 **[3404.2.7.5.5.2] 5704.2.7.5.5.2 Underground tanks.** For underground tanks, fill
10 pipe and discharge lines shall enter only through the top. Fill lines shall be sloped
11 toward the tank. Underground tanks for Class I liquids shall be equipped with a
12 vapor- and liquid-tight fill connection.

13
14 **[3404.2.7.5.6] 5704.2.7.5.6 Location of connections.** Filling, withdrawal and vapor-
15 recovery connections that are made and broken shall be located outdoors at a location
16 away from sources of ignition and not less than 10 feet (3048 mm) away from building
17 openings. Such connections shall be closed and liquid-tight when not in use and shall
18 be properly identified.

19
20 **[3404.2.7.5.7] 5704.2.7.5.7 Protection against vapor release.** Tank openings
21 provided for purposes of vapor recovery shall be protected against vapor release by
22 means of a spring-loaded check valve or dry-break connections, or other approved
23 device, unless the opening is a pipe connected to a vapor processing system. Openings
24 designed for combined fill and vapor recovery shall also be protected against vapor
25 release unless connection of the liquid delivery line to the fill pipe simultaneously
26 connects the vapor recovery line. Connections shall be vapor-tight.

27
28 **[3404.2.7.5.8] 5704.2.7.5.8 Overfill prevention.** An approved means or method in
29 accordance with FC [3404.2.9.4] 5704.2.9.4 and [3404.2.9.6.6] 5704.2.9.6.5 for
30 aboveground storage and [FC3404.2.11.4] FC5704.2.11.4 for underground storage
31 shall be provided to prevent the overfill of all flammable and combustible liquid storage
32 tanks.

33
34 **[3404.2.7.6] 5704.2.7.6 Repair or alteration of tanks and piping.** The repair or alteration,
35 including welding, cutting and hot tapping of storage tanks and piping that have been
36 placed in service, shall be in accordance with NFPA 30. Hot work on such tanks shall be
37 conducted in accordance with FC3510. Hot tapping shall only be allowed with the approval
38 of the commissioner.

39
40 **[3404.2.7.7] 5704.2.7.7 Design of supports.** The design of the supporting structure for
41 tanks shall be in accordance with the construction codes, including the Building Code and
42 NFPA 30.

43
44 **[3404.2.7.8] 5704.2.7.8 Locations subject to flooding.** When a tank is located in an area
45 where it is subject to buoyancy because of a rise in the water table, flooding or
46 accumulation of water from fire suppression operations, the tank shall be secured from
47 movement in accordance with NFPA 30.

1
2 [3404.2.7.9] 5704.2.7.9 **Corrosion protection.** Where subject to external corrosion, tanks
3 shall be fabricated from corrosion-resistant materials, coated or provided with corrosion
4 protection in accordance with NFPA 30 and the New York State Department of
5 Environmental Conservation regulations, as set forth in 6 NYCRR Part [614] 613.

6
7 [3404.2.7.10] 5704.2.7.10 **Leak reporting.** A consistent or accidental loss of liquid, or
8 other indication of a leak from a tank system, shall be reported immediately to the
9 department and other authorities having jurisdiction.

10
11 [3404.2.7.10.1] 5704.2.7.10.1 **Leaking tank disposition.** Leaking tanks shall be
12 promptly emptied, repaired and returned to service, sealed in place or removed in
13 accordance with FC [3404.2.13] 5704.2.13[or 3404.2.14].

14
15 [3404.2.7.11] 5704.2.7.11 **Tank lining.** Steel tanks are allowed to be lined only for the
16 purpose of protecting the interior from corrosion or providing compatibility with a material
17 to be stored. Only those liquids tested for compatibility with the lining material are allowed
18 to be stored in lined tanks. Tank lining shall not be used for purposes of repairing a tank.

19
20 [3404.2.8] 5704.2.8 Reserved.

21
22 [3404.2.9] 5704.2.9 **Aboveground tanks.** Aboveground storage of combustible liquids in
23 tanks shall comply with the requirements of [FC3404.2] FC5704.2, and FC [3404.2.9.1.2]
24 5704.2.9.1.2 through [3404.2.9.6.10] 5704.2.9.6.9. Except as specifically authorized in
25 [FC3406] FC5706, the storage of flammable liquid in aboveground storage tanks is prohibited.

26
27 [3404.2.9.1] 5704.2.9.1 Reserved.

28
29 [3404.2.9.1.1] 5704.2.9.1.1 Reserved.

30
31 [3404.2.9.1.2] 5704.2.9.1.2 **Foam fire protection system installation.** Where foam
32 fire protection is approved for a required fire extinguishing system pursuant to this
33 chapter, it shall be designed and installed in accordance with NFPA 11, as modified by
34 FC Appendix B.

35
36 [3404.2.9.1.2.1] 5704.2.9.1.2.1 **Foam storage.** Where foam fire protection is
37 approved for a required fire extinguishing system pursuant to this chapter, the foam-
38 producing materials shall be stored on the premises.

39
40 [3404.2.9.1.3] 5704.2.9.1.3 **Fire protection of supports.** Supports or pilings for
41 aboveground tanks storing Class I, II or IIIA liquids elevated more than 12 inches (305
42 mm) above grade shall have a fire-resistance rating of not less than 2 hours in
43 accordance with the fire exposure criteria specified in ASTM E 1529.

44
45 **Exception:** Structural supports tested as part of a protected aboveground tank in
46 accordance with UL 2085.

1 **[3404.2.9.1.4] 5704.2.9.1.4 Inerting of tanks with boilover liquids.** Liquids with
2 boilover characteristics shall not be stored in fixed roof tanks larger than 150 feet
3 (45 720 mm) in diameter unless an approved gas enrichment or inerting system is
4 provided on the tank.
5

6 **[3404.2.9.2] 5704.2.9.2 Supports, foundations and anchorage.** Supports, foundations
7 and anchorages for aboveground tanks shall be designed and constructed in accordance
8 with NFPA 30 and the construction codes, including the Building Code.
9

10 **[3404.2.9.3] 5704.2.9.3 Stairs, platforms and walkways.** Stairs, platforms and walkways
11 shall be of noncombustible construction and shall be designed and constructed in
12 accordance with NFPA 30 and the construction codes, including the Building Code.
13

14 **[3404.2.9.4] 5704.2.9.4 Aboveground tank overflow prevention.** Aboveground tanks shall
15 not be filled in excess of 95 percent of their capacity. An approved overflow prevention
16 system shall be provided for each tank. During tank-filling operations, the system shall
17 automatically shut off the flow of liquid to the tank when the quantity of liquid in the tank
18 reaches 95 percent of tank capacity. For rigid hose liquid-delivery systems, an approved
19 means shall be provided to empty the fill hose into the tank after the automatic shutoff
20 device is activated.
21

22 **[3404.2.9.5] 5704.2.9.5 Outdoor aboveground tanks.** Outdoor aboveground tanks shall
23 comply with the requirements of FC [3404.2.9.5.1] 5704.2.9.5.1 through [3404.2.9.5.3]
24 5704.2.9.5.3.
25

26 **[3404.2.9.5.1] 5704.2.9.5.1 Locations of aboveground tanks.** Outdoor aboveground
27 tanks shall be located in accordance with FC [3404.2.9.5.1.1] 5704.2.9.5.1.1 through
28 [3404.2.9.5.1.5] 5704.2.9.5.1.5, as applicable.
29

30 **[3404.2.9.5.1.1] 5704.2.9.5.1.1 Location of tanks with pressures 2.5 psig or less.**
31 Aboveground tanks operating at pressures not exceeding 2.5 psig (17.2 kPa) for
32 storage of Class I, II or IIIA liquids, which are designed with a floating roof or a
33 weak roof-to-shell seam, or equipped with emergency venting devices limiting
34 pressure to 2.5 psig (17.2 kPa), shall be located in accordance with NFPA 30.
35

36 **Exceptions:**

- 37
- 38 1. Vertical tanks having a weak roof-to-shell seam and storing Class IIIA
39 liquids are allowed to be located at one-half the distances specified in
40 NFPA 30, provided the tanks are not within a diked area or drainage path
41 for a tank storing Class I or II liquids.
42
 - 43 2. Liquids with boilover characteristics and unstable liquids in accordance
44 with FC [3404.2.9.5.1.4] 5704.2.9.5.1.3 and [3404.2.9.5.1.5]
45 5704.2.9.5.1.4.
46

1 3. For protected aboveground tanks in accordance with [FC3404.2.9.6]
2 FC5704.2.9.6, the distances in NFPA 30 shall apply and shall be reduced
3 by one-half, but not to less than 5 feet (1524 mm).
4

5 **[3404.2.9.5.1.2] 5704.2.9.5.1.2 Location of tanks with pressures exceeding 2.5**
6 **psig.** Aboveground tanks for the storage of Class I, II or IIIA liquids operating at
7 pressures exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting
8 allowing pressures to exceed 2.5 psig (17.2 kPa) shall be located in accordance with
9 NFPA 30.
10

11 **Exception:** Liquids with boilover characteristics and unstable liquids in
12 accordance with FC [3404.2.9.5.1.4] 5704.2.9.5.1.3 and [3404.2.9.5.1.5]
13 5704.2.9.5.1.4.
14

15 **[3404.2.9.5.1.3] 5704.2.9.5.1.3 Location of tanks for boilover liquids.**
16 Aboveground tanks for storage of liquids with boilover characteristics shall be
17 located in accordance with NFPA 30.
18

19 **[3404.2.9.5.1.4] 5704.2.9.5.1.4 Location of tanks for unstable liquids.**
20 Aboveground tanks for the storage of unstable liquids shall be located in
21 accordance with NFPA 30.
22

23 **[3404.2.9.5.1.5] 5704.2.9.5.1.5 Location of tanks for Class IIIB liquids.**
24 Aboveground tanks for the storage of Class IIIB liquids, excluding unstable liquids,
25 shall be located in accordance with NFPA 30, except when located within a diked
26 area or drainage path for a tank or tanks storing Class I or II liquids. Where a Class
27 IIIB liquid storage tank is within the diked area or drainage path for a Class I or II
28 liquid, distances required by [FC3404.2.9.5.1.2] FC5704.2.9.5.1.2 shall apply.
29

30 **[3404.2.9.5.2] 5704.2.9.5.2 Separation between adjacent stable or unstable liquid**
31 **tanks.** The separation between tanks containing stable liquids shall be in accordance
32 with NFPA 30. Where tanks are in a diked area containing Class I or II liquids, or in
33 the drainage path of Class I or II liquids, and are compacted in three or more rows or
34 in an irregular pattern, the commissioner may require greater separation than specified
35 in NFPA 30 or other means to make tanks in the interior of the pattern accessible for
36 firefighting purposes. The separation between tanks containing unstable liquids shall
37 not be less than one-half the sum of their diameters.
38

39 **Exception:** Tanks used for storing Class IIIB liquids are allowed to be spaced 3
40 feet (914 mm) apart unless within a diked area or drainage path for a tank storing
41 Class I or II liquids.
42

43 **[3404.2.9.5.3] 5704.2.9.5.3 Separation between adjacent tanks containing**
44 **flammable or combustible liquids and LPG.** The minimum horizontal separation
45 between an LPG container and a Class I, II or IIIA liquid storage tank shall be 20 feet
46 (6096 mm) except in the case of Class I, II or IIIA liquid tanks operating at pressures
47 exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting allowing pressures

1 to exceed 2.5 psig (17.2 kPa), in which case the provisions of [FC3404.2.9.5.2]
2 FC5704.2.9.5.2 shall apply. An approved means shall be provided to prevent the
3 accumulation of Class I, II or IIIA liquids under adjacent LPG containers such as by
4 dikes, diversion curbs or grading. When flammable or combustible liquid storage tanks
5 are within a diked area, the LPG containers shall be outside the diked area and at least
6 10 feet (3048 mm) away from the centerline of the wall of the diked area.
7

8 **Exception:** Horizontal separation is not required between LPG containers and
9 underground flammable and combustible liquid tanks.
10

11 **[3404.2.9.6] 5704.2.9.6 Additional requirements for protected aboveground tanks.** In
12 addition to the requirements of this chapter for aboveground tanks, the installation of
13 protected aboveground tanks shall be in accordance with FC [3404.2.9.6.1] 5704.2.9.6.1
14 through [3404.2.9.6.10] 5704.2.9.6.9.
15

16 **[3404.2.9.6.1] 5704.2.9.6.1 Tank construction.** The construction of a protected
17 aboveground tank and its primary tank shall be in accordance with [FC3404.2.7]
18 FC5704.2.7.
19

20 **[3404.2.9.6.2] 5704.2.9.6.2 Normal and emergency venting.** Normal and emergency
21 venting for protected aboveground tanks shall be provided in accordance with FC
22 [3404.2.7.3] 5704.2.7.3 and [3404.2.7.4] 5704.2.7.4. The vent capacity reduction factor
23 shall not be allowed.
24

25 **[3404.2.9.6.3] Flame arresters.** Approved flame arresters or pressure vacuum breather
26 valves shall be installed in normal vents.]
27

28 **[3404.2.9.6.4] 5704.2.9.6.3 Secondary containment.** Protected aboveground tanks
29 shall be provided with secondary containment, drainage control or diking in accordance
30 with [FC2704.2] FC5004.2 and 6 NYCRR [Part 613.3(c)(6)] Part 613. A means shall
31 be provided to establish the integrity of the secondary containment in accordance with
32 NFPA 30.
33

34 **[3404.2.9.6.5] 5704.2.9.6.4 Vehicle impact protection.** Where protected aboveground
35 tanks, piping, electrical conduit or dispensers are subject to vehicular impact, they shall
36 be protected therefrom, either by having the impact protection incorporated into the
37 system design in compliance with the impact test protocol of UL 2085, or by meeting
38 the provisions of FC312, or where necessary, a combination of both. Where posts or
39 other approved barriers are provided, they shall be independent of each aboveground
40 tank.
41

42 **[3404.2.9.6.6] 5704.2.9.6.5 Overfill prevention sign.** A durable sign shall be
43 conspicuously posted on or immediately adjacent to the fill point for the tank, setting
44 forth the filling procedure and the tank calibration chart. The filling procedure shall
45 require the person filling the tank to determine the number of gallons required to fill it
46 to 90 percent of capacity before commencing the fill operation.
47

1 **[3404.2.9.6.7] 5704.2.9.6.6 Fill pipe connections.** The fill pipe shall be provided with
2 a means for making a direct connection to the cargo tank's fuel delivery hose so that
3 the delivery of fuel by means of a liquid-tight connection is not exposed to the open air
4 during the filling operation. Where any portion of the fill pipe exterior to the tank
5 extends below the level of the top of the tank, a check valve shall be installed in the fill
6 pipe not more than 12 inches (305 mm) from the fill hose connection.
7

8 **[3404.2.9.6.8] 5704.2.9.6.7 Spill containers.** A spill container having a capacity of not
9 less than 15 gallons (56.8 L) shall be provided for each fill connection. For tanks with
10 a top fill connection, spill containers shall be noncombustible and shall be fixed to the
11 tank and equipped with a manual drain valve that drains into the primary tank. For
12 tanks with a remote fill connection, a portable spill container shall be allowed.
13

14 **[3404.2.9.6.9] 5704.2.9.6.8 Tank openings.** Tank openings in protected aboveground
15 tanks shall be through the top only.
16

17 **[3404.2.9.6.10] 5704.2.9.6.9 Antisiphon devices.** Approved antisiphon devices shall
18 be installed in each external pipe connected to the protected aboveground tank when
19 the pipe extends below the level of the top of the tank.
20

21 **[3404.2.10] 5704.2.10 Drainage and diking.** The area surrounding a tank or group of tanks
22 shall be provided with drainage control or shall be diked to prevent accidental discharge of
23 liquid from endangering adjacent tanks, adjoining property or reaching waterways. The area
24 shall be in compliance with the requirements of the New York State Department of
25 Environmental Conservation regulations, as set forth in 6 NYCRR [Section 613.3(c)(6)] Part
26 613.
27

28 **Exceptions:**
29

30 1. For tanks having a capacity of less than 10,000 gallons (37 850 L), the commissioner
31 may modify these requirements based on an approved technical report which
32 demonstrates that such tank or group of tanks does not constitute a hazard to other
33 tanks, waterways or adjoining property, after consideration of special features such
34 as topographical conditions, nature of occupancy and proximity to buildings or
35 structures on the same or adjacent property, capacity, and construction of proposed
36 tanks and character of liquids to be stored, and nature and quantity of private and
37 public fire protection provided.
38

39 2. Drainage control and diking is not required for listed secondary containment tanks.
40

41 **[3404.2.10.1] 5704.2.10.1 Volumetric capacity.** The volumetric capacity of the diked area
42 shall not be less than the greatest amount of liquid that can be released from the largest
43 tank within the diked area. The capacity of the diked area enclosing more than one tank
44 shall be calculated by deducting the volume of the tanks other than the largest tank below
45 the height of the dike.
46

1 [3404.2.10.2] **5704.2.10.2 Diked areas containing multiple tanks.** Diked areas
2 containing multiple tanks shall be subdivided in accordance with NFPA 30.

3
4 [3404.2.10.3] **5704.2.10.3 Protection of piping from exposure fires.** Piping shall not pass
5 through adjacent diked areas or impounding basins, unless provided with a sealed sleeve
6 or otherwise protected from exposure to fire.

7
8 [3404.2.10.4] **5704.2.10.4 Combustible materials in diked areas.** Diked areas shall be
9 kept free from combustible materials, drums and barrels.

10
11 [3404.2.10.5] **5704.2.10.5 Equipment, controls and piping in diked areas.** Pumps,
12 manifolds and fire protection equipment or controls shall not be located within diked areas
13 or drainage basins or in a location where such equipment and controls would be endangered
14 by fire in the diked area or drainage basin. Aboveground piping shall be minimized and
15 located as close as practical to the shell of the tank in diked areas or drainage basins.

16
17 **Exceptions:**

- 18
19 1. Pumps, manifolds and piping integral to the tanks or equipment being served
20 which is protected by intermediate diking, berms, drainage or fire protection, such
21 as water spray, monitors or resistive coating.
22
23 2. Fire protection equipment or controls which are appurtenances to the tanks or
24 equipment being protected, such as foam chambers or foam piping and water or
25 foam monitors and hydrants, or hand and wheeled extinguishers.

26
27 [3404.2.10.6] **5704.2.10.6 Dike construction.** All dike walls shall be of steel or reinforced
28 concrete, designed to be liquid-tight and to withstand a full hydraulic head, and constructed
29 to provide access to and from the diked area. Where stairways or other means are required
30 to provide such access, they shall be constructed of steel. No dike wall shall be higher than
31 60 percent of the tank height.

32
33 [3404.2.11] **5704.2.11 Underground tanks.** Underground storage of flammable and
34 combustible liquids in tanks shall comply with the requirements of FC [3404.2] 5704.2, and
35 [3404.2.11.1] 5704.2.11.1 through [3404.2.11.5.2] 5704.2.11.5.2.

36
37 [3404.2.11.1] **5704.2.11.1 Contents.** Underground tanks shall not store petroleum products
38 containing mixtures of a nonpetroleum nature, such as ethanol or methanol blends, without
39 evidence of compatibility.

40
41 [3404.2.11.2] **5704.2.11.2 Location.** Flammable and combustible liquid storage tanks
42 located underground, either outdoors or under buildings, shall be in compliance with the
43 following requirements:

- 44
45 1. Tanks shall be installed so that the external forces exerted from building foundations
46 and support loads are not transmitted to the tanks. The distance from any part of a
47 tank to the nearest wall of any basement, pit, cellar or any property line shall not be

1 less than 3 feet (914 mm). Tanks shall not be placed less than 20 feet (6096 mm)
2 from a subway wall.

3
4 2. Tanks shall be installed so that the highest point of the tank is not less than 2 feet
5 (610 mm) below the level of the lowest cellar floor of any building within a radius of
6 10 feet (3048 mm) from the tank. No tank shall be located under a sidewalk or beyond
7 the property line.

8
9 3. A minimum distance of 18 inches (458 mm), shell to shell, shall be maintained
10 between underground tanks.

11
12 4. Manufacturer's installation instructions.

13
14 **[3404.2.11.3] 5704.2.11.3 Depth and cover.** Excavation for underground storage tanks
15 shall be made with due care to avoid undermining of foundations of existing structures.
16 Underground tanks shall be set on firm foundations and surrounded with at least 6 inches
17 (152 mm) of noncorrosive inert material, in accordance with the manufacturer's installation
18 instructions.

19
20 **[3404.2.11.4] 5704.2.11.4 Overfill protection and prevention systems.** Fill pipes shall
21 be equipped with a spill container of not less than 15-gallon (56.8 L) capacity and an
22 approved overfill prevention system to automatically prevent overflow in accordance with
23 NFPA 30 and [FC3404.2.9.4] FC5704.2.9.4.

24
25 **[3404.2.11.5] 5704.2.11.5 Leak prevention.** Leak prevention for underground tanks shall
26 comply with the requirements of FC [3404.2.11.5.1] 5704.2.11.5.1 and [3404.2.11.5.2]
27 5704.2.11.5.2.

28
29 **[3404.2.11.5.1] 5704.2.11.5.1 Inventory control.** Daily inventory records shall be
30 maintained for underground storage tank systems.

31
32 **[3404.2.11.5.2] 5704.2.11.5.2 Leak detection.** Underground storage tank systems shall
33 be provided with an approved method of leak detection from any component of the
34 system that is designed and installed in accordance with NFPA 30. Leak detection
35 systems shall be tested at the time of installation at the owner's risk by his or her
36 representative before a representative of the department.

37
38 **[3404.2.11.6] 5704.2.11.6 Periodic tank and piping test.** Any underground single-walled
39 flammable or combustible liquid storage tank existing prior to the effective date of this
40 code that is not provided with a leak detection system meeting the requirements of
41 [FC3404.2.11.5.2] FC5704.2.11.5.2 shall be precision tested at least once every 5 years.

42
43 **Exception:** Bulk plant and terminal tanks.

44
45 **[3404.2.11.7] 5704.2.11.7 Emergency tank and piping system test.** The commissioner
46 may require a tank and piping system to be precision tested, pressure tested or tested by
47 other approved method in accordance with this section to determine the condition of the

1 tank or piping or when the commissioner has good cause to believe that a leak exists.
2 Storage systems that may contain flammable or combustible liquid vapor shall not be tested
3 pneumatically. Such tests shall be conducted at the owner's risk by his or her
4 representative.

5
6 **[3404.2.12] 5704.2.12 Testing.** Tank testing required by FC [3404.2.12.1] 5704.2.12.1
7 through [3404.2.12.3] 5704.2.12.3 shall be at the owner's risk by his or her representative
8 before a representative of the department.

9
10 **[3404.2.12.1] 5704.2.12.1 Acceptance testing.** Prior to being placed into service, tanks
11 shall be tested in accordance with NFPA 30.

12
13 **[3404.2.12.2] 5704.2.12.2 Testing of underground tanks.** Underground tanks shall be
14 tested hydrostatically at 15 pounds per square inch (psig)(103.4 kPa), or 150 percent of the
15 maximum anticipated static head pressure, whichever is greater, for the inner tank, and
16 pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the
17 annular space (secondary containment tank). When a pneumatic test is allowed, an inert
18 gas shall be used; however, air may be used if the tank does not contain any flammable or
19 combustible liquid vapor. Test pressure shall be maintained for sufficient time to complete
20 visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test
21 if it shows no evidence of leakage or permanent deformation.

22
23 **[3404.2.12.3] 5704.2.12.3 Testing of aboveground tanks.** Aboveground tanks shall be
24 tested hydrostatically at 15 pounds per square inch (psig)(103.4 kPa) for the inner tank,
25 and pneumatically or hydrostatically at 5 pounds per square inch (psig)(34.5 kPa) for the
26 annular space (secondary containment tank). When a pneumatic test is allowed, an inert
27 gas shall be used; however, air may be used if the tank does not contain any flammable or
28 combustible liquid vapor. Test pressure shall be maintained for sufficient time to complete
29 visual inspection, but not less than 1 hour. A tank shall be deemed to have passed the test
30 if it shows no evidence of leakage or permanent deformation.

31
32 **[3404.2.13] 5704.2.13 Out-of-service tanks.** Tanks taken out of service shall comply with the
33 requirements of FC [3404.2.13.1] 5704.2.13.1 through [3404.2.13.2.3] 5704.2.13.2.3 and API
34 1604. Tanks taken out of service shall be removed, sealed in place or safeguarded by a
35 certificate of license holder or a plumber in accordance with the rules.

36
37 **Exceptions:**

- 38
39 1. Tanks within operating facilities at bulk plants and terminals.
40
41 2. Tanks connected to fuel oil burning equipment that is used seasonally or as one of
42 the fuels in dual-fueled equipment.
43
44 3. Tanks that are used for seasonal storage or standby storage.
45

1 **[3404.2.13.1] 5704.2.13.1 Underground tanks.** Underground tanks taken out of service
2 shall comply with the requirements of FC [3404.2.13.1.1] 5704.2.13.1.1 through
3 [3404.2.13.1.3] 5704.2.13.1.3.
4

5 **[3404.2.13.1.1] 5704.2.13.1.1 Fuel conversions.** A fuel oil storage tank removed from
6 service by reason of conversion of the heating system to an alternative fuel or power
7 source, or other replacement of the tank, shall be sealed or removed from the premises
8 in compliance with [FC3404.2.13.1.3] FC5704.2.13.1.3 at the time of conversion or
9 replacement.
10

11 **[3404.2.13.1.2] 5704.2.13.1.2 Out of service for 30 days.** Except as otherwise
12 provided in [FC3404.2.13.1.1] FC5704.2.13.1.1, underground tanks not used for a
13 period of 30 calendar days or more shall be removed from the premises, or sealed in
14 place in compliance with the requirements of [FC3404.2.13.1.3] FC5704.2.13.1.3, or
15 safeguarded in compliance with the following requirements:
16

- 17 1. Flammable or combustible liquids shall be removed from the tank and connecting
18 piping.
19
- 20 2. The tank and connecting piping shall be rendered free of flammable and
21 combustible vapors using an inert gas.
22
- 23 3. Except for any active fire extinguishing system piping, the tank and connecting
24 piping, including fill line, gauge opening, vapor return and pump connection,
25 shall be capped or plugged and secured from tampering and the fill connection
26 covered with concrete.
27
- 28 4. Vent lines shall remain open and be maintained in accordance with FC
29 [3404.2.7.3] 5704.2.7.3 and [3404.2.7.4] 5704.2.7.4.
30

31 **[3404.2.13.1.3] 5704.2.13.1.3 Out of service for 1 year.** Except as otherwise provided
32 in [FC3404.2.13.1.1] FC5704.2.13.1.1, underground tanks that have been out of service
33 for a period of 1 year or more shall be removed from the premises or sealed in place in
34 compliance with the following requirements:
35

- 36 1. Flammable and combustible liquids shall be removed from the tank and
37 connected piping.
38
- 39 2. The tank and connecting piping shall be rendered free of flammable and
40 combustible vapors, using an inert gas.
41
- 42 3. The tank shall be disconnected from system piping and removed from the
43 premises, or filled completely with an approved, inert solid material, and sealed
44 in place.
45
- 46 4. All system piping, including fire extinguishing system lines, fill line, gauge
47 opening and vapor return and pump connection, shall be disconnected from the

1 tank and removed from the premises, or sealed in place and secured from
2 tampering. Unless other methods are approved, the fill connection shall be cut
3 from the fill piping and removed; the fill piping shall be capped or plugged;
4 and the fill box filled with concrete.
5

- 6 5. Tank openings shall be capped and plugged, leaving a 0.125-inch to 0.25-inch-
7 diameter (3.2-mm to 6.4-mm-diameter) opening for pressure equalization, when
8 tanks are removed from the premises.
9

10 **[3404.2.13.2] 5704.2.13.2 Aboveground tanks.** Aboveground tanks taken out of service
11 shall comply with the requirements of FC [3404.2.13.2.1] 5704.2.13.2.1 through
12 [3404.2.13.2.3] 5704.2.13.2.3.

13
14 **[3404.2.13.2.1] 5704.2.13.2.1 Fuel conversions.** A fuel oil storage tank removed from
15 service by reason of conversion of the heating system to an alternative fuel or power
16 source, or other replacement of the tank, shall be sealed or removed from the premises
17 in compliance with [FC3404.2.13.2.3] FC5704.2.13.2.3 at the time of conversion or
18 replacement.
19

20 **[3404.2.13.2.2] 5704.2.13.2.2 Out of service for 30 days.** Except as otherwise
21 provided in [FC3404.2.13.2.1] FC5704.2.13.2.1, aboveground tanks not used for a
22 period of 30 calendar days or more shall be removed from the premises or sealed in
23 place in compliance with the requirements of [FC3404.2.13.2.3] FC5704.2.13.2.3, or
24 safeguarded in compliance with the following requirements:
25

- 26 1. Tank and connecting piping shall be safeguarded in accordance with
27 [FC3404.2.13.1.2] FC5704.2.13.1.2.
28
29 2. The tank shall be protected from flotation in accordance with good engineering
30 practice.
31

32 **[3404.2.13.2.3] 5704.2.13.2.3 Out of service for 1 year.** Except as otherwise provided
33 in [FC3404.2.13.2.1] FC5704.2.13.2.1, aboveground tanks that have been out of
34 service for a period of 1 year or more shall be removed from the premises or sealed in
35 place in compliance with the following requirements:
36

- 37 1. Flammable and combustible liquids shall be removed from the tank and
38 connected piping.
39
40 2. The tank and connecting piping shall be rendered free of flammable and
41 combustible vapors using an inert gas.
42
43 3. The tank shall be disconnected from system piping and removed from the
44 premises, or filled completely with an approved, inert solid material, and sealed
45 in place.
46

- 1 4. All system piping, including fire extinguishing system lines, fill line, gauge
2 opening, and vapor return and pump connection, shall be disconnected from the
3 tank and removed from the premises, or sealed in place and secured from
4 tampering. Unless other methods are approved, the fill connection shall be cut
5 from the fill piping and removed; the fill piping shall be capped or plugged; and
6 the spill containment box shall be removed.
7
- 8 5. Tank openings shall be capped and plugged, leaving a 0.125-inch to 0.25-inch-
9 diameter (3.2-mm to 6.4-mm-diameter) opening for pressure equalization, when
10 tanks are removed from the premises.
- 11 6. The tank shall be protected from flotation in accordance with good engineering
12 practice.
13
- 14 7. The tank shall be stenciled with the date that it was sealed in place.
15
16

17 **[3404.3] 5704.3 Container storage.** Storage of flammable and combustible liquids in barrels, and
18 in closed containers that do not exceed 60 gallons (227 L) in individual capacity, and transfers
19 incidental thereto, shall comply with the requirements of this section. It shall be unlawful to store
20 flammable and combustible liquids in containers with an individual capacity of greater than
21 60 gallons (227 L).
22

23 **[3404.3.1] 5704.3.1 Design, construction and capacity of containers.** The design,
24 construction and capacity of containers for the storage of flammable and combustible liquids
25 shall be in accordance with this section and NFPA 30. It shall be unlawful to store flammable
26 and combustible liquids in portable tanks, intermediate bulk containers and fiber drums.
27

28 **[3404.3.1.1] 5704.3.1.1 Approved containers.** Only approved containers shall be used.
29

30 **5704.3.1.2 Barrel storage of distilled spirits.** Barrels containing distilled spirits shall be
31 stored in a liquid warehouse in accordance with FC5704.3.8 and the rules.
32

33 **[3404.3.2] 5704.3.2 Liquid storage cabinets.** Where other sections of this code require that
34 liquid containers be stored in storage cabinets, such cabinets and storage shall be in accordance
35 with FC [3404.3.2.1] 5704.3.2.1 through [3404.3.2.3] 5704.3.2.3.
36

37 **[3404.3.2.1] 5704.3.2.1 Design of storage cabinets.** Design of liquid storage cabinets shall
38 be in accordance with this section.
39

40 **[3404.3.2.1.1] 5704.3.2.1.1 Materials.** Cabinets shall be listed in accordance with
41 UL 1275.
42

43 **[3404.3.2.1.2] 5704.3.2.1.2 Labeling.** Cabinets shall be provided with a conspicuous
44 label in red letters on contrasting background which reads: FLAMMABLE—KEEP
45 FIRE AWAY.
46

1 **[3404.3.2.1.3] 5704.3.2.1.3 Doors.** Doors shall be well fitted, self-closing and equipped
2 with a three-point latch.

3
4 **[3404.3.2.1.4] 5704.3.2.1.4 Bottom.** The bottom of the cabinet shall be liquid-tight to
5 a height of at least 2 inches (51 mm).

6
7 **[3404.3.2.2] 5704.3.2.2 Capacity.** The combined total quantity of liquids in a cabinet shall
8 not exceed 120 gallons (454 L).

9
10 **[3404.3.2.3] 5704.3.2.3 Number of storage cabinets.** Not more than three storage cabinets
11 shall be located in a single fire area, except that in a Group F occupancy, additional cabinets
12 are allowed to be located in the same fire area if the additional cabinets (or groups of up to
13 three cabinets) are separated from other cabinets or groups of cabinets by at least 100 feet
14 (30 480 mm).

15
16 **[3404.3.3] 5704.3.3 Indoor storage.** Storage of flammable and combustible liquids indoors in
17 containers shall be in accordance with this section.

18
19 **Exceptions:**

- 20
21 1. Liquids in the fuel tanks of motor vehicles, aircraft, marine vessel, watercraft or
22 portable or stationary engines.
23
24 2. The storage of [distilled spirits and] wines in wooden barrels or casks.

25
26 **[3404.3.3.1] 5704.3.3.1 Portable fire extinguishers.** Approved portable fire extinguishers
27 shall be provided in accordance with specific sections of this chapter and FC906.

28
29 **[3404.3.3.2] 5704.3.3.2 Incompatible materials.** Materials that will react with water or
30 other liquids to produce a hazard shall not be stored in the same room with flammable and
31 combustible liquids in accordance with [FC2703.9.8] FC5003.9.8.

32
33 **[3404.3.3.3] 5704.3.3.3 Clear means of egress.** Storage of any liquids, including stock for
34 sale, shall not be stored near or be allowed to obstruct physically the route of egress.

35
36 **[3404.3.3.4] 5704.3.3.4 Empty containers storage.** The storage of empty containers
37 previously used for the storage of flammable or combustible liquids shall be stored as
38 required for filled containers. Containers, when emptied, shall have the covers or plugs
39 immediately replaced in openings, be removed to an outdoor location and, if not cleaned
40 on the premises, the empty containers shall be removed from the premises as soon as
41 practical, but at least daily.

42
43 **[3404.3.3.5] 5704.3.3.5 Shelf storage.** Shelving shall be of approved noncombustible
44 construction, adequately braced and anchored. Seismic requirements shall be in accordance
45 with the construction codes, including the Building Code.

46
47 **[3404.3.3.5.1] 5704.3.3.5.1 Reserved.**

1
2 **[3404.3.3.5.2] 5704.3.3.5.2 Displacement protection.** Shelves shall be of sufficient
3 depth and provided with a lip or guard to prevent individual containers from being
4 displaced.

5
6 **Exception:** Shelves in storage cabinets or on laboratory furniture specifically
7 designed for such use.

8
9 **[3404.3.3.5.3] 5704.3.3.5.3 Orderly storage.** Shelf storage of flammable and
10 combustible liquids shall be maintained in an orderly manner.

11
12 **[3404.3.3.6] 5704.3.3.6 Rack storage.** Where storage on racks is allowed elsewhere in this
13 code, a minimum 4-foot-wide (1219 mm) aisle shall be provided between adjacent rack
14 sections and any adjacent storage of liquids. Main aisles shall have a minimum of 8 feet
15 (2438 mm).

16
17 **[3404.3.3.7] 5704.3.3.7 Pile or palletized storage.** Solid pile and palletized storage in
18 liquid warehouses shall be arranged so that piles are separated from each other by at least
19 4 feet (1219 mm). Aisles shall be provided so that no container is more than 20 feet (6096
20 mm) from an aisle. Main aisles shall have a minimum width of 8 feet (2438 mm).

21
22 **[3404.3.3.8] 5704.3.3.8 Combustible materials storage.** Approved quantities of
23 combustible materials may be stored in liquid storage areas, provided that a distance of not
24 less than 8 feet (2438 mm) horizontally is maintained between the liquid storage area and
25 combustible materials and fire protection systems are provided in accordance with this
26 code and Chapter 9 of the Building Code.

27
28 **[3404.3.3.9] 5704.3.3.9 Idle combustible pallets.** Storage of empty or idle combustible
29 pallets inside an unprotected liquid storage area shall be limited to a maximum pile size of
30 2,500 square feet (232 m²) and to a maximum storage height of 6 feet (1829 mm). Storage
31 of empty or idle combustible pallets inside a protected liquid storage area shall comply
32 with the requirements of NFPA 13, as modified by FC Appendix B. Pallet storage shall be
33 separated from liquid storage by aisles with a minimum width of 8 feet (2438 mm).

34
35 **[3404.3.3.10] 5704.3.3.10 Containers in piles.** Containers in piles shall be stacked in such
36 a manner as to provide stability and to prevent excessive stress on container walls.
37 Adequate material-handling equipment shall be available to handle containers safely at the
38 upper tier level.

39
40 **[3404.3.4] 5704.3.4 Quantity limits for storage.** Liquid storage quantity limitations shall
41 comply with the requirements of FC [3404.3.4.1] 5704.3.4.1 through [3404.3.4.5] 5704.3.4.4.

42
43 **[3404.3.4.1] 5704.3.4.1 Maximum allowable quantity per control area.** For occupancies
44 other than Group M wholesale and retail sales uses, indoor storage of flammable and
45 combustible liquids shall not exceed the maximum allowable quantities per control area
46 indicated in FC Table [2703.1.1(1)] 5003.1.1(1) and shall not exceed the additional
47 limitations set forth in this section. For Group M occupancy wholesale and retail sales uses,

1 indoor storage of flammable and combustible liquids shall not exceed the maximum
2 allowable quantities per control area indicated in FC Table [3404.3.4.1] 5704.3.4.1, except
3 that no gasoline or flammable liquid motor fuel may be stored in portable containers for
4 wholesale or retail sale. Storage of hazardous production material flammable and
5 combustible liquids in Group H-5 occupancies shall be in accordance with FC Chapter [18]
6 27.

7
8 **[3404.3.4.2] 5704.3.4.2 Limitations on storage.** The quantity of flammable or
9 combustible liquid stored shall be limited by occupancy as follows:

10
11 **1. Group A, B, E, F, I and S occupancies.** Flammable and combustible liquids shall
12 be stored only for lawful uses incidental to the occupancy, including maintenance
13 and operation of equipment, and in quantities not to exceed that which is necessary
14 for such use.

15
16 **2. Group M occupancies.** Flammable and combustible liquids shall be stored only for
17 lawful uses incidental to the occupancy, including maintenance and operation of
18 equipment, and in quantities not to exceed that which is necessary for such use. The
19 maximum allowable quantities for storage in wholesale and retail sales areas shall be
20 in accordance with [FC3404.3.4.1] FC5704.3.4.1.

21
22 **3. Group R occupancies.** Flammable and combustible liquids shall be stored only for
23 maintenance and operation of equipment, and in quantities not to exceed that which
24 is necessary for such use. Quantities within a dwelling unit shall be stored only for
25 household use and in quantities below permit amounts. It shall be unlawful to store
26 gasoline or other flammable liquid motor fuel within a dwelling unit.

27
28 **4. Gasoline and other flammable liquid motor fuel.**[] Storage of gasoline and other
29 flammable liquid motor fuel in portable containers in quantities requiring a permit is
30 subject to the approval of the commissioner, regardless of the occupancy
31 classification of the premises.

32
33 **[3404.3.4.3] 5704.3.4.3 Quantities exceeding limits for control areas.** Quantities
34 exceeding those allowed in control areas set forth in [FC3404.3.4.1] FC5704.3.4.1 shall be
35 stored in liquid storage rooms or liquid storage warehouses in accordance with FC
36 [3404.3.7] 5704.3.7 and [3404.3.8] 5704.3.8.

37
38 **[3404.3.4.4] 5704.3.4.4 Liquids for maintenance and operation of equipment.** In all
39 occupancies, quantities of flammable and combustible liquids requiring a permit pursuant
40 to FC105.6, used for maintenance purposes and the operation of equipment, shall be stored
41 in liquid storage cabinets in accordance with [FC3404.3.2] FC5704.3.2. Quantities not
42 requiring a permit pursuant to FC105.6 shall be stored in approved containers and
43 locations.

44
45 **[3404.3.5] 5704.3.5 Storage in control areas.** Storage of flammable and combustible liquids
46 in control areas shall be in accordance with FC [3404.3.5.1] 5704.3.5.1 through [3404.3.5.4]
47 5704.3.5.4.

[3404.3.5.1] 5704.3.5.1 Storage of flammable and combustible liquids below grade. Flammable liquids shall not be allowed in basements, cellars or other areas below grade. Combustible liquids shall be allowed to be stored in basements, cellars or other areas below grade provided that such basement, cellar or other area below grade is protected throughout by a sprinkler system, and other fire protection is provided in accordance with FC Chapter 9 and the construction codes, including the Building Code.

Exception: Class IIIB combustible liquids may be stored in basements, cellars and other areas below grade that are not protected throughout by a sprinkler system when stored in a room or other area that is segregated, vertically and horizontally, from surrounding spaces by a fire separation of not less than 2-hour fire-resistance rating and such room or other area is protected throughout by a sprinkler system.

[3404.3.5.2] 5704.3.5.2 Storage pile heights. Containers having less than a 30-gallon (114 L) capacity which contain Class I or II liquids shall not be stacked more than 3 feet (914 mm) or two containers high, whichever is greater, unless stacked on fixed shelving or otherwise satisfactorily secured. Containers of Class I or II liquids having a capacity of 30 gallons (114 L) or more shall not be stored more than one container high. Containers shall be stored in an upright position.

[3404.3.5.3] 5704.3.5.3 Storage distance from ceilings and roofs. Piles of containers shall not be stored closer than 3 feet (914 mm) to the nearest beam, chord, girder or other obstruction, and shall be 3 feet (914 mm) below sprinkler deflectors or discharge orifices of water spray or other overhead fire extinguishing system.

[3404.3.5.4] 5704.3.5.4 Combustible materials. In areas that are inaccessible to the public, Class I, II and IIIA liquids shall not be stored in the same pile or rack section as ordinary combustible commodities unless such materials are packaged together as kits.

**FC TABLE [3404.3.4.1] 5704.3.4.1
MAXIMUM ALLOWABLE QUANTITY OF FLAMMABLE AND COMBUSTIBLE LIQUIDS
IN WHOLESALE AND RETAIL SALES USES PER CONTROL AREA^a**

TYPE OF LIQUID	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA (gallons)		
	Sprinklered ^b per footnote densities and arrangements	Sprinklered per FC Tables [3404.3.6.3(4)] 5704.3.6.3(4) through [3404.3.6.3(8)] 5704.3.6.3(8) and FC Table [3404.3.7.5.1] 5704.3.7.5.1 and the construction codes, including the Building Code	Nonsprinklered
Class IA	60	60	30
Class IB, IC, II and IIIA	7,500 ^c	15,000 ^c	1,600
Class IIIB	Unlimited	Unlimited	13,200

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929m², 1 gallon = 3.785 L, 1 gallon per minute per square foot = 40.75 L/min/m².

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier wall.

b. To be considered as sprinklered, a building shall be protected throughout by a sprinkler system with a design providing minimum densities as follows:

1. For uncartoned commodities on shelves 6 feet or less in height where the ceiling height does not exceed 18 feet, quantities are those allowed with a minimum sprinkler design density of Ordinary Hazard Group 2.
2. For cartoned, palletized or racked commodities where storage is 4 feet 6 inches or less in height and where the ceiling height does not exceed 18 feet, quantities are those allowed with a minimum sprinkler design density of 0.21 gallon per minute per square foot over the most remote 1,500-squarefoot area.

c. Where wholesale and retail sales or storage areas exceed 50,000 square feet in area, the maximum allowable quantities are allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to a maximum of 100 percent of the table amounts. A control

1 area separation is not required. The cumulative amounts, including amounts attained by having an additional control area, shall not exceed
2 30,000 gallons.

3
4 **[3404.3.6] 5704.3.6 Wholesale and retail sales.** Flammable and combustible liquids in Group
5 M occupancy wholesale and retail sales shall be in accordance with FC [3404.3.6.1] 5704.3.6.1
6 through [3404.3.6.5] 5704.3.6.5, or NFPA 30.

7
8 **[3404.3.6.1] 5704.3.6.1 Container type.** Containers for Class I liquids shall be metal.

9
10 **Exception:** In sprinklered buildings, an aggregate quantity of 120 gallons (454 L) of
11 water-miscible Class IB and Class IC liquids is allowed in nonmetallic containers, each
12 having a capacity of 16 ounces (0.473 L) or less.

13
14 **[3404.3.6.2] 5704.3.6.2 Container capacity.** Containers for Class I liquids shall not
15 exceed a capacity of 5 gallons (19 L).

16
17 **Exception:** Metal containers not exceeding 55 gallons (208 L) are allowed to store up
18 to 240 gallons (908 L) of the maximum allowable quantity per control area of Class IB
19 and IC liquids in a control area. The building shall be protected throughout by a
20 sprinkler system in accordance with FC Table [3404.3.4.1] 5704.3.4.1. The containers
21 shall be provided with plastic caps without cap seals and shall be stored upright.
22 Containers shall not be stacked or stored in racks and shall not be located in areas
23 accessible to the public.

24
25 **[3404.3.6.3] 5704.3.6.3 Fire protection and storage arrangements.** Fire protection and
26 container storage arrangements shall be in accordance with FC Table [3404.3.6.3(1)]
27 5704.3.6.3(1) or the following:

- 28
29 1. Storage on shelves shall not exceed 6 feet (1829 mm) in height, and shelving shall
30 be metal.
31
32 2. Storage on pallets or in piles greater than 4 feet 6 inches (1372 mm) in height, or
33 where the ceiling exceeds 18 feet (5486 mm) in height, shall be protected by a
34 sprinkler system in accordance with FC Table [3404.3.6.3(4)] 5704.3.6.3(4), and the
35 storage heights and arrangements shall be limited to those specified in FC Table
36 [3404.3.6.3(2)] 5704.3.6.3(2).
37
38 3. Storage on racks greater than 4 feet 6 inches (1372 mm) in height, or where the
39 ceiling exceeds 18 feet (5486 mm) in height shall be protected in accordance with FC
40 Tables [3404.3.6.3(5)] 5704.3.6.3(5), [3404.3.6.3(6)] 5704.3.6.3(6), [3404.3.6.3(7)]
41 5704.3.6.3(7) and [3404.3.6.3(8)] 5704.3.6.3(8) and the construction codes,
42 including the Building Code as appropriate, and the storage heights and arrangements
43 shall be limited to those specified in FC Table [3404.3.6.3(3)] 5704.3.6.3(3).

44
45 **[3404.3.6.3.1] 5704.3.6.3.1 Combustible commodities.** Combustible commodities
46 shall not be stored above flammable and combustible liquids.

1

MAXIMUM STORAGE HEIGHT IN CONTROL AREAS

TYPE OF LIQUID	NONSPRINKLERED AREA (feet)	SPRINKLERED AREA (feet)	SPRINKLERED BUILDINGS ^{a, b} WITH IN-RACK PROTECTION (feet)
Flammable liquids:			
Class IA	4	4	4
Class IB	4	8	12
Class IC	4	8	12
Combustible liquids:			
Class II	6	8	12
Class IIIA	8	12	16
Class IIIB	8	12	20

For SI: 1 foot = 304.8 mm.

a. In buildings protected throughout by a sprinkler system, the storage height for metallic containers shall not exceed the maximum height allowed by NFPA 30 based on the type of fire protection systems provided, or the maximum height as determined by the department based on a full-scale fire test, whichever is greater. These storage heights do not apply to storage of nonmetallic containers.

b. In-rack protection shall be in accordance with FC Table [3404.3.6.3(5)] 5704.3.6.3(5), [3404.3.6.3(6)] 5704.3.6.3(6), [3404.3.6.3(7)] 5704.3.6.3(7) or [3404.3.6.3(8)] 5704.3.6.3(8) and the construction codes, including the Building Code.

FC TABLE [3404.3.6.3(2)] 5704.3.6.3(2)
STORAGE ARRANGEMENTS FOR PALLETIZED OR SOLID-PILE STORAGE IN LIQUID STORAGE ROOMS AND WAREHOUSES

CLASS	STORAGE LEVEL	MAXIMUM STORAGE HEIGHT		MAXIMUM QUANTITY PER PILE (gallons)	MAXIMUM QUANTITY PER ROOM ^a (gallons)
		Drums	Containers ^b (feet)	Containers	Containers
IA	Ground floor	1	5	3,000	12,000
	Upper floors	1	5	2,000	8,000
	Basements ^e	Not Allowed	Not Allowed	Not Allowed	Not Allowed
IB	Ground floor	1	6.5	5,000	15,000
	Upper floors	1	6.5	3,000	12,000
	Basements ^e	Not Allowed	Not Allowed	Not Allowed	Not Allowed
IC	Ground floor ^d	1	6.5 ^c	5,000	15,000
	Upper floors	1	6.5 ^c	3,000	12,000
	Basements ^e	Not Allowed	Not Allowed	Not Allowed	Not Allowed
II	Ground floor ^d	3	10	10,000	25,000
	Upper floors	3	10	10,000	25,000
	Basements ^e	1	5	7,500	7,500
III	Ground floor	5	20	15,000	50,000
	Upper floors	5	20	15,000	50,000
	Basements ^e	3	10	10,000	25,000

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

a. See [FC3404.3.8.1] FC5704.3.8.1 for unlimited quantities in liquid storage warehouses.

b. In buildings protected throughout by a sprinkler system, the storage height for metallic containers shall not exceed the maximum height allowed by NFPA 30 based on the type of fire protection systems provided, or the maximum height as determined by the department based on a full-scale fire test, whichever is greater. These storage heights do not apply to storage of nonmetallic containers.

c. These height limitations are allowed to be increased to 10 feet for containers having a capacity of 5 gallons or less.

d. For palletized storage of unsaturated polyester resins (UPR) in relieving-style metal containers with 50 percent or less by weight Class IC or II liquid and no Class IA or IB liquid, height and pile quantity limits shall be allowed to be 10 feet and 15,000 gallons, respectively, provided that such storage is protected by sprinklers in accordance with NFPA 30 and that the UPR storage area is not located in the same containment area or drainage path for other Class I or II liquids.

e. Basements include cellars and other areas below grade.

FC TABLE [3404.3.6.3(3)] 5704.3.6.3(3)
STORAGE ARRANGEMENTS FOR RACK STORAGE IN LIQUID STORAGE ROOMS AND WAREHOUSES

CLASS	TYPE RACK	STORAGE LEVEL	MAXIMUM STORAGE HEIGHT (feet) ^b	MAXIMUM QUANTITY PER ROOM ^a (gallons)
			Containers	Containers
IA	Double row or Single row	Ground floor	25	7,500
		Upper floors	15	4,500
		Basements	Not Allowed	Not Allowed
IB IC	Double row or Single row	Ground floor	25	15,000
		Upper floors	15	9,000

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		Basements	Not Allowed	Not Allowed
II	Double row or Single row	Ground floor	25	24,000
		Upper floors	25	24,000
		Basements	15	9,000
III	Multirow	Ground floor	40	48,000
	Double room	Upper floors	20	48,000
	Single row	Basements	20	24,000

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

a. See [FC3404.3.8.1] FC5704.3.8.1 for unlimited quantities in liquid storage warehouses.

b. In buildings protected throughout by a sprinkler system, the storage height for metallic containers shall not exceed the maximum height allowed by NFPA 30 based on the type of fire protection systems provided, or the maximum height as determined by the department based on a full-scale fire test, whichever is greater. These storage heights do not apply to storage of nonmetallic containers.

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FC TABLE [3404.3.6.3(4)] 5704.3.6.3(4)
SPRINKLER SYSTEM PROTECTION FOR SOLID-PILE AND PALLETIZED STORAGE OF LIQUIDS IN METAL CONTAINERS AND PORTABLE TANKS^a

STORAGE CONDITIONS		CEILING SPRINKLER DESIGN AND DEMAND				MINIMUM HOSE STREAM DEMAND (gpm)	MINIMUM DURATION SPRINKLERS AND HOSE STREAMS (hours)
Class Liquid	Container size and arrangement	Density (gpm/ft ²)	Area (square feet)		Maximum spacing (square feet)		
			High-temperature sprinklers	Ordinary temperature sprinklers			
IA	5 gallons or less, with or without cartons, palletized or solid pile ^b	0.30	3,000	5,000	100	750	2
	Containers greater than 5 gallons, on end or side, palletized or solid pile	0.60	5,000	8,000	80	750	
IB, IC and II	5 gallons or less, with or without cartons, palletized or solid pile ^b	0.30	3,000	5,000	100	500	2
	Containers greater than 5 gallons on pallets or solid pile, one high	0.25	5,000	8,000	100		
II	Containers greater than 5 gallons on pallets or solid pile, more than one high, on end or side	0.60	5,000	8,000	80	750	2
III	5 gallons or less, with or without cartons, palletized or solid pile	0.25	3,000	5,000	120	500	1
	Containers greater than 5 gallons on pallets or solid pile, on end or sides, up to three high	0.25	3,000	5,000	120	500	1
III	Containers greater than 5 gallons, on pallets or solid pile, on end or sides, up to 18 feet high	0.35	3,000	5,000	100	750	2

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L, 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m, 1 gallon per minute per square foot = 40.75 L/min/m².

a. The design area contemplates the use of Class II standpipe systems. Where Class I standpipe systems are used, the area of application shall be increased by 30 percent without revising density.

b. For storage heights above 4 feet or ceiling heights greater than 18 feet, an approved engineering design shall be provided in accordance with FC104.7.2.

FC TABLE [3404.3.6.3(5)] 5704.3.6.3(5)
SPRINKLER SYSTEM PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS OF 5-GALLON CAPACITY
OR LESS WITH OR WITHOUT CARTONS ON CONVENTIONAL WOOD PALLET^a

CLASS LIQUID	CEILING SPRINKLER DESIGN AND DEMAND			IN-RACK SPRINKLER ARRANGEMENT AND DEMAND					MINIMUM HOSE STREAM DEMAND (gpm)	MINIMUM DURATION SPRINKLER AND HOSE STREAM (hours)
	Density (gpm/ft ²)	Area (square feet)		Maximum Spacing	Racks up to 9 feet deep	Racks more than 9 feet to 12 feet deep	30 psi (standard orifice)	Number of sprinklers operating		
		High-temperature sprinklers	Ordinary Temperature Sprinklers				14 psi (large orifice)			
I (maximum 25-foot height) Option 1	0.40	3,000	5,000	80 ft ² /head	1. Ordinary temperature, quick-response sprinklers, maximum 8 feet 3 inches horizontal spacing 2. One line sprinklers above each level of storage 3. Locate in longitudinal flue space, staggered vertical 4. Shields required where multilevel	1. Ordinary temperature, quick-response sprinklers, maximum 8 feet 3 inches horizontal spacing 2. One line sprinklers above each level of storage 3. Locate in transverse flue spaces, staggered vertical and within 20 inches of aisle 4. Shields required where multilevel	30 psi (0.5-inch orifice)	1. Eight sprinklers if only one level 2. Six sprinklers each on two levels if only two levels 3. Six sprinklers each on top three levels, if three or more levels 4. Hydraulically most remote	750	2
I (maximum 25-foot height) Option 2	0.55	2,000 ^b	Not Applicable	100 ft ² /head	1. Ordinary temperature, quick-response sprinklers, maximum 8 feet 3 inches horizontal spacing 2. See 2 above 3. See 3 above 4. See 4 above	1. Ordinary temperature, quick-response sprinklers, maximum 8 feet 3 inches horizontal spacing 2. See 2 above 3. See 3 above 4. See 4 above	14 psi (0.53-inch orifice)	See 1 through 4 above	500	2
I and II (maximum 14-foot storage height) (maximum three tiers)	0.55 ^c	2,000 ^{b, d}	Not Applicable	100 ft ² /head	Not Applicable None for maximum 6-foot-deep racks	Not Applicable	Not Applicable	Not Applicable	500	2
II (maximum 25-foot height)	0.30	3,000	5,000	100 ft ² /head	1. Ordinary temperature sprinklers 8 feet apart horizontally 2. One line sprinklers between levels at	1. Ordinary temperature sprinklers 8 feet apart horizontally 2. Two lines between levels at nearest 10-foot vertical intervals	30 psi	Hydraulically most remote—six sprinklers at each level, up to a maximum of three levels	750	2

					nearest 10-foot vertical intervals 3. Locate in longitudinal flue space, staggered vertical 4. Shields required where multilevel	3. Locate in transverse flue spaces, staggered vertical and within 20 inches of aisle 4. Shields required where multilevel				
III (40-foot height)	0.25	3,000	5,000	120 ft ² /head	Same as for Class II liquids	Same as for Class II liquids	30 psi	Same as for Class II liquids	500	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 pound per square inch = 6.895 kPa, 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 gallon per minute per square foot = 40.75 L/min/m².

- a. The design area contemplates the use of Class II standpipe systems. Where Class I standpipe systems are used, the area of application shall be increased by 30 percent without revising density.
- b. When the installation uses listed or approved extra-large orifices, high-temperature quick-response or standard element sprinklers, such spaces may be provided with a maximum 30-foot ceiling height provided minimum 7.5-foot aisles are maintained.
- c. For friction lid cans and other metal containers equipped with plastic nozzles or caps, the density shall be increased to 0.65 gpm per square foot using listed or approved extra-large orifice, high-temperature quick-response sprinklers.
- d. When the installation uses listed or approved extra-large orifice, high-temperature quick-response or standard element sprinklers, such spaces may be provided with a maximum 18-foot ceiling height provided minimum 7.5-foot aisles are maintained and only metal containers are stored.

FC TABLE [3404.3.6.3(6)] 5704.3.6.3(6)

SPRINKLER SYSTEM PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS GREATER THAN 5-GALLON CAPACITY^a

CLASS LIQUID	CEILING SPRINKLER DESIGN AND DEMAND			IN-RACK SPRINKLER ARRANGEMENT AND DEMAND					MINIMUM HOSE STREAM DEMAND (gpm)	MINIMUM DURATION SPRINKLER AND HOSE STREAM (hours)
	Density (gpm/ ft ²)	Area (square feet)		Maximum spacing	On-side storage racks up to 9-foot-deep racks	On-end storage (on pallets) up to 9-foot-deep racks	Minimum nozzle Pressure	Number of sprinklers operating		
		High-temperature sprinklers	Ordinary Temperature Sprinklers							
IA (maximum 25-foot height)	0.60	3,000	5,000	80 ft ² /head	1. Ordinary temperature sprinklers 8 feet apart horizontally 2. One line sprinklers above each tier of storage 3. Locate in longitudinal flue space, staggered vertical 4. Shields required where multilevel	1. Ordinary temperature sprinklers 8 feet apart horizontally 2. One line sprinklers above each tier of storage 3. Locate in longitudinal flue space, staggered vertical 4. Shields required where multilevel	30 psi	Hydraulically most remote—six sprinklers at each level	1,000	2
IB, IC and II (maximum 25-foot height)	0.60	3,000	5,000	100 ft ² /head	1. See 1 above 2. One line sprinklers every three tiers of storage	1. See 1 above 2. See 2 above	30 psi	Hydraulically most remote—six sprinklers at each level	750	2

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					3. See 3 above 4. See 4 above	3. See 3 above 4. See 4 above				
III (maximum 40-foot height)	0.25	3,000	5,000	120 ft ² /head	1. See 1 above 2. One line sprinklers every sixth level (maximum) 3. See 3 above 4. See 4 above	1. See 1 above 2. One line sprinklers every third level (maximum) 3. See 3 above 4. See 4 above	15 psi	Hydraulically most remote—six sprinklers at each level	500	1

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 pound per square inch = 6.895 kPa, 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 gallon per minute per square foot = 40.75 L/min/m².
a. The design assumes the use of Class II standpipe systems. Where a Class I standpipe system is used, the area of application shall be increased by 30 percent without revising density.

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FC TABLE [3404.3.6.3(7)] 5704.3.6.3(7)

AUTOMATIC AFFF WATER PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS GREATER THAN 5-GALLON CAPACITY^{a,b}

CLASS LIQUID	CEILING SPRINKLER DESIGN AND DEMAND			IN-RACK SPRINKLER ARRANGEMENT AND DEMAND ^c				DURATION AFFF SUPPLY (minimum)	DURATION WATER SUPPLY (hours)
	Density (gpm/ft ²)	Area (square feet)		On-end storage of drums on pallets, up to 25 feet	Minimum nozzle pressure (psi)	Number of Sprinklers Operating	Hose stream demand ^d (gpm)		
		High-temperature Sprinklers	Ordinary temperature sprinklers						
IA, IB, IC and II	0.30	1,500	2,500	1. Ordinary temperature sprinkler up to 10 feet apart horizontally 2. One line sprinklers above each level of storage 3. Locate in longitudinal flue space, staggered vertically 4. Shields required for multilevel	30	Three sprinklers per level	500	15	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 pound per square inch = 6.895 kPa, 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 gallon per minute per square foot = 40.75 L/min/m².

- a. System shall be a closed-head wet system with approved devices for proportioning aqueous film-forming foam.
- b. Except as modified by this table, in-rack sprinklers shall be installed in accordance with NFPA 13, as modified by FC Appendix B.
- c. Storage heights shall not exceed 25 feet.
- d. Hose stream demand includes 1½-inch inside hand hose, when required.

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FC TABLE [3404.3.6.3(8)] 5704.3.6.3(8)

SPRINKLER SYSTEM PROTECTION REQUIREMENTS FOR CLASS I LIQUID STORAGE IN METAL CONTAINERS OF 1-GALLON CAPACITY OR LESS WITH UNCARTONED OR CASE-CUT SHELF DISPLAY UP TO 6.5 FEET, AND PALLETIZED STORAGE ABOVE IN A DOUBLE-ROW RACK ARRAY^a

STORAGE HEIGHT	CEILING SPRINKLER DESIGN AND DEMAND				IN-RACK SPRINKLER ARRANGEMENT AND DEMAND				MINIMUM HOSE STREAM DEMAND (gpm)	MINIMUM DURATION SPRINKLERS AND HOSE STREAM (hours)
	Density (gpm/ft ²)	Area (square feet)		Maximum spacing	Racks up to 9 feet deep	Racks 9 to 12 feet	Minimum nozzle pressure	Number of sprinklers operating		
		High temperature	Ordinary Temperature							
Maximum 20-foot storage height	0.60	2,000 ^b	Not Applicable	100 ft ² /head	1. Ordinary temperature, quick-response sprinklers, maximum 8 feet 3 inches horizontal spacing 2. One line of sprinklers at the 6-foot level and the 11.5-foot level of storage 3. Locate in longitudinal flue space, staggered vertical 4. Shields required where multilevel	Not Applicable	30 psi (standard orifice) or 14 psi (large orifice)	1. Six sprinklers each on two levels 2. Hydraulically most remote 12 sprinklers	500	2

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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 pound per square inch = 6.895 kPa, 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 gallon per minute per square foot = 40.75 L/min/m².

a. This table shall not apply to racks with solid shelves.

b. When the installation uses extra-large orifice sprinklers, such spaces may be provided with a maximum 30-foot ceiling height provided [] minimum 7.5-foot aisles are maintained.

1 **[3404.3.6.4] 5704.3.6.4 Container warning labels.** All containers of flammable liquids
2 offered for sale shall bear a warning label in accordance with federal laws, rules and
3 regulations, painted or printed on the container, cautioning that the liquid is flammable and
4 must be kept away from heat and open flames.
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6 **[3404.3.6.5] 5704.3.6.5 Storage plan.** The commissioner may require that aisle and
7 storage plans be submitted to the department in accordance with FC Chapter [27] 50.
8

9 **[3404.3.7] 5704.3.7 Liquid storage rooms.** Liquid storage rooms shall comply with the
10 requirements of FC [3404.3.7.1] 5704.3.7.1 through [3404.3.7.5.2] 5704.3.7.5.2.
11

12 **[3404.3.7.1] 5704.3.7.1 General.** Quantities of liquids exceeding those set forth in
13 [FC3404.3.4.1] FC5704.3.4.1 for storage in control areas shall be stored in a liquid storage
14 room complying with the requirements of this section and constructed and separated as
15 required by the construction codes, including the Building Code.
16

17 **[3404.3.7.2] 5704.3.7.2 Quantities and arrangement of storage.** The quantity limits and
18 storage arrangements in liquid storage rooms shall be in accordance with FC Tables
19 [3404.3.6.3(2)] 5704.3.6.3(2) and [3404.3.6.3(3)] 5704.3.6.3(3) and FC [3404.3.7.2.1]
20 5704.3.7.2.1 through [3404.3.7.2.3] 5704.3.7.2.3.
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22 **[3404.3.7.2.1] 5704.3.7.2.1 Mixed storage.** Where two or more classes of liquids are
23 stored in a pile or rack section:
24

- 25 1. The quantity in that pile or rack shall not exceed the smallest of the maximum
26 quantities for the classes of liquids stored in accordance with FC Table
27 [3404.3.6.3(2)] 5704.3.6.3(2) or [3404.3.6.3(3)] 5704.3.6.3(3); and
28
- 29 2. The height of storage in that pile or rack shall not exceed the smallest of the
30 maximum heights for the classes of liquids stored in accordance with FC Table
31 [3404.3.6.3(2)] 5704.3.6.3(2) or [3404.3.6.3(3)] 5704.3.6.3(3).
32

33 **[3404.3.7.2.2] 5704.3.7.2.2 Separation and aisles.** Piles shall be separated from each
34 other by at least 4-foot (1219 mm) aisles. Aisles shall be provided so that all containers
35 are 20 feet (6096 mm) or less from an aisle. Where the storage of liquids is on racks, a
36 minimum 4-foot-wide (1219 mm) aisle shall be provided between adjacent rows of
37 racks and adjacent storage of liquids. Main aisles shall be a minimum of 8 feet
38 (2438 mm) wide. Additional aisles shall be provided for access to doors, required
39 windows and ventilation openings, standpipe connections, mechanical equipment and
40 switches. Such aisles shall be at least 3 feet (914 mm) in width, unless greater widths
41 are required for separation of piles or racks, in which case the greater width shall be
42 provided.
43

44 **[3404.3.7.2.3] 5704.3.7.2.3 Stabilizing and supports.** Containers and piles shall be
45 separated by pallets or dunnage to provide stability and to prevent excessive stress to
46 container walls. Adequate material-handling equipment shall be readily available and
47 used to handle containers safely at upper tier levels.

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2 **[3404.3.7.3] 5704.3.7.3 Spill control and secondary containment.** Liquid storage rooms
3 shall be provided with spill control and secondary containment in accordance with
4 [FC2704.2] FC5004.2.

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6 **[3404.3.7.4] 5704.3.7.4 Ventilation.** Liquid storage rooms shall be ventilated in
7 accordance with [FC2704.3] FC5004.3.

8
9 **[3404.3.7.5] 5704.3.7.5 Fire protection.** Fire protection for liquid storage rooms shall
10 comply with the requirements of FC [3404.3.7.5.1] 5704.3.7.5.1 and [3404.3.7.5.2]
11 5704.3.7.5.2.

12
13 **[3404.3.7.5.1] 5704.3.7.5.1 Fire extinguishing systems.** Liquid storage rooms shall be
14 protected throughout by sprinkler systems installed in accordance with FC Chapter 9,
15 FC Tables [3404.3.6.3(4)] 5704.3.6.3(4) through [3404.3.6.3(8)] 5704.3.6.3(8) and FC
16 Table [3404.3.7.5.1] 5704.3.7.5.1 and the construction codes, including the Building
17 Code. In-rack sprinklers shall additionally comply with the requirements of NFPA 13,
18 as modified by FC Appendix B, and the construction codes, including the Building
19 Code. Foam fire extinguishing systems and aqueous film-forming foam (AFFF) fire
20 extinguishing systems shall not be used except when approved by the commissioner
21 and the Commissioner of Buildings. Protection criteria developed from fire modeling
22 or full-scale fire testing conducted at an approved testing laboratory are allowed in lieu
23 of the protection as required in FC Tables [3404.3.6.3(2)] 5704.3.6.3(2) through
24 [3404.3.6.3(8)] 5704.3.6.3(8) and FC Table [3404.3.7.5.1] 5704.3.7.5.1 and the
25 construction codes, including the Building Code when approved by the commissioner
26 and the Commissioner of Buildings.

27
28 **FC TABLE [3404.3.7.5.1] 5704.3.7.5.1**
29 **AUTOMATIC AFFF-WATER PROTECTION REQUIREMENTS FOR SOLID-PILE AND PALLETIZED STORAGE OF LIQUIDS**
30 **IN METAL CONTAINERS OF 5-GALLON CAPACITY OR LESS^{a,b}**

PACKAGE TYPE	CLASS LIQUID	CEILING SPRINKLER DESIGN AND DEMAND					STORAGE HEIGHT (feet)	HOSE DEMAND (gpm) ^c	DURATION AFFF SUPPLY (minimum)	DURATION WATER SUPPLY (hours)
		Density (gpm/ft ²)	Area (square feet)	Temperature rating	Maximum spacing	Orifice size (inch)				
Cartoned	IB, IC, II and III	0.40	2,000	286°F	100 ft ² /head	0.531	11	500	15	2
Uncartoned	IB, IC, II and III	0.30	2,000	286°F	100 ft ² /head	0.5 or 0.531	12	500	15	2

31 For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m,

32 1 gallon per minute per square foot = 40.75 L/min/m², °C. = (°F-32)/1.8.

33 a. System shall be a closed-head wet system with approved devices for proportioning aqueous film-forming foam.

34 b. Ceiling heights shall not exceed 30 feet.

35 c. Hose stream demand includes 1½-inch inside hand hose, when required.

36
37 **[3404.3.7.5.2] 5704.3.7.5.2 Portable fire extinguishers.** A minimum of one portable
38 fire extinguisher complying with the requirements of FC906 and having a rating of not
39 less than 20-B shall be located not less than 10 feet (3048 mm) or more than 50 feet
40 (15 240 mm) from any Class I or II liquid storage area located outside of a liquid storage
41 room. A minimum of one portable fire extinguisher having a rating of not less than 20-
42 B shall be located outside of, but not more than 10 feet (3048 mm) from, the door
43 opening into a liquid storage room.

1 **[3404.3.8] 5704.3.8 Liquid warehouses.** Buildings used for storage of flammable or
2 combustible liquids in quantities exceeding those set forth in [FC3404.3.4] FC5704.3.4 for
3 control areas and [FC3404.3.7] FC5704.3.7 for liquid storage rooms shall comply with the
4 requirements of FC [3404.3.8.1] 5704.3.8.1 through [3404.3.8.5] 5704.3.8.5 and shall be
5 constructed and separated as required by the construction codes, including the Building Code.
6

7 **[3404.3.8.1] 5704.3.8.1 Quantities and storage arrangement.** Except as may be limited
8 by the commissioner at a particular premises in the interest of public safety, any amount of
9 flammable and combustible liquids may be stored in a liquid warehouse as defined in
10 NFPA 30. The arrangement of such storage shall be in accordance with FC Table
11 [3404.3.6.3(2)] 5704.3.6.3(2) or [3404.3.6.3(3)] 5704.3.6.3(3).
12

13 **[3404.3.8.1.1] 5704.3.8.1.1 Mixed storage.** Mixed storage shall be in accordance with
14 [FC3404.3.7.2.1] FC5704.3.7.2.1.
15

16 **[3404.3.8.1.2] 5704.3.8.1.2 Separation and aisles.** Separation and aisles shall be in
17 accordance with [FC3404.3.7.2.2] FC5704.3.7.2.2.
18

19 **[3404.3.8.2] 5704.3.8.2 Spill control and secondary containment.** Liquid warehouses
20 shall be provided with spill control and secondary containment as set forth in [FC2704.2]
21 FC5004.2.
22

23 **[3404.3.8.3] 5704.3.8.3 Ventilation.** Liquid warehouses storing containers greater than
24 5 gallons (19 L) in capacity shall be ventilated in accordance with the Mechanical Code.
25

26 **[3404.3.8.4] 5704.3.8.4 Fire extinguishing systems.** Liquid warehouses shall be protected
27 throughout by sprinkler systems installed in accordance with FC Chapter 9 and FC Tables
28 [3404.3.6.3(4)] 5704.3.6.3(4) through [3404.3.6.3(8)] 5704.3.6.3(8) and FC Table
29 [3404.3.7.5.1] 5704.3.7.5.1, or NFPA 30. In-rack sprinklers shall additionally comply with
30 the requirements of NFPA 13, as modified by FC Appendix B, and the construction codes,
31 including the Building Code. Foam fire extinguishing systems and automatic aqueous film-
32 forming foam fire extinguishing systems shall not be used except when approved.
33 Protection criteria developed from fire modeling or full-scale fire testing conducted at an
34 approved testing laboratory are allowed in lieu of the protection as required in FC Tables
35 [3404.3.6.3(2)] 5704.3.6.3(2) through [3404.3.6.3(8)] 5704.3.6.3(8) and FC Table
36 [3404.3.7.5.1] 5704.3.7.5.1 and the construction codes, including the Building Code, when
37 approved by the commissioner and the Commissioner of Buildings.
38

39 **[3404.3.8.5] 5704.3.8.5 Warehouse hose lines.** In liquid warehouses, either 1½-inch ([8]
40 38-mm) lined or 1-inch (25-mm) hard rubber hand hose lines shall be provided in sufficient
41 number to reach all liquid storage areas and shall be in accordance with FC905 and the
42 construction codes, including the Building Code.
43

44 **[3404.4] 5704.4 Outdoor storage of containers.** Outdoor storage areas for portable containers of
45 flammable and combustible liquids shall be designed, installed, operated and maintained in
46 compliance with the requirements of [FC3403] FC5703, and [3404.4.1] 5704.4.1 through
47 [3404.4.8] 5704.4.8.

1
2 **[3404.4.1] 5704.4.1 Design and construction.** Outdoor portable container storage areas shall
3 be designed and constructed in accordance with approved design and installation documents.
4

5 **[3404.4.2] 5704.4.2 Location on property.** Outdoor portable container storage areas shall be
6 designed, installed, operated and maintained in accordance with FC Table [3404.4.2] 5704.4.2
7 and in compliance with the requirements of [FC3404.4.2.1] FC5704.4.2.1 through [3404.4.2.4]
8 5704.4.2.4.
9

10 **[3404.4.2.1] 5704.4.2.1 Mixed liquid piles.** Where two or more classes of liquids are
11 stored in a single pile, the quantity in the pile shall not exceed the smallest of maximum
12 quantities for the classes of material stored.
13

14 **[3404.4.2.2] 5704.4.2.2 Fire apparatus access.** Outdoor portable container storage areas
15 shall be provided with fire apparatus access in accordance with [FC319.7.1] FC3605.3.1.
16

17 **[3404.4.2.3] 5704.4.2.3** Reserved.
18

19 **[3404.4.2.4] 5704.4.2.4 Storage adjacent to buildings.** A maximum amount of
20 1,100 gallons (4163 L) of flammable and combustible liquids stored in portable containers
21 may be stored adjacent to a building located on the same premises and under the same
22 ownership, provided that:
23

- 24 1. The building does not exceed one story in height. Such building shall be of fire-
25 resistance-rated construction with noncombustible exterior surfaces or
26 noncombustible construction and shall be used principally for the storage of liquids;
27 or
28
- 29 2. The exterior building wall adjacent to the storage area shall have a fire-resistance
30 rating of not less than 2 hours, having no openings to above grade areas within 10 feet
31 (3048 mm) horizontally of such storage and no openings to below grade areas within
32 50 feet (15 240 mm) horizontally of such storage.
33

34 **[3404.4.2.4.1] 5704.4.2.4.1 Separation.** The quantity of liquids stored adjacent to a
35 building protected in accordance with [FC3404.4.2.4(2)] FC5704.4.2.4(2) may exceed
36 1,100 gallons (4163 L), provided that the maximum quantity per pile does not exceed
37 1,100 gallons (4163 L) and each pile is separated by a 10-foot-minimum (3048 mm)
38 clear space along the common wall. Where the quantity stored exceeds 1,100 gallons
39 (4163 L) adjacent to a building complying with [FC3404.4.2.4(1)] FC5704.4.2.4(1), or
40 the provisions of [FC3404.4.2.4(1)] FC5704.4.2.4(1) cannot be met, a minimum
41 distance in accordance with the column for distance to a lot line in FC Table [3404.4.2]
42 5704.4.2 shall be maintained between buildings and the nearest container.
43

44 **FC TABLE [3404.4.2] 5704.4.2**
45 **OUTDOOR LIQUID STORAGE IN CONTAINERS**

CLASS OF LIQUID	CONTAINER STORAGE— MAXIMUM PER PILE	MINIMUM DISTANCE	MINIMUM DISTANCE	MINIMUM DISTANCE
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	Quantity ^{a, b} (gallons)	Height (feet)	BETWEEN PILES OR RACKS (feet)	TO LOT LINE ^d (feet)	TO PUBLIC STREET OR PRIVATE ROAD ^d (feet)
IA	1,100	10	5	50	10
IB	2,200	12	5	50	10
IC	4,400	12	5	50	10
II	8,800	12	5	25	5
III	22,000	18	5	10	5

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

a. For mixed class storage, see [FC3404.4.2] FC5704.4.2.

b. For storage in racks, the quantity limits per pile do not apply, but the rack arrangement shall be limited to a maximum of 50 feet in length and two rows or 9 feet in depth.

c. Reserved.

d. When the total quantity stored does not exceed 50 percent of the maximum allowed per pile, the distances are allowed to be reduced 50 percent, but not less than 3 feet.

[3404.4.3] 5704.4.3 Spill control and secondary containment. Outdoor portable container storage areas shall be provided with spill control and secondary containment in accordance with [FC3403.4] FC5703.4.

Exception: Containers stored on approved containment pallets in accordance with [FC2704.2.3] FC5004.2.3 and containers stored in cabinets and lockers with integral spill containment.

[3404.4.4] 5704.4.4 Security. Outdoor portable container storage areas shall be protected against tampering or trespassers by fencing or other approved control measures.

[3404.4.5] 5704.4.5 Protection from vehicles. Posts or other means shall be provided to protect outdoor portable container storage areas from vehicular damage. When posts are installed, the posts shall be installed in accordance with FC312.

[3404.4.6] 5704.4.6 Clearance from combustibles. Outdoor portable container storage areas shall be kept free from vegetation and other combustible waste as set forth in FC [3404.4.6.1] 5704.4.6.1 and [3404.4.6.2] 5704.4.6.2.

[3404.4.6.1] 5704.4.6.1 Vegetation. Brush, grass, vines, weeds and other vegetation capable of being ignited that is located within 15 feet (4572 mm) of an outdoor portable container storage area shall be regularly mowed or pruned and the clippings removed from the premises.

[3404.4.6.2] 5704.4.6.2 Combustible waste. Rubbish and other combustible waste shall not be allowed to accumulate within 15 feet (4572 mm) of an outdoor portable container storage area.

[3404.4.7] 5704.4.7 Weather protection. Weather protection for outdoor portable container storage areas shall be in accordance with [FC2704.13] FC5004.13.

[3404.4.8] 5704.4.8 Empty containers storage. The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers. Containers when emptied shall have the covers or plugs immediately replaced in openings.

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**SECTION FC [3405] 5705
HANDLING AND USE**

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[3405.1] 5705.1 Scope. The handling and use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall be conducted in accordance with this chapter. Cargo tank and tank car loading and unloading and other special operations shall be conducted in accordance with [FC3406] FC5706.

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Exception: Containers of organic coatings having no fire point and which are opened for pigmentation are not required to comply with the requirements of this section.

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[3405.2] 5705.2 Liquid transfer. Liquid transfer equipment and methods for transfer of Class I, II and IIIA liquids shall be subject to the approval of the commissioner and conducted in compliance with the requirements of FC [3405.2.1] 5705.2.1 through [3405.2.7] 5705.2.7.

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[3405.2.1] 5705.2.1 Pumps. Positive-displacement pumps shall be provided with pressure relief discharging back to the tank, pump suction or other approved location, or shall be provided with interlocks to prevent over-pressure.

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[3405.2.2] 5705.2.2 Pressured systems. Gases shall not be used to pressurize containers or tanks to provide for transfer.

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[3405.2.3] 5705.2.3 Piping, hoses and valves. Piping, hoses and valves used in liquid transfer operations shall be subject to the approval of the commissioner or listed for the intended use.

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[3405.2.4] 5705.2.4 Class I, II and III liquids. Class I and II liquids or Class III liquids in containers exceeding 5.3 gallons (20 L) capacity that are at a temperature higher than 20°F (11°C) less than their flash points shall not be dispensed by gravity, but shall be transferred by one of the following methods:

- 46
47
1. From safety cans complying with the requirements of UL 30.
 2. Through an approved closed piping system.
 3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
 4. Approved engineered liquid transfer systems.

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[3405.2.5] 5705.2.5 Manual container filling operations for Class I liquids. Class I liquids and Class II or III liquids at a temperature higher than 20°F (11°C) less than their flash points shall not be transferred into containers unless the nozzle and containers are electrically interconnected. Acceptable methods of electrical interconnection include:

1. Metallic floor plates on which containers stand while filling, when such floor plates are electrically connected to the fill stem; or

1
2 2. Where the fill stem is bonded to the container during filling by means of a bond wire.
3

4 **[3405.2.6] 5705.2.6 Automatic container-filling operations for flammable liquids.**
5 Container-filling operations for flammable liquids involving conveyor belts or other
6 automatic-feeding operations shall be designed to prevent static accumulations.
7

8 **[3405.2.7] 5705.2.7 Portable container dispensing.** When a portable container is used to
9 dispense gasoline or other flammable or combustible liquids into portable fueled equipment or
10 stationary fuel-burning equipment by means of pouring or other gravity dispensing, the
11 individual capacity of the portable container shall not exceed 2½ gallons (9.5L), except as
12 authorized by this code at construction sites.
13

14 **[3405.3] 5705.3 Indoor use.** Indoor use of flammable and combustible liquids, including the
15 dispensing and mixing of such liquids, shall be in accordance with [FC3405.2] FC5705.2, and FC
16 [3405.3.1] 5705.3.1 through [3405.3.5.3] 5705.3.5.3.
17

18 **[3405.3.1] 5705.3.1 Closure of mixing or blending vessels.** Vessels used for mixing or
19 blending of flammable liquids and combustible liquids at a temperature higher than 20°F
20 (11°C) less than their flash points shall be provided with self-closing, tight-fitting,
21 noncombustible lids that will control a fire within such vessel.
22

23 **Exception:** Where such devices are determined by the commissioner to be impractical, a
24 fire extinguishing system shall be provided.
25

26 **[3405.3.2] 5705.3.2 Bonding of vessels.** Where differences of potential could be created,
27 vessels containing flammable liquids, or combustible liquids at a temperature higher than 20°F
28 (11°C) less than their flash points shall be electrically connected by bond wires, ground cables,
29 piping or similar means to a static grounding system to maintain equipment at the same
30 electrical potential to prevent sparking.
31

32 **[3405.3.3] 5705.3.3 Heating, lighting and cooking devices, equipment and systems.**
33 Heating, lighting and cooking devices, equipment and systems which utilize flammable liquids
34 shall not be operated indoors, and shall comply with the requirements of FC Chapters 3 and
35 [14] 33, as applicable.
36

37 **[3405.3.4] 5705.3.4 Location of processing vessels.** Processing vessels shall be located with
38 respect to distances to lot lines, in accordance with FC Tables [3405.3.4(1)] 5705.3.4(1) and
39 [3405.3.4(2)] 5705.3.4(2). Processing vessels for flammable liquids shall be limited to not
40 more than 550 gallons (2082 L). Processing vessels for Class II and IIIA combustible liquids
41 shall be limited to not more than 1,100 gallons (4164 L). Processing vessels for Class IIIB
42 combustible liquids shall be limited to not more than 20,000 gallons (75 700 L).
43

44 **Exception:** Where the exterior wall facing the adjoining lot line is a blank wall having a
45 fire-resistance rating of not less than 4 hours, the commissioner may modify the distances.
46 The distance shall not be less than that set forth in the construction codes, including the

Building Code, and when Class IA or unstable liquids are involved, explosion control shall be provided in accordance with FC911.

**FC TABLE [3405.3.4(1)] 5705.3.4(1)
SEPARATION OF PROCESSING VESSELS FROM LOT LINES**

PROCESSING VESSELS WITH EMERGENCY RELIEF VENTING	LOCATION	
	Stable liquids	Unstable liquids
Not in excess of 2.5 psig	FC Table [3405.3.4(2)] <u>5705.3.4(2)</u>	two and one-half times FC Table [3405.3.4(2)] <u>5705.3.4(2)</u>
Over 2.5 psig	one and one-half times FC Table [3405.3.4(2)] <u>5705.3.4(2)</u>	four times FC Table [3405.3.4(2)] <u>5705.3.4(2)</u>

For SI: 1 pound per square inch gauge = 6.895 kPa.

**FC TABLE [3405.3.4(2)] 5705.3.4(2)
REFERENCE TABLE FOR USE WITH FC TABLE [3405.3.4(1)] 5705.3.4(1)**

TANK CAPACITY (gallons)	MINIMUM DISTANCE FROM LOT LINE (feet)	MINIMUM DISTANCE FROM A BUILDING, PUBLIC STREET OR PRIVATE ROAD (feet)
275 or less	5	5
Over 275 to 750	10	5
Over 750 to 12,000	15	5
Over 12,000 to 20,000	20	5

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

[3405.3.5] 5705.3.5 Quantity limits for use. Liquid use quantity limitations shall comply with the requirements of FC [3405.3.5.1] 5705.3.5.1 through [3405.3.5.3] 5705.3.5.3.

[3405.3.5.1] 5705.3.5.1 Maximum allowable quantity per control area. Indoor use of flammable and combustible liquids, including the dispensing and mixing of such liquids, shall not exceed the maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) and shall not exceed the additional limitations set forth in [FC3405.3.5] FC5705.3.5.

Exceptions:

1. Cleaning with Class I, II and IIIA liquids shall be in accordance with [FC3405.3.6] FC5705.3.6.
2. Use of hazardous production material flammable and combustible liquids in Group H-5 occupancies shall be in accordance with FC Chapter [18] 27.

[3405.3.5.2] 5705.3.5.2 Limitations on handling and use. The quantity of flammable or combustible liquid handled and used, including the quantity dispensed and mixed, shall be limited by occupancy as follows:

- 1. Group A, B, E, F, I and S occupancies.** Flammable and combustible liquids shall be handled and used only for lawful uses incidental to the occupancy, including maintenance and operation of equipment, and in quantities not to exceed those which are necessary for such use.
- 2. Group M occupancies.** Flammable and combustible liquids shall be handled and used only for lawful uses incidental to the occupancy, including maintenance and

1 operation of equipment, and in quantities not to exceed those which are necessary for
2 such use.

3
4 **3. Group R occupancies.** Flammable and combustible liquids shall be handled and
5 used only for maintenance and operation of equipment, and in quantities not to
6 exceed those which are necessary for such use. Quantities used within a dwelling unit
7 shall be for household uses only and in quantities below permit amounts. It shall be
8 unlawful to handle or use gasoline or other flammable liquid motor fuel within a
9 dwelling unit.

10
11 **4. Gasoline and other flammable liquid motor fuel.** Gasoline and other flammable
12 liquid motor fuel in portable containers in quantities requiring a permit is subject to
13 the approval of the commissioner, regardless of the occupancy classification of the
14 premises.

15
16 **[3405.3.5.3] 5705.3.5.3 Quantities exceeding limits for control areas.** Quantities
17 exceeding the maximum allowable quantity per control area indicated in FC [3405.3.5.1]
18 5705.3.5.1 and [3405.3.5.2] 5705.3.5.2 shall be in compliance with the following
19 requirements:

- 20
21 1. For open systems, indoor use of flammable and combustible liquids, including the
22 dispensing and mixing of such liquids, shall be within a room or building complying
23 with the construction codes, including the Building Code and FC [3405.3.7.1]
24 5705.3.7.1 through [3405.3.7.5] 5705.3.7.5.
- 25
26 2. For closed systems, indoor use of flammable and combustible liquids, including the
27 dispensing and mixing of such liquids, shall be within a room or building complying
28 with the requirements of the construction codes, including the Building Code and FC
29 [3405.3.7] 5705.3.7 through [3405.3.7.4] 5705.3.7.4 and [3405.3.7.6] 5705.3.7.6.

30
31 **[3405.3.6] 5705.3.6 Cleaning with flammable and combustible liquids.** Cleaning with Class
32 I, II and IIIA liquids shall be in accordance with this section.

33
34 **Exceptions:**

- 35
36 1. Dry cleaning shall be in accordance with FC Chapter [12] 21.
- 37
38 2. Spray-nozzle cleaning shall be in accordance with [FC1503.3.5] FC2403.3.5.

39
40 **[3405.3.6.1] 5705.3.6.1 Cleaning operations.** Class IA liquids and gasoline shall not be
41 used to clean facilities or for other maintenance purposes, except as authorized by this code
42 or the rules in connection with commercial and industrial process-related operations. The
43 cleaning with Class IB, IC or II liquids shall be conducted as follows:

- 44
45 1. In a room or building in accordance with [FC3405.3.7] FC5705.3.7; or

1 2. In a machine listed and approved for the purpose in accordance with [FC3405.3.6.2]
2 FC5705.3.6.2.
3

4 **[3405.3.6.2] 5705.3.6.2 Listed and approved machines.** Parts cleaning and degreasing
5 conducted in listed and approved machines in accordance with [FC3405.3.6.1]
6 FC5705.3.6.1 shall be in accordance with FC [3405.3.6.2.1] 5705.3.6.2.1 through
7 [3405.3.6.2.7] 5705.3.6.2.7.
8

9 **[3405.3.6.2.1] 5705.3.6.2.1 Solvents.** Solvents shall be classified and shall be
10 compatible with the machines within which they are used.
11

12 **[3405.3.6.2.2] 5705.3.6.2.2 Machine capacities.** The quantity of solvent shall not
13 exceed the listed design capacity of the machine for the solvent being used with the
14 machine.
15

16 **[3405.3.6.2.3] 5705.3.6.2.3 Solvent quantity limits.** Solvent quantities shall be limited
17 as follows:
18

- 19 1. Machines without remote solvent reservoirs shall be limited to quantities set forth
20 in [FC3405.3.5] FC5705.3.5.
21
- 22 2. Machines with remote solvent reservoirs using a Class IB or IC liquid shall be
23 limited to quantities set forth in [FC3405.3.5] FC5705.3.5.
24
- 25 3. Machines with remote solvent reservoirs using Class II liquids shall be limited
26 to 35 gallons (132 L) per machine. The total quantities shall not exceed an
27 aggregate of 240 gallons (908 L) per control area in buildings not protected
28 throughout by a sprinkler system and an aggregate of 480 gallons (1817 L) per
29 control area in buildings protected throughout by a sprinkler system.
30
- 31 4. Machines with remote solvent reservoirs using Class IIIA liquids shall be limited
32 to 80 gallons (303 L) per machine.
33

34 **[3405.3.6.2.4] 5705.3.6.2.4 Immersion soaking of parts.** Work areas of machines
35 with remote solvent reservoirs shall not be used for immersion soaking of parts.
36

37 **[3405.3.6.2.5] 5705.3.6.2.5 Separation.** Multiple machines shall be separated from
38 each other by a distance of not less than 30 feet (9144 mm) or by a fire barrier with a
39 minimum 1-hour fire-resistance rating.
40

41 **[3405.3.6.2.6] 5705.3.6.2.6 Ventilation.** Machines shall be located in areas adequately
42 ventilated to prevent accumulation of vapors.
43

44 **[3405.3.6.2.7] 5705.3.6.2.7 Installation.** Machines shall be installed in accordance
45 with their listings.
46

1 **[3405.3.7] 5705.3.7 Rooms or buildings for quantities exceeding the maximum allowable**
2 **quantity per control area.** Where required by FC [3405.3.5.3] 5705.3.5.3 or [3405.3.6.1]
3 5705.3.6.1, rooms or buildings used for the handling and use of flammable and combustible
4 liquids, including the dispensing and mixing of such liquids, shall be in accordance with FC
5 [3405.3.7.1] 5705.3.7.1 through [3405.3.7.6.3] 5705.3.7.6.3.

6
7 **[3405.3.7.1] 5705.3.7.1 Construction, location and fire protection.** Rooms or buildings
8 classified in accordance with the Building Code as Group H-2 or H-3 occupancies based
9 on use of flammable or combustible liquids, including the dispensing or mixing of such
10 liquids, shall be constructed in accordance with the construction codes, including the
11 Building Code.

12
13 **[3405.3.7.2] 5705.3.7.2 Basements and other areas below grade.** In rooms or buildings
14 classified in accordance with the Building Code as Group H-2 or H-3, dispensing or mixing
15 of flammable or combustible liquids shall not be conducted in basements, cellars or other
16 areas below grade.

17
18 **[3405.3.7.3] 5705.3.7.3 Fire protection.** Rooms or buildings classified in accordance with
19 the construction codes, including the Building Code, as Group H-2 or H-3 occupancies
20 shall be protected throughout by a sprinkler system.

21
22 **[3405.3.7.4] 5705.3.7.4 Doors.** Interior doors to rooms or portions of such buildings shall
23 be self-closing fire doors in accordance with the construction codes, including the Building
24 Code.

25
26 **[3405.3.7.5] 5705.3.7.5 Open systems.** The handling and use of flammable and
27 combustible liquids, including the dispensing and mixing of such liquids, in open systems
28 shall be in accordance with FC [3405.3.7.5.1] 5705.3.7.5.1 through [3405.3.7.5.3]
29 5705.3.7.5.3.

30
31 **[3405.3.7.5.1] 5705.3.7.5.1 Ventilation.** Continuous mechanical ventilation shall be
32 provided and shall comply with the requirements of the construction codes, including
33 the Building Code and the Mechanical Code.

34
35 **[3405.3.7.5.2] 5705.3.7.5.2 Explosion control.** Explosion control shall be provided in
36 accordance with FC911.

37
38 **[3405.3.7.5.3] 5705.3.7.5.3 Spill control and secondary containment.** Spill control
39 shall be provided in accordance with [FC3403.4] FC5703.4 where Class I, II or IIIA
40 liquids are dispensed into containers exceeding a 1.3-gallon (5 L) capacity or mixed or
41 used in open containers or systems exceeding a 5.3-gallon (20 L) capacity. Spill control
42 and secondary containment shall be provided in accordance with [FC3403.4] FC5703.4
43 when the capacity of an individual container exceeds 55 gallons (208 L) or the
44 aggregate capacity of multiple containers or tanks exceeds 100 gallons (378.5 L).

1 **[3405.3.7.6] 5705.3.7.6 Closed systems.** The handling and use of flammable or
2 combustible liquids in closed containers, including the mixing of such liquids, shall be in
3 accordance with FC [3405.3.7.6.1] 5705.3.7.6.1 through [3405.3.7.6.3] 5705.3.7.6.3.

4
5 **[3405.3.7.6.1] 5705.3.7.6.1 Ventilation.** Closed systems designed to be opened as part
6 of normal operations shall be provided with ventilation in accordance with
7 [FC3405.3.7.5.1] FC5705.3.7.5.1.

8
9 **[3405.3.7.6.2] 5705.3.7.6.2 Explosion control.** Explosion control shall be provided
10 when an explosive environment can occur as a result of the use, including any mixing
11 process. Explosion control shall be designed in accordance with FC911.

12
13 **Exception:** When process vessels are designed to contain fully the worst-case
14 explosion anticipated within the vessel under process conditions considering the
15 most likely failure.

16
17 **[3405.3.7.6.3] 5705.3.7.6.3 Spill control and secondary containment.** Spill control
18 shall be provided in accordance with [FC3403.4] FC5703.4 when flammable or
19 combustible liquids are dispensed into containers exceeding a 1.3-gallon (5 L) capacity
20 or mixed or used in open containers or systems exceeding a 5.3-gallon (20 L) capacity.
21 Spill control and secondary containment shall be provided in accordance with
22 [FC3403.4] FC5703.4 when the capacity of an individual container or tank exceeds
23 55 gallons (208 L) or the aggregate capacity of multiple containers or tanks exceeds
24 1,000 gallons (3785 L).

25
26 **[3405.3.8] 5705.3.8 Outdoor handling and use.** Outdoor handling and use of flammable and
27 combustible liquids, including the dispensing of such liquids, shall be in accordance with FC
28 [3405.3.8.1] 5705.3.8.1 through [3405.3.8.3] 5705.3.8.3.

29
30 **Exception:** Dispensing of liquids into motor vehicle fuel tanks at liquid motor fuel-
31 dispensing facilities shall be in accordance with FC Chapter [22] 23.

32
33 **[3405.3.8.1] 5705.3.8.1 Spill control and drainage control.** Outdoor handling and use of
34 flammable and combustible liquids, including the dispensing areas for such liquids, shall
35 be provided with spill control as set forth in [FC3403.4] FC5703.4.

36
37 **[3405.3.8.2] 5705.3.8.2 Location.** Dispensing activities which exceed the quantities set
38 forth in FC Table [3405.3.8.2] 5705.3.8.2 shall not be conducted within 15 feet (4572 mm)
39 of buildings or combustible materials or within 25 feet (7620 mm) of building openings,
40 lot lines, public streets or private roads. Dispensing activities that exceed the quantities set
41 forth in FC Table [3405.3.8.2] 5705.3.8.2 shall not be conducted within 15 feet (4572 mm)
42 of storage of Class I, II or III liquids unless such liquids are stored in tanks which are listed
43 and labeled as 2-hour protected tank assemblies in accordance with UL 2085. The
44 commissioner may impose by rule, or as a condition of a permit, additional restrictions on
45 dispensing activities, including dispensing locations, dispenser requirements, container
46 requirements and fire protection requirements, upon a determination that such additional
47 restrictions are required in the interest of public safety.

1
2 **Exceptions:**

- 3
4 1. The requirements shall not apply to areas where only the following liquids are
5 dispensed: Class III liquids; liquids that are heavier than water; water-miscible
6 liquids; and liquids with viscosities greater than 10,000 centipoise (cp).
7
8 2. Flammable and combustible liquid dispensing in chemical plants, process
9 facilities, oil blending and packaging facilities, bulk plants and terminals.

10
11 **FC TABLE [3405.3.8.2] 5705.3.8.2**
12 **MAXIMUM ALLOWABLE QUANTITIES FOR DISPENSING OF FLAMMABLE AND COMBUSTIBLE**
13 **LIQUIDS IN OUTDOOR CONTROL AREAS^a**

CLASS OF LIQUID	QUANTITY (gallons)
Flammable	
Class IA	10
Class IB	15
Class IC	20
Combination Class IA, IB and IC	30 ^c
Combustible	
Class II	30
Class IIIA	80
Class IIIB	3,300

14 For SI: 1 gallon = 3.785 L.

15 a. For definition of "Outdoor Control Area," see [FC2702.1] FC202.

16 b. Reserved.

17 c. Containing not more than the maximum allowable quantity per control area of each individual class.

18
19 **[3405.3.8.3] 5705.3.8.3 Location of processing vessels.** Processing vessels shall be
20 located with respect to distances to lot lines in accordance with FC Table [3405.3.4(1)]
21 5705.3.4(1).

22
23 **[3405.3.9] 5705.3.9 Mobile trailers using fuel oil for heating and power generation.** Mobile
24 trailers using fuel oil for heating and power generation shall comply with the requirements of
25 the rules.

26
27 **[3405.4] 5705.4 Solvent distillation units.** Solvent distillation units shall comply with the
28 requirements of FC [3405.4.1] 5705.4.1 through [3405.4.9] 5705.4.9.

29
30 **[3405.4.1] 5705.4.1 Unit with a capacity of not more than 60 gallons.** Solvent distillation
31 units used to recycle Class I, II or IIIA liquids having a distillation chamber capacity of not
32 more than 60 gallons (227 L) shall be listed, labeled and installed in accordance with
33 [FC3405.4] FC5705.4 and UL 2208.

34
35 **Exceptions:**

- 36
37 1. Solvent distillation units installed in dry cleaning facilities in accordance with FC
38 Chapter [12] 21.
39
40 2. Solvent distillation units used in continuous through-put industrial processes where
41 the source of heat is remotely supplied using steam, hot water, oil or other heat

1 transfer fluids, the temperature of which is below the auto-ignition point of the
2 solvent.

3
4 3. Solvent distillation units listed for and used in laboratories.

5
6 4. Approved research, testing and experimental processes.
7

8 **[3405.4.2] 5705.4.2 Units with a capacity exceeding 60 gallons.** Solvent distillation units
9 used to recycle Class I, II or IIIA liquids, having a distillation chamber capacity exceeding
10 60 gallons (227 L) shall be used in locations that comply with the use and mixing requirements
11 of [FC3405] FC5705 and other applicable provisions in this chapter.
12

13 **[3405.4.3] 5705.4.3 Prohibited processing.** It shall be unlawful to process Class I, II and IIIA
14 liquids also classified as unstable (reactive) in solvent distillation units.
15

16 **[3405.4.4] 5705.4.4 Labeling.** Solvent distillation units shall bear a permanent label indicating
17 the capacity of the distillation chamber, the distance the unit shall be placed away from sources
18 of ignition, and the products for which the unit has been listed for use.
19

20 **[3405.4.5] 5705.4.5 Manufacturer's manual and [Material] Safety Data Sheets.** The
21 manufacturer's manual for the installation, operation and servicing of the solvent distillation
22 unit shall be maintained on the premises, readily available to the user and for inspection by any
23 department representative. In accordance with [FC2703.4] FC5003.4, [material] safety data
24 sheets shall be maintained on the premises for each flammable or combustible liquid used in
25 the distillation unit.
26

27 **[3405.4.6] 5705.4.6 Location.** Solvent distillation units shall be installed at locations in
28 accordance with the listing for the unit. Solvent distillation units shall not be used in basements,
29 cellars or other areas below grade.
30

31 **[3405.4.7] 5705.4.7 Storage of liquids.** Distilled liquids and liquids awaiting distillation shall
32 be stored in accordance with [FC3404] FC5704.
33

34 **[3405.4.8] 5705.4.8 Storage of residues.** Hazardous residue from the distillation process shall
35 be stored in accordance with [FC3404] FC5704 and FC Chapter [27] 50.
36

37 **[3405.4.9] 5705.4.9 Portable fire extinguishers.** Portable fire extinguishers shall be provided
38 in accordance with FC906. At least one portable fire extinguisher having a rating of not less
39 than 40-B shall be located not less than 10 feet (3048 mm) or more than 30 feet (9144 mm)
40 from any solvent distillation unit.
41

42 **[3405.5] 5705.5 Alcohol-based hand rubs classified as Class I or Class II liquids.** [The storage,
43 handling and use of dispensers] Dispensers containing alcohol-based hand rubs classified as Class
44 I or Class II liquids for use on the premises, shall be designed, installed, operated and maintained
45 in [compliance with the following requirements] accordance with FC 5705.5.1 through 5705.5.4.
46 Storage, handling and use of alcohol-based hand rubs in dispensers or other containers for purposes

1 other than use on the premises shall be in accordance with the provisions of this code applicable
2 to flammable liquids generally.

3
4 **5705.5.1. Dispenser design and operation.** Except as otherwise provided in FC5705.5.4, all
5 dispensers installed or placed for use on the premises, including wall-mounted, floor-mounted
6 or tabletop dispensers, shall comply with the following requirements:

- 7
8 1. Dispensers shall be of the nonaerosol[, disposable and nonrefillable] type.
- 9
10 2. The maximum capacity of each dispenser shall be 68 fluid ounces (2.0 L).
- 11
12 3. The maximum alcohol content shall not exceed 95 percent by volume.
- 13
14 4. [The minimum separation between dispensers shall be 48 inches (1219 mm).] Dispensers
15 shall either be disposable or designed to be refilled with a sealed refill.
- 16
17 5. Dispensers shall not be installed or placed directly adjacent to, above or below any
18 electrical receptacle, switch, appliance, device or other ignition source. [The wall space
19 between the dispenser and the floor shall remain clear and unobstructed.]
- 20
21 6. [Dispensers shall be wall mounted with the bottom of each dispenser a minimum of 42
22 inches (1067 mm) and a maximum of 48 inches (1219 mm) above the finished floor.
- 23
24 7.] Dispensers shall not release their contents except when the dispenser is manually
25 activated. Dispensers manually activated by touch-free devices shall comply with the
26 following requirements:
 - 27
28 6.1. The dispensing mechanism shall be tested in accordance with the manufacturer's
29 instructions each time a new refill is installed.
 - 30
31 6.2. Dispensers shall be designed to minimize accidental or malicious activations of the
32 dispensing device and shall have the following safety features:
 - 33
34 6.2.1. The dispenser shall activate only when an object is placed within four inches
35 of the sensing device.
 - 36
37 6.2.2. The dispenser shall not dispense more than the amount required for hand
38 hygiene consistent with United States Food and Drug Administration labeling
39 regulations.
 - 40
41 6.2.3. An object placed within the activation zone and left in place will cause only
42 one activation.
- 43
44 [8. The storage of dispensers shall be in compliance with the applicable requirements of
45 FC3404.
- 46

1 9. In occupancies with carpeted floors, dispensers may only be installed in smoke
2 compartments or fire areas protected throughout by a sprinkler system.
3

4 **3405.5.1 Corridor installations.** Dispensers installed in corridors shall additionally comply
5 with the following requirements:] **5705.5.2 Wall-mounted dispenser installation.** Except as
6 otherwise provided in FC 5705.5.4, wall-mounted dispensers shall be installed in compliance
7 with the following requirements:
8

9 1. The bottom of each wall-mounted dispenser shall be a minimum of 42 inches (1067 mm)
10 and a maximum of 48 inches (1219 mm) above the finished floor.

11
12 2. The wall space between the dispenser and the floor shall remain clear and unobstructed.

13
14 3. The minimum separation between dispensers shall be 48 inches (1219 mm).

15
16 [1] 4. The maximum capacity of each dispenser installed in a public hallway shall be
17 41 fluid ounces (1.21 L).

18
19 [2] 5. The maximum quantity allowed in a [corridor] public hallway within a control area
20 shall be 10 gallons (38 L), unless the public hallway is protected throughout by a sprinkler
21 system or a smoke detection system.

22
23 [3. The minimum corridor width shall be 72 inches (1829 mm).

24
25 4] 6. Projections into a [corridor] public hallway shall be in accordance with the
26 construction codes, including the Building Code.

27
28 [5. The corridor shall be protected throughout by a sprinkler system or smoke detection
29 system.]
30

31 **5705.5.3 Storage of alcohol-based hand rub dispensers.** Storage of alcohol-based hand rubs
32 in dispensers for use on the premises (excluding dispensers installed or placed for use) shall be
33 in accordance with FC Table 5003.1.1(1), except as may be otherwise authorized by the
34 department.
35

36 **5705.5.4 Alcohol-based hand rubs in bulk packaging.** Storage, handling and use of alcohol-
37 based hand rub dispensers in packaging not in compliance with FC5705.5.1, including
38 dispensers with a capacity exceeding 68 fluid ounces (2 L) or dispensers of any size that must
39 be manually refilled from a container, shall be stored, handled and used on a premises for use
40 at such premises only as may be prescribed by rule and/or authorized by permit.
41

42 SECTION FC [3406] 5706 43 SPECIAL OPERATIONS 44

45 [3406.1] **5706.1 Scope.** Flammable and combustible liquids shall be stored, handled and used in
46 connection with special operations, including the following operations, in compliance with the
47 requirements of this section:

- 1
- 2 1. Storage and dispensing of flammable and combustible liquids at construction sites.
- 3
- 4 2. Bulk plants or terminals.
- 5
- 6 3. Bulk transfer and process transfer operations utilizing cargo tanks and tank cars.
- 7
- 8 4. Cargo tanks and cargo tank operation.
- 9
- 10 5. Vapor recovery and vapor-processing systems.

11 **[3406.1.1] 5706.1.1 General.** Special operations involving the storage, handling and use of
12 flammable and combustible liquids shall be conducted in accordance with FC [3401] 5701,
13 [3403] 5703, [3404] 5704 and [3405] 5705, except as otherwise provided in this section.

14
15
16 **[3406.1.2] 5706.1.2 Prohibition.** It shall be unlawful to dispense any flammable or
17 combustible liquid from a cargo tank or tank car into the fuel tanks of motor vehicles, except
18 for the transfer of liquids from a cargo tank to construction equipment at a construction site in
19 accordance with [FC3406.2.8] FC5706.2.8.

20
21 **[3406.2] 5706.2 Storage and dispensing of flammable and combustible liquids at construction**
22 **sites.** Temporary storage and dispensing of flammable and combustible liquids at construction
23 sites shall be in accordance with FC [3406.2.1] 5706.2.1 through [3406.2.8] 5706.2.8.

24
25 **Exception:** Storage and use of fuel oil connected with nonportable oil-burning equipment
26 regulated by the Mechanical Code.

27
28 **[3406.2.1] 5706.2.1 Combustibles and open flames near tanks.** Storage areas shall be kept
29 free from weeds and other combustible waste. It shall be unlawful to smoke, or light or
30 maintain an open flame in a flammable or combustible liquid storage area.

31
32 **[3406.2.2] 5706.2.2 Marking of tanks and containers.** Tanks and containers for aboveground
33 storage of liquids shall be conspicuously marked with the name of the product which they
34 contain and the words: FLAMMABLE—KEEP FIRE AND FLAME AWAY. Tanks shall bear
35 the additional marking: KEEP 50 FEET FROM BUILDINGS.

36
37 **[3406.2.3] 5706.2.3 Containers for storage and use.** Flammable and combustible liquid shall
38 only be stored in metal containers of a type meeting the requirements of the regulations of the
39 United States Department of Transportation, as set forth in 49 CFR Part 178, or in containers
40 of an approved design.

41
42 **[3406.2.3.1] 5706.2.3.1 Liquid handling devices.** Discharge devices shall be of a type that
43 do not develop an internal pressure on the container. Pumping devices or approved self-
44 closing faucets used for dispensing liquids shall not leak and shall be well-maintained.
45 Individual containers shall not be interconnected and shall be kept closed when not in use.

1 **[3406.2.3.2] 5706.2.3.2 Outdoor storage.** Containers stored outdoors shall be in
2 accordance with [FC3404] FC5704 and the construction codes, including the Building
3 Code.
4

5 **[3406.2.4] 5706.2.4 Temporary tanks.** The capacity of a storage tank temporarily installed
6 aboveground containing flammable or combustible liquids shall not exceed 660 gallons
7 (2498 L). Tanks shall be of the single-compartment design, shall be constructed of steel, and
8 shall meet the requirements of the New York State Department of Environmental Conservation
9 regulations, as set forth in 6 NYCRR [Parts] Part 613[and 614].
10

11 **[3406.2.4.1] 5706.2.4.1 Fill-opening security.** Fill openings shall be equipped with a
12 locking closure device. Fill openings shall be separate from vent openings.
13

14 **[3406.2.4.2] 5706.2.4.2 Vents.** Tanks shall be provided with a method of normal and
15 emergency venting. Normal vents shall also be in accordance with [FC3404.2.7.3]
16 FC5704.2.7.3. Emergency vents shall be in accordance with [FC3404.2.7.4] FC5704.2.7.4.
17 Emergency vents shall be arranged to discharge in a manner which prevents localized
18 overheating or flame impingement on any part of the tank in the event that vapors from
19 such vents are ignited.
20

21 **[3406.2.4.3] 5706.2.4.3 Location.** Tanks containing flammable or combustible liquids
22 shall be kept outdoors and at least 50 feet (15 240 mm) from buildings, combustible
23 material and combustible waste. Additional distance shall be provided when necessary to
24 ensure that vehicles, equipment and containers being filled directly from such tanks will
25 not be less than 50 feet (15 240 mm) from structures or combustible storage.
26

27 **[3406.2.5] 5706.2.5 Type of tank.** Tanks shall be provided with top openings only.
28

29 **Exception:** Aerial crane refueling operations when conducted in accordance with
30 [FC3406.2.5.2] FC5706.2.5.2.
31

32 **[3406.2.5.1] 5706.2.5.1 Tanks with top openings only.** Tanks with top openings shall be
33 mounted as follows:
34

- 35 1. On well-constructed metal legs connected to shoes or runners designed so that the
36 tank is stabilized and the entire tank and its supports can be moved as a unit; or
37
- 38 2. For stationary tanks, on a stable base of timbers or blocks approximately 6 inches
39 (152 mm) in height which prevents the tank from contacting the ground.
40

41 **[3406.2.5.1.1] 5706.2.5.1.1 Pumps and fittings.** Tanks with top openings only shall
42 be equipped with a tightly and permanently attached, approved pumping device having
43 an approved hose of sufficient length for filling construction equipment or containers
44 to be served from the tank. Either the pump or the hose shall be equipped with a padlock
45 to its hanger to prevent tampering. An antisiphoning device shall be provided in the
46 pump discharge unless a self-closing nozzle is used. Siphons or internal pressure
47 discharge devices shall not be used.

1
2 **[3406.2.5.2] 5706.2.5.2 Tanks for gravity discharge.** Tanks with a connection in the
3 bottom or the end for gravity-dispensing liquids for aerial crane refueling operations shall
4 be mounted and equipped as follows:
5

- 6 1. Support lugs used to elevate the tank for gravity discharge shall be designed to carry
7 all required loads and provide stability.
8
- 9 2. Bottom or end openings for gravity discharge shall be equipped with a valve located
10 adjacent to the tank shell which will close automatically in the event of fire through
11 the operation of a heat-activated releasing device. Where this valve cannot be
12 operated manually, it shall be supplemented by a second, manually operated valve.
13
- 14 3. The gravity discharge outlet shall be provided with an approved hose equipped with
15 a self-closing valve at the discharge end of a type that can be padlocked to its hanger.
16

17 **[3406.2.6] 5706.2.6 Spill control drainage control and diking.** Indoor storage and dispensing
18 areas shall be provided with spill control and drainage control as set forth in [FC3403.4]
19 FC5703.4. Outdoor storage areas shall be provided with drainage control or diking as set forth
20 in [FC3404.2.10] FC5704.2.10.
21

22 **[3406.2.7] 5706.2.7 Portable fire extinguishers.** Portable fire extinguishers with a minimum
23 rating of 20-B:C and complying with the requirements of FC906 shall be provided where
24 required by this code.
25

26 **[3406.2.8] 5706.2.8 Dispensing from cargo tanks.** Where approved, liquids used as fuels are
27 allowed to be transferred from cargo tanks into the fuel tanks of construction equipment at a
28 construction site, subject to the following requirements:
29

- 30 1. The cargo tank is used solely for the purpose of supplying fuel to construction equipment
31 at a construction site.
32
- 33 2. The dispensing hose does not exceed 100 feet (30 480 mm) in length.
34
- 35 3. The dispensing nozzle is an approved type.
36
- 37 4. The dispensing hose is properly placed on the approved reel or in a compartment
38 provided before the cargo tank is moved.
39
- 40 5. Signs prohibiting smoking and open flames within 25 feet (7620 mm) of the cargo tank
41 and construction equipment being refueled are prominently posted on the cargo tank.
42
- 43 6. Electrical devices and wiring in areas where fuel dispensing is conducted are in
44 accordance with the Electrical Code.
45
- 46 7. Cargo tank-dispensing equipment is operated only by a person holding a certificate of
47 fitness.

- 1
- 2 8. Provision has been made to control and mitigate the accidental or unauthorized release
- 3 of flammable and combustible liquid.
- 4
- 5 9. The cargo tank has a capacity of not more than 1,920 gallons (7267 L), and contains no
- 6 Class IA liquid and not more than 640 gallons (2422 L) of any other Class I liquid.
- 7
- 8 10. Dispensing is conducted at least 50 feet (15 240 mm) from buildings, structures,
- 9 combustible material or combustible waste.
- 10
- 11 11. A portable fire extinguisher with a minimum rating of 40-B:C shall be provided on the
- 12 cargo tank with signage clearly indicating its location.
- 13
- 14 12. Absorbent materials, nonwater-absorbent pads, a 10-foot-long (3048 mm) containment
- 15 boom, an approved container with lid and a nonmetallic shovel shall be provided to
- 16 mitigate a minimum 5-gallon (19 L) fuel spill.
- 17
- 18 13. Operators of tank vehicles used for mobile fueling operations shall have in their
- 19 possession at all times an approved means of notifying the department of a fire or other
- 20 emergency.
- 21
- 22 14. Fuel dispensing shall be prohibited within 25 feet (7620 mm) of any source of ignition.
- 23
- 24 15. The engines of vehicles being fueled shall be shut off during dispensing operations.
- 25
- 26 16. Nighttime fueling operations shall only be conducted in adequately lighted areas.
- 27
- 28 17. The cargo tank shall be positioned with respect to the construction equipment being
- 29 fueled so as to prevent vehicular traffic from driving over the delivery hose.
- 30
- 31 18. During fueling operations, a cargo tank shall be secured from movement by setting the
- 32 cargo tank's brakes and chocking the wheels, and the cargo tank's warning lights shall
- 33 be activated.
- 34

35 **[3406.3] 5706.3** Reserved.

36

37 **[3406.4] 5706.4 Bulk plants and terminals.** Any premises in or upon which flammable and

38 combustible liquids are received by marine vessels, watercraft, pipelines, tank cars or cargo tanks

39 and which are stored or blended in bulk for the purpose of distributing such liquids by marine

40 vessels, watercraft, pipelines, tanks cars, cargo tanks or containers shall be designed, installed,

41 operated and maintained in accordance with FC [3406.4.1] 5706.4.1 through [3406.4.10.4]

42 5706.4.10.4.

43

44 **[3406.4.1] 5706.4.1 Building construction.** Buildings and structures housing bulk plant or

45 terminal materials, operations and facilities shall be constructed in accordance with the

46 construction codes, including the Building Code.

47

1 **[3406.4.1.1] 5706.4.1.1 Design and installation documents.** A site plan of the bulk plant
2 or terminal, indicating the location and dimensions of all buildings and structures housing
3 bulk plan or terminal materials, operations and facilities, and all flammable and
4 combustible liquid installations, shall be filed with the department, together with such other
5 design and installation documents as the department may require.
6

7 **[3406.4.2] 5706.4.2 Means of egress.** Rooms in which flammable and combustible liquids are
8 stored, handled or used shall be arranged such that occupants engaging in such handling and
9 use have readily available access to a means of egress in the event of fire.
10

11 **[3406.4.3] 5706.4.3 Heating.** Rooms in which Class I liquids are stored, handled or used shall
12 be heated only by means not constituting a source of ignition, such as steam or hot water.
13

14 **[3406.4.4] 5706.4.4 Ventilation.** Ventilation shall be provided for rooms, enclosures and other
15 areas in buildings or structures in which Class I liquids are handled or used, including any
16 pumping or transfer. Ventilation systems shall be designed in a manner that takes into
17 consideration the relatively high specific gravity of the vapors. When natural ventilation is
18 approved, adequate openings in outside walls at floor level, unobstructed except by louvers or
19 coarse screens, shall be provided. When natural ventilation is not approved, mechanical
20 ventilation shall be provided in accordance with the construction codes, including the
21 Mechanical Code.
22

23 **[3406.4.4.1] 5706.4.4.1 Basements and other areas below grade.** Class I liquids shall not
24 be stored, handled or used within a building or structure having a basement, cellar or other
25 area below grade into which flammable vapors can travel, unless such area is provided with
26 ventilation designed to prevent the accumulation of flammable vapors therein.
27

28 **[3406.4.4.2] 5706.4.4.2 Dispensing of Class I liquids.** Containers of Class I liquids shall
29 not be drawn from or filled indoors unless a provision is made to prevent the accumulation
30 of flammable vapors in hazardous concentrations. Where mechanical ventilation is
31 required, it shall be kept in operation while flammable vapors could be present.
32

33 **[3406.4.5] 5706.4.5 Storage.** Except as otherwise provided in [FC3406.4] FC5706.4, storage
34 of flammable and combustible liquids in bulk plants and terminals shall be in compliance with
35 the applicable requirements of [FC3404] FC5704.
36

37 **[3406.4.5.1] 5706.4.5.1 Distance to lot line.** The distance between any part of an
38 aboveground flammable or combustible liquid storage tank and the nearest lot line shall be
39 as provided in FC Table [3406.4.5.1] 5706.4.5.1, except where FC [3406.4.5.1.1]
40 5706.4.5.1.1 through [3406.4.5.1.5] 5706.4.5.1.5 require a greater distance.
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FC TABLE [3406.4.5.1] 5706.4.5.1
DISTANCE BETWEEN AN ABOVEGROUND STORAGE TANK AND LOT LINES

TANK CAPACITY	MINIMUM DISTANCE (FEET)
≤30,000 gallons	20
Over 30,000 to 50,000 gallons	30
Over 50,000 to 100,000	50
Over 100,000 to 500,000	80
Over 500,000 to 1,000,000	100
Over 1,000,000 to 2,000,000	135
Over 2,000,000 to 3,000,000	165
Over 3,000,000 to 6,000,000	175

[3406.4.5.1.1] 5706.4.5.1.1 Vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a flammable liquid. For vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a flammable liquid, the distance shall not be less than the greater dimension of height or diameter of the tank, up to a maximum distance of 175 feet (53 340 mm).

[3406.4.5.1.2] 5706.4.5.1.2 Rectangular tanks over 50,000 gallons (189 250 L) storing a flammable liquid. For rectangular tanks over 50,000 gallons (189 250 L) storing a flammable liquid, the distance shall not be less than the total of the length and the width of the tank divided by two, up to a maximum distance of 175 feet (53 340 mm).

[3406.4.5.1.3] 5706.4.5.1.3 Vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a combustible liquid. For vertical cylindrical tanks over 50,000 gallons (189 250 L) storing a combustible liquid, the distance shall not be less than 1/2 the greater dimension of height or diameter of the tank, up to a maximum distance of 175 feet (53 340 mm).

[3406.4.5.1.4] 5706.4.5.1.4 Rectangular tanks over 50,000 gallons (189 250 L) storing a combustible liquid. For rectangular tanks over 50,000 gallons (189 250 L) storing a combustible liquid, the distance shall not be less than the total of the length and the width of the tank divided by 4, up to a maximum distance of 175 feet (53 340 mm).

[3406.4.5.1.5] 5706.4.5.1.5 Tank construction. Newly constructed tanks shall be in accordance with API 650. Repairs and alterations to existing tanks shall be in accordance with API 653.

[3406.4.5.2] 5706.4.5.2 Distance between aboveground tanks. The distance between any part of an aboveground storage tank and adjacent tanks shall be in accordance with FC Table [3406.4.5.2] 5706.4.5.2.

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FC TABLE [3406.4.5.2] 5706.4.5.2

DISTANCE BETWEEN ABOVEGROUND STORAGE TANKS

ADJACENT TANK CAPACITY	MINIMUM DISTANCE (FEET)
≤ 50,000 gallons	3
Over 50,000 to 100,000 gallons	6
Over 100,000 to 200,000 gallons	12
Over 200,000 gallons	25

[3406.4.5.3] 5706.4.5.3 Height of aboveground storage tanks. The maximum height of aboveground flammable and combustible liquid storage tanks shall not exceed 40 feet (12 192 mm).

Exception: Aboveground vertical cylindrical tanks storing combustible liquids shall not exceed 48 feet (14 630 mm) in height.

[3406.4.5.4] 5706.4.5.4 Distance from aboveground tanks to buildings. The distance between any part of an aboveground storage tank and buildings or structures used for housing of fire extinguishing equipment, central heating plant or electrical distribution equipment shall not be less than 50 feet (15 240 mm).

[3406.4.5.5] 5706.4.5.5 Maximum capacity for aboveground tanks. The maximum capacity of any aboveground tank used for storage of a flammable liquid shall not exceed 500,000 gallons (1892 500 L). The maximum capacity of any aboveground tank used for storage of combustible liquid shall not exceed 6,000,000 gallons (22 710 000 L).

[3406.4.5.6] 5706.4.5.6 Distance from aboveground tanks to exposures. No aboveground tank shall be installed within:

1. 1,000 feet (304 800 mm) of the nearest wall of a building occupied as a school or hospital, or an entrance to or exit from a tunnel for motor vehicles, subway or railroad trains, or the ventilating buildings or shafts of such tunnels.
2. 250 feet (76 200 mm) of any point under a bridge for pedestrians, motor vehicles, subway or railroad trains, a public park or a land zoned for residential purposes.

[3406.4.5.7] 5706.4.5.7 Depth of underground storage tanks. The maximum distance between the top and bottom plates of an underground flammable and combustible liquid storage tank shall not exceed 40 feet (12 192 mm).

[3406.4.5.8] 5706.4.5.8 Underground tank location. Underground tanks shall be located such that the top plate thereof shall be at least 2 feet (610 mm) below the established grade. No such tank shall be buried within 10 feet (3048 mm) of any building or adjoining property line. Individual underground tanks shall be covered with 2 feet (610 mm) of earth or 4 inches (102 mm) of reinforced concrete extending 10 feet (3048 mm) beyond all the vertical walls of the tank, and the excavation made to receive the tank shall be backfilled with well-compacted clean sand or earth, free of any ash or other corrosive substance, and free from stones larger than will pass through a 1-inch (25-mm) mesh. Underground tanks may be erected in groups of 2 or more, when such tanks are separated by a space of 1 foot

1 (305 mm), and provided the reinforced concrete top cover extends unbroken over the open
2 space between the tanks.

3
4 **[3406.4.5.9] 5706.4.5.9 Mounded-over tanks.** Mounded-over tanks shall be considered
5 underground tanks. A mounded-over tank may be erected with its base at any desired
6 elevation not higher than the grade plane of the premises. It shall be enclosed with a steel,
7 reinforced-concrete, or closed-face-concrete cribbing wall extending from the established
8 grade to the top of the top cover, with the exterior face of the wall at least 10 feet (3048 mm)
9 from the exterior face of the wall of the tank, and backfilled between the tank and the
10 enclosing wall with compacted clean earth or sand containing no ash or other corrosive
11 substance. The wall and backfill may be replaced with compacted similar fill, extending
12 from the established grade to the level of the top cover on the tank, at the normal angle of
13 repose of the material so used, with the provision that the width of the sloped material at
14 the level of the top of the top cover shall be at least 10 feet (3048 mm) wide. When two or
15 more mounded-over tanks, either rectangular or vertical-cylindrical, are grouped together,
16 the tanks shall be at least 1 foot (305 mm) apart from each other, and the group of tanks
17 shall be enclosed around the periphery with the same type of wall and backfill described
18 above for one mounded-over tank.

19
20 **[3406.4.5.10] 5706.4.5.10 Maximum capacity of flammable liquid underground tanks.**
21 Underground storage tanks used for storage of a flammable liquid shall not exceed
22 500,000 gallons (1892 500 L), except that the commissioner may approve the installation
23 of underground tanks with a capacity not to exceed 6,000,000 gallons (22 710 000 L) where
24 such greater capacity is determined to be necessary because of the capacity of the marine
25 vessel, watercraft, pipeline or tank car delivering such liquid and where such increased
26 capacity does not endanger the public safety.

27
28 **[3406.4.5.11] 5706.4.5.11 Maximum capacity of combustible liquid underground**
29 **tanks.** Underground storage tanks used for storage of a combustible liquid shall not exceed
30 6,000,000 gallons (22 710 000 L). Such tanks may be compartmented; however, in no case
31 shall any compartment exceed 4,000,000 gallons (15 140 000 L).

32
33 **[3406.4.6] 5706.4.6 Overfill protection.** To prevent an overfill during the transfer of
34 flammable or combustible liquid from a marine vessel, watercraft, pipeline, tank car, cargo
35 tank or storage tank, each tank shall be equipped with an approved electrically operated overfill
36 protection system. Such system shall be in accordance with API 2350.

37
38 **[3406.4.6.1] 5706.4.6.1 Alarms.** Audible and visible alarms shall be activated
39 automatically when the liquid level in the tank approaches 95 percent of tank capacity and
40 again when it attains a level of 98 percent of tank capacity. This alarm shall be connected
41 to both the marine vessel, watercraft, pipeline, tank car or cargo tank receiving point, as
42 applicable, and to the facility dispatcher's office.

43
44 **[3406.4.6.2] 5706.4.6.2 Tanks filled from pipelines.** Tanks filled by pipelines shall be
45 provided with a shutoff valve in the fill line that will automatically shut off the flow to the
46 tank when the liquid level in the tank approaches 95 percent.

1 [3406.4.7] **5706.4.7 Wharves.** This section shall apply to all wharves, piers, bulkheads and
2 other structures over or contiguous to navigable water having a primary function of transferring
3 liquid cargo in bulk between shore installations and marine vessels and watercraft []including
4 barges, lighter boats or similar watercraft.
5

6 **Exception:** Marine liquid motor fuel-dispensing facilities designed, installed, operated and
7 maintained in accordance with FC Chapter [22] 23.
8

9 [3406.4.7.1] **5706.4.7.1 Transferring approvals.** Handling packaged cargo of liquids,
10 including full and empty drums, bulk fuel and stores, over a wharf during cargo transfer
11 shall be subject to the approval and under the personal supervision of the bulk plant or
12 terminal certificate of fitness holder and the senior deck officer on duty.
13

14 [3406.4.7.2] **5706.4.7.2 Transferring location.** Wharves at which liquid cargoes are to be
15 transferred in bulk quantities to or from marine vessels and watercraft shall be at least
16 100 feet (30 480 mm) from any bridge over a navigable waterway; or from any entrance
17 to, or superstructure of, any vehicular or railroad tunnel under a waterway. The termination
18 of the fixed piping used for loading or unloading at a wharf shall be at least 200 feet
19 (60 960 mm) from a bridge or from an entrance to, or superstructures of, a tunnel.
20

21 [3406.4.7.3] **5706.4.7.3 Superstructure and decking material.** Superstructure and
22 decking shall be designed for the intended use. Decking shall be constructed of materials
23 that will afford the desired combination of flexibility, resistance to shock, durability,
24 strength and fire resistance.
25

26 [3406.4.7.4] **5706.4.7.4 Wharf tanks prohibited.** It shall be unlawful to install, operate or
27 maintain on wharfs any tanks containing flammable and combustible liquids.
28

29 [3406.4.7.5] **5706.4.7.5 Transferring equipment.** Loading pumps capable of building up
30 pressures in excess of the safe working pressure of cargo hose or loading arms shall be
31 provided with bypasses, relief valves or other arrangements to protect the loading facilities
32 against excessive pressure. Relief devices shall be tested at least annually to determine that
33 they function satisfactorily at their set pressure.
34

35 [3406.4.7.6] **5706.4.7.6 Piping, valves, fittings and ancillary equipment.** Piping systems
36 shall be in accordance with [FC3403.6] FC5703.6 except as otherwise provided as follows:
37

- 38 1. Piping systems shall be designed to protect against physical damage resulting from
39 the motion of the wharf from wave action, currents, tides or the mooring of marine
40 vessels and watercraft.
41
- 42 2. Pipe joints that depend on the friction characteristics of combustible materials or on
43 the grooving of pipe ends for mechanical continuity of piping shall not be used.
44
- 45 3. Swivel joints may be used in piping to which hoses are connected and for articulated,
46 swivel-joint transfer systems, provided that the design of the swivel joints is such that

1 the mechanical strength of the joint will not be impaired if the packing materials fail
2 such as by exposure to fire.

3
4 4. Each pipe used to convey Class I or II liquids leading to a wharf shall be provided
5 with a readily accessible block valve located on shore near the approach to the wharf
6 and outside of any diked area. Where more than one line is used to convey liquid, the
7 valves shall be grouped in one location.

8
9 5. Means shall be provided for ready access to cargo line valves located below the
10 wharf deck.

11
12 6. Piping systems shall contain a sufficient number of valves to operate the system
13 properly and to control the flow of liquid both during normal operation and in the
14 event of physical damage.

15
16 7. Piping on wharves shall be bonded and grounded where Class I and II liquids are
17 transported. If excessive stray current conditions exist, insulating joints shall be
18 installed. Bonding and grounding connections on piping shall be located on the wharf
19 side of hose riser insulating flanges, where used, and shall be accessible for
20 inspection.

21
22 8. Hose or articulated swivel-joint pipe connections used for cargo transfer shall be
23 capable of accommodating the combined effects of change in draft and maximum
24 tidal range, and mooring lines shall be kept adjusted to prevent surge of the marine
25 vessel or watercraft from placing stress on the cargo transfer system.

26
27 9. Hoses shall be supported to avoid kinking and physical damage, including damage
28 from chafing.

29
30 10. Piping, hoses, valves and fittings shall be constructed of steel. Valves shall be rated
31 for not less than 150 pounds per square inch (psig)(1034 kPa).

32
33 **[3406.4.7.7] 5706.4.7.7 Loading and unloading.** Loading or unloading shall not
34 commence until the bulk plant or terminal certificate of fitness holder and officer in charge
35 of the marine vessel or watercraft agree that the marine vessel or watercraft has been
36 properly moored and connections have been properly made.

37
38 **[3406.4.7.8] 5706.4.7.8 Construction work.** Construction work shall not be performed on
39 the wharf except as approved by the commissioner upon a determination that such work
40 can be safely performed, and subject to such terms and conditions as the commissioner
41 may prescribe in the interest of public safety.

42
43 **[3406.4.8] 5706.4.8 Sources of ignition.** Class I, II or IIIA liquids shall not be used, drawn or
44 dispensed where flammable vapors can reach a source of ignition.

45
46 **[3406.4.9] 5706.4.9 Drainage control.** Loading and unloading areas shall be provided with
47 drainage control in accordance with [FC3404.2.10] FC5704.2.10.

1
2 **[3406.4.10] 5706.4.10 Fire protection.** Fire protection shall be in accordance with FC Chapter
3 9 and FC [3406.4.10.1] 5706.4.10.1 through [3406.4.10.8] 5706.4.10.8.

4
5 **[3406.4.10.1] 5706.4.10.1 Portable fire extinguishers.** Portable fire extinguishers with a
6 rating of not less than 20-B and complying with the requirements of FC906 shall be located
7 within 75 feet (22 860 mm) of hose connections, pumps and separator tanks.

8
9 **[3406.4.10.2] 5706.4.10.2 Fire hoses.** Fire hose connected to a water supply in a size
10 appropriate for the water supply shall be provided in accordance with FC905 and the
11 construction codes, including the Building Code, so that manifolds where connections are
12 made and broken can be reached by at least one hose stream.

13
14 **[3406.4.10.3] 5706.4.10.3 Obstruction of equipment.** Material shall not be placed on
15 wharves in such a manner that would obstruct access to firefighting apparatus or equipment
16 or important pipeline or other delivery control valves.

17
18 **[3406.4.10.4] 5706.4.10.4 Fire apparatus access.** An unobstructed fire apparatus access
19 road to the shore end of the wharf shall be maintained in accordance with FC Chapter 5.

20
21 **[3406.4.10.5] 5706.4.10.5 Fire protection systems.** Aboveground tanks, mounded-over
22 tanks, underground tanks, tank car loading and unloading racks, cargo tank loading racks,
23 cargo tank unloading areas, marine vessel and watercraft loading and unloading areas and
24 all other portions of a bulk plant or terminal shall be provided with fire extinguishing
25 systems that are approved by the commissioner, inspected by a representative of the
26 department and tested at the owner's risk by his or her representative before a
27 representative of the department. Such systems shall include an approved yard hydrant
28 system and tank monitor nozzles.

29
30 **[3406.4.10.5.1] 5706.4.10.5.1 Cargo tank loading racks.** A fire extinguishing system
31 shall be provided over and under each cargo tank loading position. At least one remote
32 control valve shall be provided to control the extinguishing agent for each three loading
33 positions. Piping systems shall be installed so they can be thoroughly drained. The fire
34 extinguishing system shall be sized to provide protection for the three largest adjacent
35 loading positions.

36
37 **[3406.4.10.6] 5706.4.10.6 Emergency alarm transmission.** Manual pull stations shall be
38 provided at one or more approved locations that will automatically transmit a signal to the
39 department via an approved central station.

40
41 **[3406.4.10.7] 5706.4.10.7 Periodic tests.** Fire extinguishing systems, fire protection
42 systems and tank overfill protection shall be tested once every 2 years at the owner's risk
43 by his or her representative before a representative of the department. Tests of foam
44 extinguishing systems shall produce foam at the most remote tank and produce water flow
45 at each tank. In the event that the discharge of foam to the most remote tank would result
46 in a reportable hazardous material release in accordance with federal, state or local laws,
47 rules or regulations, such other test acceptable to the commissioner may be conducted.

1
2 **[3406.4.10.8] 5706.4.10.8 Color coding and labeling.** Fire protection systems shall be
3 color-coded and labeled in accordance with FC [3406.4.10.8.1] 5706.4.10.8.1 through
4 [3406.4.10.8.2] 5706.4.10.8.2. Copies of the color code shall be posted in all central
5 locations for fire extinguishing media, such as the foam house location.
6

7 **[3406.4.10.8.1] 5706.4.10.8.1 Color coding.** Fire protection systems shall be color-
8 coded as follows:
9

10 1. Standpipe and/or yard hydrant systems:

11 1.1. Piping, valve bodies and handles, hydrants and hydrant or hose houses: Red
12 with contrasting white bands.
13

14 1.2. Fire department connections: Red.
15

16 2. Sprinkler systems (wet or dry):
17

18 2.1. Piping and valve bodies and handles: Red with contrasting bright green
19 bands.
20

21 2.2. Fire department connections: Red with green caps.
22

23 3. Nonautomatic sprinkler systems (including fog spray systems):
24

25 3.1. Piping and valve bodies and handles: Red with contrasting aluminum
26 bands.
27

28 3.2. Fire department connections: Aluminum.
29

30 4. Carbon dioxide extinguishing systems—piping, valve bodies and handles: Red
31 with contrasting brown bands.
32

33 5. Steam extinguishing systems—piping, valve bodies and handles: Red with
34 contrasting black bands.
35

36 6. Foam extinguishing systems:
37

38 6.1. Piping, valve bodies and handles, hydrants and hydrant or hose houses: Red
39 with contrasting bright orange bands.
40

41 6.2. Department water connections: Red. A durable sign that reads “WATER
42 FOR FOAM SYSTEM,” shall be conspicuously posted immediately
43 adjacent to such connections.
44

45 6.3. Department foam connection: Red with contrasting bright orange band or
46 caps. []A durable sign that reads “CHEMICAL FOAM DIRECT TO
47

1 TANKS” or “...% MECHANICAL FOAM SOLUTION DIRECT TO
2 TANKS,” shall be conspicuously posted immediately adjacent to such
3 connections.
4

5 **[3406.4.10.8.2] 5706.4.10.8.2 Labeling.** Bands, or piping immediately adjacent to
6 bands, shall be labeled to indicate the names of the extinguishing media. The letters
7 shall be in a contrasting color of a suitable size in proportion to the pipe diameters. The
8 width of each band shall be not less than the pipe diameter and shall be spaced not more
9 than 30 feet (9144 mm) apart. Bands, lettering and piping shall be painted in sun- and
10 weather-resistant colors and paint; but bands and lettering may be applied by means of
11 pressure sensitive tape that is sun- and weather-resistant.
12

13 **[3406.4.11] 5706.4.11 Interconnected piping.** All tanks shall be connected by a system of
14 steel pipes in a manner that the contents of each tank may be transferred to another tank without
15 resulting in product contamination, or flash point reduction of the stored liquid.
16

17 **[3406.4.12] 5706.4.12 Supervision.** Bulk plants and terminals, including transfer operations,
18 shall be continuously under the personal supervision of a person holding a certificate of fitness
19 for such facility. Such supervision shall satisfy the certificate of fitness supervision
20 requirements of this code for all fire protection systems at the facility, including standpipe
21 systems, sprinkler systems, yard hydrant systems and foam systems.
22

23 **[3406.4.13] 5706.4.13 Oil spills.** Bulk plants and terminals storing petroleum products and
24 petroleum product pipelines operating within the city shall provide oil-absorbent material, oil-
25 dispersant material, booms and other such material and equipment for the control and
26 remediation of oil spills in such quantity and at such locations as set forth in FC [3406.4.13.1]
27 5706.4.13.1 through [3406.4.13.4] 5706.4.13.4.
28

29 **Exceptions:**
30

- 31 1. Bulk plants and terminals storing petroleum products when such facility has in place
32 a spill prevention control and countermeasure plan meeting the requirements of
33 United States [Department of Transportation] Environmental Protection Agency
34 regulations, as set forth in 40 CFR Part 112.
35
- 36 2. Petroleum product pipelines when such pipeline operator has in place for its New
37 York City operations a response plan for onshore oil pipelines meeting the
38 requirements of United States Department of Transportation regulations, as set forth
39 in 49 CFR Part 194.
40

41 **[3406.4.13.1] 5706.4.13.1 Quantities of clean-up materials and equipment.** Oil spill
42 clean-up materials and equipment shall be stored for use at each bulk plant and terminal
43 and locations designated for pipeline operations in accordance with FC Table [3406.4.13.1]
44 5706.4.13.1, the rules or as a condition of the permit for the facility.
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FC TABLE [3406.4.13.1] 5706.4.13.1
OIL SPILL MATERIALS AND EQUIPMENT TO BE STORED AT EACH BULK PLANT AND TERMINAL OR PIPELINE

MATERIAL OR EQUIPMENT	TOTAL PETROLEUM PRODUCT STORAGE			
	1,000,000 GALLONS OR LESS	5,000,000 GALLONS OR LESS	10,000,000 GALLONS OR LESS OR PIPELINE OPERATION	OVER 10,000,000 GALLONS
Absorbent material to recover	3,000 gallons	5,000 gallons	10,000 gallons	20,000 gallons
Boom	300 feet	300 feet plus enough to encircle marine vessel or watercraft, including barges which may be loading or unloading at the premises		

[3406.4.13.2] 5706.4.13.2 Availability. Adequate storage facilities, materials-handling equipment and personnel shall be provided by the bulk plant and terminal or pipeline operator. Such materials-handling equipment and personnel shall be continuously available to properly deploy and apply the materials and equipment specified in [FC3406.4.13.1] FC5706.4.13.1.

[3406.4.13.3] 5706.4.13.3 Use of clean-up service. The commissioner may approve the utilization of an oil spill clean-up service as a “back-up” spill mitigation measure, authorizing the material quantities to be reduced by 2/3 of those specified in FC Table [3406.4.13.1] 5706.4.13.1, but to a quantity not less than 3,000 gallons (11 356 L) of absorbent material and 300 feet (91 440 mm) of boom, and subject to the following conditions:

1. A responsible officer of the bulk plant and terminal or pipeline operation shall submit a sworn affidavit identifying the oil spill clean-up service with which it has contracted to perform such services, averring that such oil spill clean-up service meets the standards set forth in [FC3406.4.13.4] FC5706.4.13.4 and setting forth the nature of the services to be rendered.
2. The department shall be notified, in writing, within 10 business days of the date when the utilization of the clean-up service is cancelled or the service goes out of business.
3. Such approval may be rescinded by the commissioner for good cause for failure of the spill clean-up service to timely respond to an oil spill, to have adequate equipment, materials or personnel, or to obey or cooperate with the department representatives in charge of the scene of the oil spill.

[3406.4.13.4] 5706.4.13.4 Oil spill clean-up service standards. An oil spill clean-up service may be retained by a bulk plant, bulk terminal or pipeline operation pursuant to [FC3406.4.13.3] FC5706.4.13.3 provided it is capable of meeting the following standards:

1. It maintains the stockpile of material and equipment required by [FC3406.4.13.1] FC5706.4.13.1 for storage of over 10,000,000 gallons (37 850 000 L) of petroleum products, regardless of the amount of petroleum products actually stored at the contracting bulk plants, bulk terminals or pipelines.
2. A supervisor will respond to the spill site within 1 hour from time of notification.

1 3. It is capable of delivering, on a 24-hour, 7-day-a-week basis, sufficient materials,
2 equipment and personnel to the contracting bulk plant, bulk terminal or pipeline
3 within 2 hours from time of notification.
4

5 4. Such service is licensed and operated in accordance with all applicable federal, state
6 and local laws.
7

8 **[3406.4.14] 5706.4.14 Valves.** All inlet and outlet nozzles of tanks shall be provided with a
9 valve of steel construction of a 150 pounds per square inch (psig)(1034 kPa) rating located as
10 close as practicable to the tank.
11

12 **[3406.4.15] 5706.4.15 Dike construction.** All dike walls shall be of steel or reinforced
13 concrete, designed to be liquid-tight and to withstand a full hydraulic head, and constructed so
14 as to afford ready access. Where stairways or other similar means are required to afford such
15 access, they shall be constructed of steel or other approved noncombustible material.
16

17 **[3406.4.16] 5706.4.16 Dike capacity.** Each single dike wall enclosure shall have a capacity
18 equal to 110 percent of the tank's capacity. Tanks arranged in groups with a total capacity not
19 exceeding 500,000 gallons (1892 500 L) may be enclosed in a single dike wall enclosure. Each
20 group tank dike area shall have a net capacity not less than that of the largest tank plus 10
21 percent of the aggregate capacity of all other tanks served by the dike enclosure. That portion
22 of the surface occupied by tank or tanks shall be included when computing the diked area.
23

24 **[3406.4.17] 5706.4.17 Tank and piping test.** Tank and piping shall be tested at the time of
25 installation at the owner's risk by his or her representative before a representative of the
26 department as follows:
27

28 1. Aboveground, underground and mounded-over tanks shall be filled to capacity with
29 water and maintained for not less than 24 hours.
30

31 2. Piping shall be hydrostatically tested to a pressure of 100 pounds per square inch
32 (psig)(689.5 kPa) or 150 percent of the maximum operating pressure, whichever is
33 greater, for 30 minutes.
34

35 **[3406.4.17.1] 5706.4.17.1 Periodic test.** Underground piping shall be tested once every
36 10 years at the owner's risk by his or her representative before a representative of the
37 department. Such test shall be made at 100 pounds per square inch (psig)(689.5 kPa) or
38 150 percent of the maximum operating pressure, whichever is greater, for 30 minutes.
39

40 **[3406.5] 5706.5 Bulk transfer and process transfer operations.** Bulk transfer and process
41 transfer operations shall be subject to the approval of the commissioner and be conducted in
42 compliance with the requirements of FC [3406.5.1] 5706.5.1 through [3406.5.18.3] 5706.5.18.3,
43 except that liquid motor fuel-dispensing facilities shall comply with the requirements of FC
44 Chapter [22] 23.
45

46 **[3406.5.1] 5706.5.1 Location.** Bulk transfer and process transfer operations shall be conducted
47 in approved locations. Tank cars shall be unloaded only on private sidings or railroad-siding

1 facilities equipped for transferring flammable or combustible liquids. Cargo tank and tank car
2 transfer facilities shall be separated from buildings, aboveground tanks, combustible materials,
3 lot lines, public streets and private roads by a distance of 25 feet (7620 mm) for flammable
4 liquids and 15 feet (4572 mm) for combustible liquids measured from the nearest position of
5 any loading or unloading valve or connection. Buildings for pumps or shelters for personnel
6 shall be considered part of the transfer facility.
7

8 **[3406.5.2] 5706.5.2 Weather protection canopies.** Where weather protection canopies are
9 provided, they shall be constructed in accordance with [FC2704.13] FC5004.13. Weather
10 protection canopies shall not be located within 15 feet (4572 mm) of a building or combustible
11 material or within 25 feet (7620 mm) of building openings, lot lines, public streets or private
12 roads.
13

14 **[3406.5.3] 5706.5.3 Ventilation.** Ventilation shall be provided to prevent accumulation of
15 vapors in accordance with [FC3405.3.7.5.1] FC5705.3.7.5.1.
16

17 **[3406.5.4] 5706.5.4 Sources of ignition.** Sources of ignition shall be controlled or eliminated
18 in accordance with [FC2703.7] FC5003.7.
19

20 **[3406.5.5] 5706.5.5 Spill control and secondary containment.** Areas where transfer
21 operations are located shall be provided with spill control and secondary containment in
22 accordance with [FC3403.4] FC5703.4. The spill control and secondary containment system
23 shall have a design capacity capable of containing the capacity of the largest tank compartment
24 located in the area where transfer operations are conducted. Containment of the rainfall volume
25 specified in [FC2704.2.2.6] FC5004.2.2.6 is not required.
26

27 **[3406.5.6] 5706.5.6 Fire protection.** Fire protection shall be in accordance with
28 [FC3406.4.10.5] FC5706.4.10.5.
29

30 **[3406.5.7] 5706.5.7 Static protection.** Static protection shall be provided to prevent the
31 accumulation of static charges during transfer operations. Bonding facilities shall be provided
32 during the transfer through open domes where flammable liquids are transferred, or where
33 combustible liquids are transferred into cargo tanks or tank cars which could contain vapors
34 from previous cargoes of flammable liquids. Protection shall consist of a metallic bond wire
35 permanently electrically connected to the fill stem. The fill pipe assembly shall form a
36 continuous electrically conductive path downstream from the point of bonding. The free end
37 of such bond wire shall be provided with a clamp or equivalent device for convenient
38 attachment to a metallic part in electrical contact with the cargo tank or tank car. For cargo
39 tanks, protection shall consist of a flexible bond wire of adequate strength for the intended
40 service and the electrical resistance shall not exceed 1 megohm. For tank cars, bonding shall
41 be provided where the resistance of a tank car to ground through the rails is 25 ohms or greater.
42 Such bonding connection shall be fastened to the cargo tank or tank car before dome covers
43 are raised and shall remain in place until filling is complete and all dome covers have been
44 closed and secured.
45

46 **Exceptions:**
47

- 1 1. Where cargo tanks or tank cars are loaded exclusively with products not having a static-
2 accumulating tendency, such as asphalt, cutback asphalt, most crude oils, residual oils
3 and water-miscible liquids.
- 4
- 5 2. When flammable liquids are not handled at the transfer facility and the cargo tanks are
6 used exclusively for combustible liquids.
- 7
- 8 3. Where cargo tanks or tank cars are loaded or unloaded through closed top or bottom
9 connections when the hose is conductive.

10
11 **[3406.5.7.1] 5706.5.7.1 Filling through open domes.** Filling through open domes into the
12 tanks of cargo tanks or tank cars that contain vapor-air mixtures within the flammable
13 range, or where the liquid being filled can form such a mixture, shall be by means of a
14 downspout which extends to near the bottom of the tank. It shall be unlawful to fill a cargo
15 tank or tank car with gasoline through an open dome.

16
17 **[3406.5.8] 5706.5.8 Stray current protection.** Tank car loading facilities where Class I, II or
18 IIIA liquids are transferred through open domes shall be protected against stray currents by
19 permanently bonding the pipe to at least one rail and to the transfer apparatus. Multiple pipes
20 entering the transfer areas shall be permanently electrically bonded together. In areas where
21 excessive stray currents are known to exist, all pipes entering the transfer area shall be provided
22 with insulating sections to isolate electrically the transfer apparatus from the pipelines.

23
24 **[3406.5.9] 5706.5.9 Top loading.** When top loading a cargo tank with Class I and II liquids
25 without vapor control, valves used for the final control of flow shall be of the self-closing type
26 and shall be manually held open except where automatic means are provided for shutting off
27 the flow when the tank is full. When used, automatic shutoff systems shall be provided with a
28 manual shutoff valve located at a safe distance from the loading nozzle to stop the flow if the
29 automatic system fails. When top loading a cargo tank with vapor control, flow control shall
30 be in accordance with [FC3406.5.10] FC5706.5.10. Self-closing valves shall not be tied or
31 locked in the open position.

32
33 **[3406.5.10] 5706.5.10 Bottom loading.** When bottom loading a cargo tank or tank car with or
34 without vapor control, a positive means shall be provided for loading a predetermined quantity
35 of liquid, together with an automatic secondary shutoff control to prevent overflow. The
36 connecting components between the transfer equipment and the cargo tank or tank car required
37 to operate the secondary control shall be functionally compatible.

38
39 **[3406.5.10.1] 5706.5.10.1 Dry disconnect coupling.** When bottom loading a cargo tank,
40 the coupling between the liquid loading hose or pipe and the cargo tank piping shall be a
41 dry disconnect coupling.

42
43 **[3406.5.10.2] 5706.5.10.2 Venting.** When bottom loading a cargo tank or tank car that is
44 equipped for vapor control and vapor control is not required or used for the product being
45 loaded, the tank shall be vented to the atmosphere to prevent pressurization of the tank.
46 Such venting shall be at a height equal to or greater than the top of the cargo tank or tank
47 car.

1
2 [3406.5.10.3] **5706.5.10.3 Vapor-tight connection.** Connections to the plant vapor control
3 system shall be designed to prevent the escape of vapor to the atmosphere when not
4 connected to a cargo tank or tank car.

5
6 [3406.5.10.4] **5706.5.10.4 Vapor recovery and processing equipment.** Vapor recovery
7 and processing equipment at bulk plants and terminals shall comply with the requirements
8 of [FC3406.8] FC5706.8.

9
10 [3406.5.11] **5706.5.11 Switch loading.** Cargo tanks or tank cars which have previously
11 contained flammable liquids shall not be loaded with combustible liquids until such tanks or
12 cars and all piping, pumps, hoses and meters connected thereto have been completely drained
13 and flushed.

14
15 [3406.5.12] **5706.5.12 Loading racks.** Where provided, loading racks, stairs or platforms shall
16 be constructed of noncombustible materials. Buildings for pumps or for shelter of loading
17 personnel are allowed to be part of the loading rack. Wiring and electrical equipment located
18 within 25 feet (7620 mm) of any portion of the loading rack shall be in accordance with
19 [FC3403.1.1] FC5703.1.1.

20
21 [3406.5.13] **5706.5.13 Transfer apparatus.** Bulk and process transfer apparatus shall be of an
22 approved type.

23
24 [3406.5.14] **5706.5.14 Indoor transfers.** Cargo tanks and tank cars shall not be located indoors
25 while transferring flammable or combustible liquids.

26
27 **Exception:** Cargo tanks are allowed under weather protection canopies and canopies of
28 automotive liquid motor fuel-dispensing facilities.

29
30 [3406.5.15] **5706.5.15 Cargo tank and tank car.** Cargo tanks and tank cars shall be certified
31 and permitted in accordance with this section.

32
33 [3406.5.15.1] **5706.5.15.1 DOTn certification.** Certification shall be maintained for cargo
34 tanks and tank cars in accordance with the regulations of the United States Department of
35 Transportation, as set forth in Parts 100-180.

36
37 [3406.5.15.2] **5706.5.15.2 Department permit.** It shall be unlawful for any person to load
38 a cargo tank with any flammable liquid or Class II or IIIA combustible liquid or to receive
39 or accept delivery of such products in or from a cargo tank, except in or from a cargo tank
40 for which a department permit has been issued and is displayed pursuant to the provisions
41 of FC Chapter [27] 50. The provisions of this section shall not prohibit the loading of a
42 cargo tank with any liquid products with a flash point over 200°F (93°C) nor the receiving
43 or acceptance of delivery from a cargo tank of any liquid products with a flash point over
44 200°F (93°C), provided that such cargo tank is designed, constructed, and equipped in
45 accordance with the regulations of the United States Department of Transportation
46 governing the transportation of dangerous articles by common, contract, private and
47 proprietary carriers engaged in interstate commerce.

1
2 **[3406.5.16] 5706.5.16 Securing cargo tanks and tank cars from movement.** Cargo tanks
3 and tank cars shall be secured from movement during loading and unloading operations by
4 setting the cargo tank's or tank car's brakes and by chocking or blocking the wheels. At least
5 two wheel chocks not less than 5 inches by 5 inches by 12 inches (127 mm by 127 mm by
6 305 mm) in size and dished to fit the contour of the tires shall be used for cargo tanks.
7

8 **[3406.5.17] 5706.5.17 Vehicle motor.** Motors of cargo tanks or tank cars shall be shut off
9 during the making and breaking of hose connections and during the unloading operation except
10 when unloading is performed with a pump deriving its power from the cargo tank motor.
11

12 **[3406.5.18] 5706.5.18 Piping, valves, hoses and fittings.** During process transfers, piping,
13 valves, hoses and fittings which are not a part of the cargo tank or tank car shall be designed
14 and installed in accordance with [FC3403.6] FC5703.6. Caps or plugs which prevent leakage
15 or spillage shall be provided at all points of connection to transfer piping.
16

17 **[3406.5.18.1] 5706.5.18.1 Shutoff valves.** Approved automatically or manually activated
18 shutoff valves shall be provided where the transfer hose connects to the process piping, and
19 on both sides of any exterior fire-resistance-rated wall through which the piping passes.
20 Manual shutoff valves shall be arranged such that they are readily accessible from grade.
21 Valves shall not be locked in the open position.
22

23 **[3406.5.18.2] 5706.5.18.2 Hydrostatic relief.** Hydrostatic pressure-limiting or relief
24 devices shall be provided where pressure buildup in trapped sections of the system could
25 exceed the design pressure of the components of the system. Devices shall relieve to other
26 portions of the system or to another approved location.
27

28 **[3406.5.18.3] 5706.5.18.3 Antisiphon valves.** Antisiphon valves shall be provided when
29 the system design would allow siphonage.
30

31 **[3406.6] 5706.6** Reserved.
32

33 **[3406.7] 5706.7** Reserved.
34

35 **[3406.8] 5706.8 Vapor recovery and processing systems for use in bulk plants and terminals.**
36 Vapor recovery and processing systems installed at bulk plants and terminals, including systems
37 associated with piping, loading racks, dikes, fire detection and fire protection equipment, shall be
38 designed, installed, operated and maintained in accordance with FC [3406.8.1] 5706.8.1 through
39 [3406.8.3] 5706.8.3. Such compliance shall be required for all vapor recovery processing systems,
40 whether installed voluntarily or pursuant to the requirements of the United States Environmental
41 Protection Agency, United States Coast Guard or New York State Department of Environmental
42 Conservation. The requirements of FC [3406.8] 5706.8 through [3406.8.3] 5706.8.3 apply to both
43 new and existing facilities.
44

45 **[3406.8.1] 5706.8.1 General.** Vapor recovery and processing systems shall comply with the
46 requirements of NFPA 30, except as otherwise provided in this section, the regulations of the
47 United States Environmental Protection Agency, United States Coast Guard and New York

1 State Department of Environmental Conservation, as applicable, and the following general
2 requirements:

- 3
- 4 1. Electrical equipment shall comply with the requirements of the Electrical Code. Upon
5 request, proof of compliance with the Electrical Code shall be filed with the department.
6
- 7 2. The installation of any refrigerating system shall comply with the requirements of FC
8 Chapter 6 and the Mechanical Code.
9
- 10 3. All tanks and piping shall be grounded. Static bonding connections shall be made
11 between loading arm, vehicle and vapor recovery unit. An interlock shall be provided to
12 prevent pumping operations until properly grounded.
13
- 14 4. All product pumps and compressors shall be of a type approved for such use.
15
- 16 5. Pressure vessels shall conform to the ASME Boiler and Pressure Vessel Code. The
17 manufacturer data sheet for the pressure vessel shall be maintained on the premises and
18 made available for inspection to any representative of the department.
19
- 20 6. Knock-out vessels shall be provided with a high liquid level sensor that will initiate
21 shutdown of the liquid transfer into the vessel and the vapor recovery or processing
22 system.
23
- 24 7. A flame arrestor and mist eliminator element shall be provided at final emission vent.
25
- 26 8. A fire detection system shall be provided that will initiate shutdown of the vapor
27 recovery and processing system in the event of fire.
28
- 29 9. An annunciator panel with audible and visible alarms shall be provided in the
30 dispatcher's office. The annunciator panel shall monitor and shut down the vapor
31 recovery and processing system upon any equipment malfunction, including a
32 malfunction of the fire detection system.
33
- 34 10. Insulation material shall be noncombustible.
35
- 36 11. Lightning protection shall be provided in accordance with NFPA 780.
37
- 38 12. Pressure relief valves shall be provided on all pressure vessels and wherever else
39 required by the system design, and shall be sized in accordance with the ASME Boiler
40 and Pressure Vessel Code. Pressure relief valves shall discharge to a safe location. No
41 shutoff valve shall be installed in the line of relief. Tanks and equipment shall have
42 independent venting for over-pressure or vacuum conditions that might occur from
43 malfunction of the vapor recovery or recovery unit.
44
- 45 13. A reinforced concrete base shall be provided and approved by the agency having
46 jurisdiction.
47

- 1 14. Vapor recovery and processing systems shall be placed in an unpierced dike of such
2 construction and capacity as the commissioner may prescribe. No drains shall be
3 allowed, and any drain pump used shall be manually activated.
4
- 5 15. Vapor recovery and processing systems shall be installed at least 25 feet (7620 mm)
6 from bulk storage tanks, warehouses, loading racks, dispatchers' offices, transfer
7 facilities, buildings housing fire protection systems, central heating plants or electrical
8 distribution systems, other plant buildings, building lines and adjoining lot lines. When
9 []vessels in the vapor recovery and processing system operate in excess of 50 pounds
10 per square inch gauge (psig)(345 kPa), but less than 150 pounds per square inch gauge
11 (psig)(1034 kPa), the minimum distance shall be 50 feet (15 240 mm), unless a
12 protective structure, such as masonry or concrete fire wall, is installed in the line of
13 sight between such vessel and the exposure, in which case the minimum distance of 25
14 feet (7620 mm) shall be applicable.
15
- 16 16. Vents on vapor-processing equipment shall be not less than 15 feet (4572 mm) from
17 ground level, with outlets located and directed so that flammable vapors will disperse
18 to below the lower flammable limit (LFL) before reaching a potential ignition source.
19
- 20 17. The vapor recovery and processing system shall be protected from physical damage,
21 including damage by motor vehicles utilizing dikes, posts, or other approved means.
22
- 23 18. The entire vapor recovery and processing system shall be inspected for proper operation
24 on a periodic basis, but not less than once every 6 months, by a qualified person. []Such
25 inspection shall be documented in a log book maintained at the facility for such purpose.
26
- 27 19. Durable signs reading “DANGER—NO SMOKING, MATCHES, OPEN LIGHTS OR
28 SPARKING DEVICES AT THIS EQUIPMENT” shall be conspicuously posted at or
29 near the vapor recovery and processing system in addition to the “No Smoking” signs
30 required throughout the facility.
31
- 32 20. One or more foam hydrants, yard hydrants, monitor nozzles and portable fire
33 extinguishers having a minimum 40-B:C rating, shall be provided within 50 feet
34 (15 240 mm) of the vapor recovery and processing system and shall be readily available
35 for use.
36
- 37 21. All piping associated with a vapor recovery and processing system, including piping
38 connecting such system to storage tanks, shall be hydrostatically tested to a pressure of
39 100 pounds per square inch gauge (psig)(690 kPa) or one and one-half (1.5) times the
40 maximum working pressure, whichever is greater, for a period of 2 hours, and shall
41 show no leaks. Such hydrostatic testing shall be conducted at the owner’s risk by his or
42 her representative before a representative of the department. In lieu of such hydrostatic
43 testing, the commissioner may accept an affidavit from the manufacturer attesting to
44 the integrity of piping integral to the vapor recovery and processing system.
45

1 22. Where a storage tank is connected to a vapor recovery and processing system, a mist
2 eliminator shall be provided in the vapor line at or adjacent to the tank to remove
3 entrained liquid and return same to the tank or an approved collection system.
4

5 23. The vapor recovery and processing system shall be designed to minimize and dissipate
6 static electricity in accordance with NFPA 77.
7

8 **[3406.8.2] 5706.8.2 Atmospheric condensation and refrigeration vapor recovery and**
9 **processing systems.** A vapor condenser system shall be placed in an unpierced dike or within
10 a concrete trench of adequate width and depth to hold at least 1 hour's vapor recovery.
11

12 **[3406.8.3] 5706.8.3 Absorption vapor recovery and processing systems.** Absorption vapor
13 recovery and processing systems shall comply with the following requirements:
14

- 15 1. A lean oil storage tank shall be protected by a foam fire extinguishing system.
16
- 17 2. The entire vapor recovery and processing system, including the lean oil storage tank,
18 shall be placed in an unpierced dike. The height of the dike shall be based upon the size
19 of the lean oil storage tank and shall have a capacity of at least 110 percent of such tank,
20 but in any event not less than the maximum pumping capacity of the system for 20
21 minutes of operation.
22
- 23 3. Heaters used shall be of a type approved for such use and shall be equipped with an
24 automatic shutoff device that activates upon reaching the high temperature limit for the
25 absorption vapor recovery and processing system.
26
- 27 4. All absorbers, saturators, heat exchangers and condensers shall conform to ASME Boiler
28 and Pressure Vessel Code and the provisions of FC Chapter [30] 53.
29
- 30 5. A relief valve shall be provided for compressors, stripper columns and other pressure
31 vessels.
32
- 33 6. Lean oil tanks and vapor vessels shall be constructed and installed in accordance with
34 this chapter and API 650.
35
- 36 7. Upon installation, a vapor vessel bladder shall be pneumatically tested at one and one
37 quarter times the maximum operating pressure for 4 hours without leakage. A retest shall
38 be performed annually. All such tests shall be conducted at the owner's risk by his or her
39 representative before a representative of the department.
40

41 **[3406.9] 5706.9 Cargo tank loading rack systems.** Loading rack systems shall be designed,
42 installed, operated and maintained in accordance with the following requirements:
43

- 44 1. Any vapor recovery and processing system used in connection with a loading rack system
45 shall comply with the requirements of FC [3406.8.1] 5706.8.1 through [3406.8.3] 5706.8.3.
46

- 1 2. Loading racks shall be protected throughout by a fire extinguishing system as set forth in
2 [FC3406.4.10.5.1] FC5706.4.10.5.1.
- 3
- 4 3. Cargo tanks loaded at bulk plants or terminals shall be compatible with all safety features
5 incorporated into the loading rack.
- 6
- 7 4. Dry-break adapters conforming to API standards shall be provided on the fill and vapor
8 recovery lines. During loading, each cargo tank compartment shall be sealed except for the
9 dry-break fill coupling and vapor recovery line.
- 10
- 11 5. An interlock shall be provided to prevent loading when the cargo tank vehicle motor is
12 running and to prevent start up of the cargo tank vehicle motor during loading. Such interlock
13 device shall further prevent the vehicle motor from starting before the product fill line and
14 vapor return line have been disconnected.
- 15
- 16 6. An interlock device shall be provided so that no loading may take place unless the vapor
17 recovery line is properly connected to the cargo tank.
- 18
- 19 7. Except when loading, protective caps shall cover all dry-break adapters as protection against
20 the elements and physical damage from impact.
- 21
- 22 8. No more than three compartments shall be loaded at a time.
- 23
- 24 9. A two-stage preset meter shall be provided for each loading arm. Loading arms shall be
25 equipped with manual or electronic dead-man control valves.
- 26
- 27 10. All electrical equipment shall be suitable for use in hazardous locations. The design of the
28 electronic sending device shall be such that a source of higher voltage or current cannot be
29 connected to same.
- 30
- 31 11. An approved overfill prevention system shall be provided at the loading rack and shall be
32 designed to ensure at least 1 percent vapor space per compartment. In no event shall the
33 vapor space in a compartment be less than 40 gallons (151 L) in capacity.
- 34
- 35 12. A liquid detector shall be provided in the vapor return line, to automatically shut off the
36 loading system if liquid reaches the vapor line.
- 37
- 38 13. All components of the fill and vapor recovery loading arm assemblies making contact with
39 the cargo tank, including the loading head, shall be constructed of sparkproof material.
- 40
- 41 14. The fill line and the vapor recovery line in loading arm assemblies shall be of the same
42 diameter. The maximum velocity in any liquid line shall not exceed 15 feet per second
43 (4572 mm per second).
- 44
- 45 15. The fill line and vapor recovery line in loading arm assemblies shall be constructed of rigid
46 steel, except that flexible hose may be used for fill or vapor recovery loading assemblies
47 provided that such hose is no longer in length than necessary, has an inner diameter no

1 greater than 4 inches (102 mm), is of steel construction and is rated for not less than 800
2 pounds per square inch gauge (psig)(5617 kPa).
3

4 16. Cargo tanks shall not be filled with flammable or combustible liquids unless one or more
5 devices, equipment or systems are provided to immediately shut down the flow of such
6 liquid in the event of cargo tank overfilling, faulty dome seal, cargo tank pressure exceeding
7 3 pounds per square inch gauge (psig)(21.7 kPa) and electrical grounding fault.
8

9 17. The loading arm assembly shall be grounded.
10

11 18. The loading arm assembly shall be designed to break away from the cargo tank without
12 rupture should the cargo tank move with the loading arm still in place.
13

14 19. All liquid and vapor piping at the loading arm assembly shall be hydrostatically tested to a
15 pressure of 100 pounds per square inch gauge (psig)(690 kPa) or one and one-half (1.5)
16 times the maximum working pressure, whichever is greater, for a period of 2 hours. Such
17 test shall be conducted at the owner's risk by his or her representative before a
18 representative of the department.
19

20 20. The loading head unit seal against the cargo tank shall not exceed a force of 200 pounds
21 (90.8 kg) or a pressure of 5 pounds per square inch gauge (psig)(34.5 kPa).
22

23 21. A mist eliminator shall be provided in the vapor line at or adjacent to the loading arm to
24 remove entrained liquid and return same to the cargo tank, or to an approved collection
25 system.
26

27 22. Cargo tanks containing flammable liquids in any compartment shall not be loaded with
28 combustible liquids unless the loading rack is protected by a fire extinguishing system in
29 accordance with this chapter.
30

31 23. The loading rate of combustible liquids into cargo tanks shall be such that the initial
32 velocity in the liquid line is 3 feet per second (914 mm per second) and the final rate does
33 not exceed 15 feet per second (4572 mm per second).
34

35 **SECTION 5707**
36 **FLEET FUELING OPERATIONS**
37

38 **5707.1 General.** Fleet fueling operations shall be conducted in accordance with this section.
39

40 **5707.2 Site plan.** A site plan shall be prepared and maintained at each fleet fueling location or
41 other approved location identifying all buildings, structures and property lines; adjoining
42 property uses; proposed fueling locations; and slope, drainage, storm drains and other relevant
43 site conditions. The site plan shall be made available for inspection by any department
44 representative.
45

1 **5707.3 Scope and duration of fleet fueling operations.** Cargo tanks used to conduct fleet fueling
2 operations shall be used solely for that purpose. Fleet fueling operations shall be conducted during
3 approved hours and the cargo tank shall leave the fleet facility after completing such operations.
4

5 **5707.4 Location of dispensing at fleet facility.** Fleet fueling may be conducted at a designated
6 location at the fleet facility and/or by proceeding from vehicle to vehicle, as approved by the
7 department. Fleet fueling shall not be conducted at the following locations:
8

9 1. On public streets;

10 2. On fire apparatus access roads;

11 3. Inside buildings;

12 4. On the roof level of parking structures or other buildings;

13 5. Less than 10 feet (3048 mm) from buildings or property lines;

14 6. Less than 15 feet (4572 mm) from combustible material or waste;

15 7. Less than 25 feet (7620 mm) from any flammable gas storage area; and

16 8. Less than 25 feet (7620 mm) from any smoking, open flames or other source of ignition.

17 9. Less than 10 feet (3048 mm) from overhead powerlines or other aboveground electrical
18 installation, measured from the boundary of the utility easement, or, if there is no easement,
19 from the vertical plane of the installation at its widest point; or

20 10. Less than 10 feet (3048 mm) from the boundary of any transportation easement, including
21 bridges and tunnels, as measured from the vertical plane of the easement at its widest point.
22

23 **5707.5 Cargo tank and dispensing equipment.** Fleet fueling shall be conducted from a cargo
24 tank complying with DOTn regulations or other approved vehicle, subject to the following
25 requirements:
26

27 1. The capacity of the cargo tank shall not exceed 5500 gallons (20 818 L), except as otherwise
28 approved by the department.

29 2. The cargo tank shall be designed for fleet fueling operations, including a fuel limit switch
30 set to a maximum of 50 gallons (189 L).

31 3. The dispensing hose does not exceed 100 feet (30 480 mm) in length and shall be mounted
32 on a reel.

33 4. Dispensing hoses and nozzles shall be listed. The dispensing hose shall be provided with a
34 breakaway device designed to prevent release of the combustible liquid on both sides of the
35 breakaway point.
36
37
38
39
40
41
42
43
44
45
46
47

1
2 **5707.6 Fleet fueling procedures.** Fleet fueling operations shall be conducted in accordance with
3 the following procedures:

- 4
5 1. The cargo tank shall be positioned so as to prevent vehicular traffic from driving over the
6 dispensing hose.
7
8 2. The cargo tank shall be secured from movement by setting the cargo tank's brakes and
9 chocking the wheels, and the cargo tank's warning lights shall be activated.
10
11 3. The engines of the motor vehicles being fueled shall be shut off.
12
13 4. The dispensing nozzle shall be maintained in contact with the motor vehicle fuel tank at all
14 times.
15
16 5. The dispensing hose and nozzle shall be placed back on the reel before moving the cargo
17 tank.
18
19 6. Signs prohibiting smoking and open flames within 25 feet (7620 mm) of the cargo tank and
20 the motor vehicle being fueled shall be prominently posted on the cargo tank.
21
22 7. Nighttime fueling operations shall only be conducted in adequately lighted areas.
23
24 8. Cargo tank operators shall have in their possession at all times an approved means of
25 notifying the department of a fire or other emergency.
26

27 **5707.7 Emergency procedures.** The fleet owner and the provider of fleet fueling services shall
28 comply with the requirements of FC 5707.7.1 through 5707.7.2.
29

30 **5707.7.1 Emergency response plan.** A written fire safety and emergency response plan that
31 sets forth policies and procedures for compliance with the requirements of this section and
32 other fire safety measures, including spill prevention and control, shall be prepared and
33 maintained by the fleet facility and the provider of fleet fueling services and made available
34 for inspection to any department representative.
35

36 **5707.7.2 Spill Control.** A catchment basin with a capacity of not less than 5 gallons (19 L)
37 shall be provided under the cargo tank hose nozzle/motor vehicle fuel tank connection during
38 fuel dispensing. Spill absorbing materials, such as absorbent socks, pads or powders, in
39 quantities sufficient to handle at least 200 gallon (757 L) spill, shall be available for immediate
40 use. Where dispensing operations occur within 15 feet (4572 mm) of a storm drain, an
41 approved storm drain cover or approved equivalent method shall be used to prevent any fuel
42 spill from reaching the drain. Non-water-absorbent pads, a 10-foot-long (3048 mm)
43 containment boom, an approved container with lid and a nonmetallic shovel shall be provided
44 to mitigate a minimum 5 gallon (19 L) fuel spill.
45

1 **5707.8 Portable fire extinguisher.** A portable fire extinguisher complying with FC906 with a
2 minimum rating of 40-B:C shall be provided on the cargo tank with signage clearly indicating its
3 location.
4

5
6 **CHAPTER 58**
7 **FLAMMABLE GASES**

8
9 **SECTION FC [3501] 5801**
10 **GENERAL**

11
12 **[3501.1] 5801.1 Scope.** This chapter shall govern the storage, handling and use of flammable
13 gases.
14

15 **Exceptions:**

- 16
17 1. Flammable gases used as refrigerants in refrigerating systems, as set forth in FC606.
- 18
19 2. Liquefied petroleum gases, as set forth in FC Chapter [38] 61.
- 20
21 3. Fuel-gas systems, as set forth in the construction codes, including the Fuel Gas Code,
22 other than gaseous hydrogen systems.
- 23
24 4. Compressed natural gas motor fuel-dispensing facilities as set forth in [FC2208]
25 FC2308.
- 26
27 5. Pyrophoric gases, as set forth in FC Chapter [41] 64.
- 28
29 6. Liquefied natural gas (LNG) as set forth in FC Chapter [32] 55.

30
31 **[3501.2] 5801.2 Permits.** Permits shall be required as set forth in FC105.6.
32

33 **[3501.3] 5801.3 General.** Flammable gases shall be stored, handled and used in accordance with
34 this chapter, FC Chapter [30] 53 and NFPA 55. Cryogenic fluids shall additionally comply with
35 the requirements of FC Chapter [32] 55.
36

37 **[3501.4] 5801.4 Supervision.** Except as otherwise provided for ethylene oxide, compressed
38 natural gas and methane recovery, the handling and use of flammable gases in quantities requiring
39 a permit shall be under the personal supervision of a certificate of fitness holder. The storage of
40 flammable gases in quantities requiring a permit shall be under the general supervision of a
41 certificate of fitness holder.
42

43 **[3501.4.1] 5801.4.1 Ethylene oxide.** The handling and use of flammable compositions of
44 ethylene oxide in any amount, including the cleaning and maintenance of the sterilizer, shall
45 be under the personal supervision of a person holding a certificate of fitness.
46

1 **[3501.4.2] 5801.4.2 Compressed natural gas.** The connecting and disconnecting of CNG
2 containers shall be performed by a person holding a certificate of fitness. The handling and use
3 of CNG containers in quantities requiring a permit, or for purposes of operating a tar kettle,
4 conducting torch operations, curing concrete, drying plaster and similar applications, or
5 conducting hot air balloon operations, shall be under the personal supervision of a person
6 holding a certificate of fitness applicable to such operation. In addition, a pilot's license issued
7 by the United States Federal Aviation Administration shall be required for hot air balloon
8 operations involving the handling and use of CNG.

9
10 **[3501.4.3] 5801.4.3 Methane recovery.** Methane recovery facilities shall be operated under
11 the personal supervision of a person holding a certificate of fitness to recover methane gas
12 from landfills.

13
14 **[3501.5] 5801.5 Prohibitions.** It shall be unlawful to:

- 15
16 1. fill a container with a flammable gas, except as authorized by this code or the rules, including
17 FC 309.5.4, [2208] 2308, [2209] 2309, [and 3507] 5807 and 5808;
18
19 2. manufacture, generate or compress acetylene;
20
21 3. use an acetylene generator; or
22
23 4. fill balloons with hydrogen or any other flammable gas, or to possess, store, handle, use,
24 transport, or sell any such balloon.
25

26 **[3501.5] 5801.6 Flood hazard.** Stationary flammable gas containers located in areas of special
27 flood hazard or on the premises of Group I-2 occupancies that are hospitals located in shaded X-
28 Zones (as defined in Section G201.2 of Appendix G of the Building Code) shall comply with
29 Section G307.5 of the Building Code.

30
31 **SECTION FC [3502] 5802**
32 **DEFINITIONS**
33

34 **[3502.1] 5802.1 Definitions.** The following terms shall, for the purposes of this chapter and as
35 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

36
37 **FLAMMABLE GAS.** [A material which has a boiling point and becomes a gas at 68°F (20°C) or
38 less at 14.7 pounds per square inch absolute (psia) (101 kPa) of pressure which:

- 39
40 1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with
41 air, in accordance with testing procedures set forth in ASTM E 681; or
42
43 2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of
44 the lower explosive limit, in accordance with testing procedures set forth in ASTM E 681.]
45

46 **FLAMMABLE LIQUEFIED GAS.** [A liquefied compressed gas which, under a charged
47 pressure, is partially liquid at a temperature of 68°F (20°C) and which is a flammable gas.]

1
2 **GASEOUS HYDROGEN.**

3
4 **HYDROGEN FUEL GAS ROOM.**

5
6 **METAL HYDRIDE.** [A chemical compound composed of one or more hydrogen-absorbing
7 metallic elements, and hydrogen.]
8

9 **METAL HYDRIDE HYDROGEN STORAGE SYSTEM.** [A closed system designed to store
10 and release hydrogen through the use of a metal hydride.]
11

12 **MICROTURBINE.** [A turbine-driven electrical generator with an electric generating capacity of
13 not more than 500 kW, fueled by piped natural gas that is compressed by ancillary compressing
14 equipment to a pressure exceeding 6 psig (689.5 kPa).]
15

16 **SECTION FC [3503] 5803**
17 **GENERAL REQUIREMENTS**
18

19 **[3503.1] 5803.1 Quantities not exceeding the maximum allowable quantity per control area.**
20 Flammable gases in amounts not exceeding the maximum allowable quantity per control area set
21 forth in [FC2703.1] FC5003.1 shall be stored, handled and used in accordance with FC [2701]
22 5001, [2703] 5003, [3501] 5801, [3503] 5803, [3506] 5806, [3507] 5807, 5808 and [3508] 5811.
23

24 **[3503.1.1] 5803.1.1 Special limitations for indoor storage, handling and use.** Flammable
25 gases shall not be stored, handled or used in Group A, B office, E, I or R occupancies.
26

27 **Exceptions:**

- 28
29 1. Containers not exceeding a capacity of 250 SCF (7.08 m³) used for maintenance
30 purposes or operation of equipment.
31
32 2. Food service operations conducted in accordance with [FC3803.2.1.7]
33 FC6103.2.1.7.
34

35 **[3503.1.1.1] 5803.1.1.1 Medical gases.** It shall be unlawful to store, handle or use
36 flammable gas as an anesthetizing agent. Medical gas systems using flammable gas for
37 other approved purposes shall be located in medical gas storage rooms or gas cabinets as
38 set forth in [FC3006] 5306.
39

40 **[3503.1.1.2] 5803.1.1.2 Aggregate quantity.** The aggregate quantities of flammable gases
41 used for maintenance purposes and operation of portable equipment shall not exceed the
42 maximum allowable quantity per control area set forth in FC Table [2703.1.1(1)]
43 5003.1.1(1).
44

45 **[3503.1.2] 5803.1.2 Storage containers.** Containers for flammable gases shall be designed,
46 constructed, installed, operated and maintained in accordance with FC Chapter [30] 53.
47

1 [3503.1.3] **5803.1.3 Emergency shutoff.** Flammable gas piping systems shall be provided
2 with approved manual or automatic emergency shutoff valves that can be activated at each
3 point of use and at each source of supply.
4

5 [3503.1.3.1] **5803.1.3.1 Shutoff at source.** A manual or automatic fail-safe emergency
6 shutoff valve shall be installed on supply piping at the container or other source of supply.
7 Manual or automatic valves on the containers supplying the flammable gas may serve as
8 the emergency shutoff valve when the containers are the sole source of supply and are not
9 manifolded.
10

11 [3503.1.3.2] **5803.1.3.2 Shutoff at point of use.** A manual or automatic emergency shutoff
12 valve shall be installed on the supply piping at the point of use or at a point where the
13 equipment using the gas is connected to the supply system.
14

15 [3503.1.4] **5803.1.4 Sources of ignition.** Protection against sources of ignition in areas in
16 which flammable gases are being stored or used shall be provided in accordance with
17 [FC2703.7] 5003.7 and in compliance with the following requirements:
18

19 [3503.1.4.1] **5803.1.4.1 Static-producing equipment.** Static-producing equipment
20 located in flammable gas storage areas shall be grounded.
21

22 [3503.1.4.2] **5803.1.4.2 Signs.** “No Smoking” signs shall be posted at entrances to and in
23 areas containing flammable gas containers, piping and equipment in accordance with
24 [FC2703.7.1] FC5003.7.1.
25

26 [3503.1.5] **5803.1.5 Electrical.** Electrical wiring and equipment shall be installed and
27 maintained in accordance with the Electrical Code.
28

29 [3503.1.5.1] **5803.1.5.1 Bonding of electrically conductive components.** Exposed
30 noncurrent-carrying metal components, including metal gas piping, that are part of a
31 flammable gas supply system located in a hazardous location shall be bonded to a grounded
32 conductor in accordance with the provisions of the Electrical Code.
33

34 [3503.1.5.2] **5803.1.5.2 Static-producing equipment.** Static-producing equipment
35 located in flammable gas storage or use areas shall be grounded.
36

37 [3503.1.6] **5803.1.6 Liquefied flammable gases and flammable gases in solution.**
38 Containers of liquefied flammable gases and flammable gases in solution shall be positioned
39 in the upright position or positioned so that the pressure relief valve is in direct contact with
40 the vapor space of the container.
41

42 **Exceptions:**

- 43
44 1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or
45 less.
46

- 1 2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons
2 (5 L), designed to preclude the discharge of liquid from safety relief devices.
3

4 **[3503.2] 5803.2 Quantities exceeding the maximum allowable quantity per control area.** The
5 storage, handling and use of flammable gases in amounts exceeding the maximum allowable
6 quantity per control area set forth in [FC2703.1] FC5003.1 shall be in accordance with FC Chapter
7 [27] 50 and this chapter.
8

9 **SECTION FC [3504] 5804**
10 **STORAGE**

11
12 **[3504.1] 5804.1 Indoor storage.** Indoor storage of flammable gases in amounts exceeding the
13 maximum allowable quantity per control area set forth in FC Table [2703.1.1(1)] 5003.1.1(1), is
14 not allowed where outdoor storage is available on the premises. Indoor storage shall be in
15 accordance with FC [2701] 5001, [2703] 5003 and [2704] 5004, and this chapter.
16

17 **[3504.1.1] 5804.1.1 Explosion control.** Buildings or portions thereof containing flammable
18 gases shall be provided with explosion control in accordance with FC911.
19

20 **[3504.1.2] 5804.1.2 Maximum storage quantity.** Storage of flammable gases shall not exceed
21 15,000 SCF (424.8 m³) in any building or structure, except at construction sites where larger
22 quantities of CNG are authorized by rule.
23

24 **[3504.1.3] 5804.1.3 Flammable gas storage of 3,500 SCF ([99.12] 99.11 m³) or less.** Indoor
25 storage shall be protected against damage or injury from falling objects or surrounding activity,
26 and be located not less than:
27

- 28 1. 20 feet (6096 mm) from all classes of flammable and combustible liquids, oxidizing
29 gases and readily combustible materials, such as paper and combustible fibers.
30
- 31 2. 25 feet (7620 mm) from open flames, ordinary electrical equipment or other sources of
32 ignition.
33
- 34 3. 50 feet (15 240 mm) from air-conditioning equipment, air compressors and intakes of
35 ventilation.
36
- 37 4. 50 feet (15 240 mm) from other flammable gas storage.
38

39 **[3504.1.4] 5804.1.4 Flammable gas storage of more than 3,500 SCF ([99.12] 99.11 m³).**
40 Except as otherwise provided in the rules with respect to construction sites, a storage room
41 may contain more than one storage area, provided that each storage area does not exceed
42 3,500 SCF ([99.12] 99.11 m³) and storage areas are separated from each other by at least 50
43 feet (15 240 mm) or an approved masonry barrier having a minimum fire resistance rating of
44 2 hours. Each such storage area shall additionally comply with the requirements of FC
45 [3504.1.2] 5804.1.2 and [3504.1.3] 5804.1.3.
46

[3504.2] 5804.2 Outdoor storage. Outdoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area set forth in FC Table [2703.1.1(3)] 5003.1.1(3) shall be limited to a maximum storage of 3,500 SCF (99.12 m³) except where the provisions of this code or the rules authorize storage in larger quantities at construction sites. Outdoor storage of flammable gases shall be in accordance with FC [2701] 5001, [2703] 5003 and [2704] 5004, and this chapter.

[3504.2.1] 5804.2.1 Location of outdoor storage areas. Outdoor storage areas for flammable gases shall be located at or above grade level, and in accordance with [FC3504.2.1.1] FC5804.2.1.1 and FC Table [3504.2.1] 5804.2.1, as applicable.

[3504.2.1.1] 5804.2.1.1 Proximity to hazards. Storage shall not be located where the stored flammable gases would be exposed to the following hazards in the event of the failure of their structure or containment systems:

1. Electric power lines.
2. Piping containing flammable or combustible liquids.
3. Piping containing flammable gases.
4. Piping containing oxidizing materials.

**FC TABLE [3504.2.1] 5804.2.1
FLAMMABLE GASES DISTANCE FROM OUTDOOR STORAGE AREAS TO EXPOSURES**

TYPE OF OUTDOOR EXPOSURE	FLAMMABLE GAS STORAGE AREA MORE THAN 1500 SCF UP TO MAXIMUM 3500 SCF MINIMUM DISTANCE TO OUTDOOR EXPOSURE (FEET)
Building or structure of combustible construction	10 ^a
Building or structure of noncombustible construction	5 ^a
Building openings	10
Flammable and combustible liquids Aboveground – 1,000 gallons or less	10 ^a
Flammable and combustible liquids Aboveground – in excess of 1,000 gallons	20 ^a
Flammable and combustible liquids Underground tank – 1,000 gallons or less	10 ^a
Flammable and combustible liquids Underground tank – 1,000 gallons or less Vent or fill opening of tank	15 ^a
Flammable and combustible liquids Underground tank – in excess of 1,000 gallons	15 ^a
Flammable and combustible liquids Underground tank – in excess of 1,000 gallons Vent or fill opening of tank	15 ^a
Flammable gas storage area, any pressure 1,500 SCF or less	10 ^a
Flammable gas storage area, any pressure More than 1,500 SCF up to maximum 3,500 SCF	20 ^a
Oxygen storage – 20,000 SCF or less	In accordance with NFPA 51 ^a
Oxygen storage – in excess of 20,000 SCF	In accordance with NFPA 55 ^a
Combustible material or combustible waste	10 ^a
Air compressor intakes or inlets to ventilating or air-conditioning equipment	5
Group A occupancies and public gathering places	25

Public sidewalks and parked motor vehicles	10
Public streets, private roads and lot lines	10 ^a

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³, 1 gallon = 3.785 L.

a. The minimum required distances shall be reduced to 5 feet when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

[3504.2.2] 5804.2.2 Proximity to flammable and combustible liquid storage. Storage within 50 feet (15 240 mm) of aboveground storage of flammable and combustible liquids shall be located on ground higher than such storage, except where dikes, diversion curbs, grading or walls are used to prevent these liquids from accumulating under the flammable gas storage.

[3504.2.3] 5804.2.3 Electrical equipment. Electrical equipment within 3 feet (914 mm) in any direction of an outdoor flammable gas storage area shall comply with the Class I, Division 2 wiring requirements of the Electrical Code for hazardous locations, unless such electrical equipment is separated from such area by a wall or other solid partition having no openings.

SECTION FC [3505] 5805 USE

[3505.1] 5805.1 General. Flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or [2703.1.1(3)] 5003.1.1(3) shall be used in accordance with FC [2701] 5001, [2703] 5003 and [2705] 5005, and this chapter.

SECTION FC [3506] 5806 ETHYLENE OXIDE

[3506.1] 5806.1 Scope. This section shall govern the storage, handling and use of flammable gas containing ethylene oxide used for sterilization purposes.

[3506.2] 5806.2 General. Flammable gases containing ethylene oxide used for sterilization purposes shall be stored, handled and used in compliance with the requirements of this chapter and FC Chapter [30] 53. Ethylene oxide shall additionally be stored, handled and used in compliance with the requirements of NFPA 55.

[3506.3] 5806.3 Design and installation requirements. The design and installation of sterilization systems shall comply with the requirements of FC [3506.3.1] 5806.3.1 through [3506.3.7] 5806.3.7.

[3506.3.1] 5806.3.1 Sterilizer design. The sterilization equipment shall be of a type listed by an approved testing laboratory, and approved by the department, and having a chamber volume of not more than 10 cubic feet (0.2832 m³).

[3506.3.2] 5806.3.2 Sprinkler protection. Sterilization systems shall be located in a room or other area protected by a sprinkler system.

[3506.3.3] 5806.3.3 Proximity to hazard. Sterilization systems shall be installed away from sources of heat and ignition, means of egress and areas of activity, and shall not be installed in

1 any room or other area in which flammable liquids or flammable gases, other than sterilizer
2 gases, are stored, handled or used.

3
4 **[3506.3.4] 5806.3.4 Sterilization system room and local area ventilation.** Room ventilation
5 and local area ventilation shall comply with the requirements of FC [3506.3.4.1] 5806.3.4.1
6 and [3506.3.4.2] 5806.3.4.2.

7
8 **[3506.3.4.1] 5806.3.4.1 Room ventilation.** Rooms in which sterilization systems are
9 installed shall be equipped with ventilation systems that provide not less than 10 air
10 changes per hour.

11
12 **[3506.3.4.2] 5806.3.4.2 Local area ventilation.** When a local ventilation system is
13 required by the regulations of the United States Department of Labor, such ventilation
14 system shall comply with the following requirements:

- 15
16 1. The discharge point of the ventilation system shall be at least 25 feet (7620 mm)
17 from pedestrian traffic, building openings or sources of ignition. Prevailing wind
18 direction and location of adjacent buildings shall be considered in selecting the
19 discharge point.
- 20
21 2. At each discharge location there shall be a durable sign, conspicuously posted, that
22 reads “DANGER—FLAMMABLE GAS.”
- 23
24 3. Signage shall appear on the duct at intervals of not more than 20 feet (6090 mm) and
25 at least once in each room and each story traversed by the duct. Such signage shall
26 be by means of metal tags, stenciling, stamping or adhesive markers, which shall be
27 attached or imprinted in a manner that is not readily removable.
- 28
29 4. A sparkproof centrifugal fan with backward curved blades designed for continuous
30 operation shall be used, and the impeller and the ring around the impeller drive shaft
31 shall be nonferrous.

32
33 **[3506.3.5] 5806.3.5 Vent lines.** Sterilization system vent lines shall be designed and installed
34 in accordance with the following requirements:

- 35
36 1. The discharge point of vent lines shall be at least 25 feet (7620 mm) from pedestrian
37 traffic, building openings and sources of ignition. Prevailing wind direction and location
38 of adjacent buildings shall be considered in selecting the discharge point.
- 39
40 2. At each discharge location there shall be a durable sign, conspicuously posted, that reads
41 “Danger—Flammable Gas.”
- 42
43 3. Signage shall appear on the vent line at intervals of not more than 20 feet (6096 mm)
44 and shall be present in at least one place in each room and in each story traversed by the
45 duct.

4. A sparkproof centrifugal fan with backward curved blades designed for continuous operation shall be used, and the impeller and the ring around the impeller drive shaft shall be nonferrous.
5. Vent terminals shall be provided with a flash arrester, provided that the manufacturer of the sterilizer or the testing laboratory does not prohibit same. The flash arrester, when used, shall be constructed of material compatible with ethylene oxide and installed in such a manner as not to restrict gas flow.

[3506.3.6] 5806.3.6 Storage. Flammable gases containing ethylene oxide shall be stored in compliance with the following requirements:

1. Only containers of the type, composition and size approved by the manufacturer for the particular model of sterilization system shall be stored or used.
2. A one-day supply of flammable gases that contains ethylene oxide, but not more than 12 containers, may be stored in its original packaging in the room or other area in which the sterilizer is installed, provided that:
 - 2.1. Such room or other area is above grade.
 - 2.2. The containers are stored at room temperature, away from sources of heat and ignition.
 - 2.3. The containers are stored not less than 5 feet (1524 mm) from the sterilizer, on open shelving protected by a sprinkler system or in an approved flammable liquid storage cabinet.
 - 2.4. In addition to the amounts specified in [FC3506.3.6(2)] FC5806.3.6(2), a maximum of 3 gallons (11.4 L) liquid volume (9908 grams, or 21.8 pounds) of flammable gases that contain ethylene oxide may be stored in their original packaging in a flammable gas storage room, provided that such storage room meets the requirements of the construction codes, including the Building Code, is located above grade, is away from sources of heat and ignition, and is protected by a sprinkler system. Storage of flammable gases that contain ethylene oxide, in excess of 3 gallons (11.4 L) liquid volume, shall be in a detached above grade building designed for the storage of flammable gas in accordance with this chapter and the construction codes. For purposes of complying with the foregoing, 3-gallon (11.4 L) storage limitation, FC Table [3506.3.6] 5806.3.6 shall be used to determine the quantity of ethylene oxide being stored.

**FC TABLE [3506.3.6] 5806.3.6
MAXIMUM NUMBER OF ETHYLENE OXIDE CONTAINERS NOT EXCEEDING 3 GALLON LIMIT**

Quantity of gas per container (grams)	Maximum number of containers not exceeding 3 gallon limit
100	99
134	73
150	66
170	58

1 For SI: 1 gallon = 3.785 L.
2

3 **[3506.3.7] 5806.3.7 Certification of installation.** The owner of the facility in which the
4 sterilization system is installed shall maintain on the premises and make available for
5 inspection by any representative of the department a written certification from the
6 manufacturer of the sterilizer, the certificate of fitness holder responsible for the supervision
7 of the sterilization system and/or a New York State licensed professional engineer, that the
8 installation conforms to the requirements of the manufacturer, the approved testing laboratory
9 that listed the sterilizer and this section.
10

11 **[3506.4] 5806.4 Operation and maintenance.** Sterilization systems shall be operated and
12 maintained in compliance with the following requirements:
13

- 14 1. The quantity of flammable gases that contain ethylene oxide connected to the sterilizer at
15 any one time shall be no more than required for a single sterilization cycle and in no
16 circumstance more than 200 grams (7 ounces) net weight. Containers shall be opened only
17 while connected to the sterilizer in the manner specified by the manufacturer of the sterilizer.
18
- 19 2. Empty or underweight containers, containers with past expiration dates, and containers
20 which fail to open in the sterilizer shall be kept separate from other containers and promptly
21 removed from the premises and lawfully disposed of. Containers shall not be incinerated.
22

23 **[3506.5] 5806.5 Portable fire extinguishers.** At least one portable fire extinguisher having a
24 minimum 40 B:C rating shall be provided in the area where flammable gases containing ethylene
25 oxide are stored or used. The maximum travel distance to such extinguisher shall not exceed 30
26 feet (9144 mm).
27

28 **SECTION [3507] 5807** 29 **METAL HYDRIDE HYDROGEN STORAGE SYSTEMS** 30

31 **[3507.1] 5807.1 General.** Metal hydride hydrogen storage systems shall be designed, installed,
32 operated and maintained in accordance with this section. Metal hydride hydrogen storage systems
33 may only be used to provide motive power on powered industrial trucks.
34

35 **[3507.2] 5807.2 Hazard classification.** Metal hydride hydrogen storage systems shall be
36 classified pursuant to FC [2701.2] 5001.2 based on the hazard presented by the hydrogen it absorbs
37 and/or stores, without regard for the metal hydride content.
38

39 **[3507.3] 5807.3 Design requirements.** Metal hydride hydrogen storage systems shall be designed
40 and installed in compliance with the requirements of this section.
41

42 **[3507.3.1] 5807.3.1 Listing or approval for intended use.** Metal hydride hydrogen storage
43 systems shall either be listed for the purpose for which they are used or be of the type for which
44 a certificate of approval has been issued.
45

1 **[3507.3.2] 5807.3.2 Containers.** Containers designed for use in metal hydride hydrogen
2 storage systems shall be designed to be filled, refilled or emptied of metal hydride only by the
3 original equipment manufacturer or a trained and knowledgeable supplier, constructed in
4 accordance with FC [3003.1] 5303.1, and marked in accordance with [FC3507.3.3]
5 FC5807.3.3.

6
7 **[3507.3.3] 5807.3.3 Marking and labeling.** Metal hydride hydrogen storage systems shall be
8 marked and labeled in accordance with [FC3003.2] FC5303.2, and FC [3507.3.3.1] 5807.3.3.1
9 through [3507.3.3.4] 5807.3.3.4.

10
11 **[3507.3.3.1] 5807.3.3.1 System markings.** Metal hydride hydrogen storage systems shall
12 be marked with the following[.]:

- 13 1. Manufacturer's name;
- 14 2. Manufacturer's emergency contact information;
- 15 3. A unique code or serial number specific to the system;
- 16 4. System name or product code that identifies the system by the type of chemistry used
17 in the system;
- 18 5. Limitations on refilling of containers that include rated charging pressure and
19 capacity; and
- 20 6. Service life indicating the last date the metal hydride hydrogen storage system can
21 be used.

22
23 **[3507.3.3.2] 5807.3.3.2 Valve markings.** Metal hydride hydrogen storage system valves
24 shall be marked with the following information:

- 25 1. Manufacturer's name;
- 26 2. The type of metal hydride hydrogen storage system with which the valve is
27 compatible; and
- 28 3. Service life indicating the last date the valve can be used.

29 **[3507.3.3.3] 5807.3.3.3 Pressure relief device markings.** Metal hydride hydrogen storage
30 system pressure relief devices shall be marked with the following information (markings
31 for pressure relief devices integral to a valve may be made on the valve):

- 32 1. Manufacturer's name;
- 33 2. The type of metal hydride hydrogen storage system with which the device is
34 compatible; and

1 3. Activation parameters that include temperature and/or pressure.
2

3 **[3507.3.3.4] 5807.3.3.4 Container markings.** Containers used in metal hydride hydrogen
4 storage systems shall be marked with the following information:
5

- 6 1. Manufacturer's name;
- 7
- 8 2. Standard to which the container was designed and constructed;
- 9
- 10 3. Date of manufacturer's initial inspection and testing;
- 11
- 12 4. Individual serial number;
- 13
- 14 5. The type of metal hydride hydrogen storage system; and
- 15
- 16 6. Service life identifying the last date the container can be used.
- 17

18 **[3507.3.4] 5807.3.4 Physical protection.** Metal hydride hydrogen storage systems installed
19 on powered industrial trucks shall be designed and installed in compliance with the
20 requirements of this section.
21

22 **[3507.3.4.1] 5807.3.4.1 Securing containers.** The installation shall be designed to secure
23 containers from movement when the truck is in motion.
24

25 **[3507.3.4.2] 5807.3.4.2 Impact protection.** The installation shall be designed to minimize
26 the risk of release of metal hydride or hydrogen gas in the event of a physical impact.
27 System components shall not extend beyond the truck platform or chassis.
28

29 **[3507.4] 5807.4 Operational and maintenance requirements.** Metal hydride hydrogen storage
30 systems shall be operated and maintained in compliance with the requirements of this section.
31

32 **[3507.4.1] 5807.4.1 Valves.** Container valves shall remain closed except when containers are
33 connected for use and the hydrogen-powered equipment is in use.
34

35 **[3507.4.2] 5807.4.2 Protection from temperature extremes and falling objects.** Metal
36 hydride hydrogen storage systems shall comply with the requirements of FC [3003.5.4]
37 5303.5.4 and [3003.5.5] 5303.5.5.
38

39 **[3507.4.3] 5807.4.3 Refilling of containers.** The refilling of metal hydride hydrogen storage
40 system containers with metal hydride shall be in accordance with the listing or approval
41 requirements and manufacturers' instructions. The refilling of metal hydride hydrogen storage
42 systems with hydrogen shall be in accordance with FC 309 and [2209] 2309.
43

44 **[3507.4.4] 5807.4.4 Periodic inspection and testing of containers.** Metal hydride hydrogen
45 storage system containers shall be inspected, tested and requalified for service at least once
46 every 5 years in accordance with the requirements of the United States Department of
47 Transportation.

1
2 **[3507.4.5] 5807.4.5 Hydrogen purity.** The purity of the hydrogen generated by a metal
3 hydride hydrogen storage system shall meet or exceed the listing or approval requirements,
4 and the design specifications of the truck to be powered by the hydrogen supplied.
5

6 **[SECTION FC 3508**
7 **COMPRESSED NATURAL GAS**
8

9 **3508.1 Scope.** This section shall govern the storage, handling and use of compressed natural gas
10 (CNG).
11

12 **Exceptions:**

- 13
- 14 1. Storage, handling and use of CNG, including dispensing, for use as a fuel in motor
15 vehicles, as set forth in FC Chapter 22.
 - 16
 - 17 2. The storage, handling and use of CNG in connection with special effects.
18

19 **3508.2 General.** Compressed natural gas shall be stored, handled and used in accordance with this
20 chapter, including this section, and the rules.
21

22 **3508.3 General prohibitions.** It shall be unlawful to:

- 23 1. fill a CNG container with CNG or transfer CNG from one container to another, except as
24 authorized by FC2208.
- 25
- 26 2. store, handle or use CNG in any container with a capacity greater than 381 SCF.
27
- 28
- 29 3. store, handle or use CNG in a basement, cellar or other area below grade, except as
30 authorized by the commissioner.
- 31
- 32 4. store, handle or use CNG without a permit when such storage, handling or use exceeds the
33 quantities set forth in FC105.6.
- 34
- 35 5. store CNG in any outdoor or indoor storage facility, or store, handle or use CNG for a
36 stationary CNG installation, that has not been approved.
- 37
- 38 6. store, handle or use in, or bring or allow into any residential occupancy, or on any lot
39 containing a building used for a residential occupancy, any CNG container with a capacity
40 greater than 8.7 SCF, except as authorized by the commissioner.
- 41
- 42 7. store, handle or use in, or bring or allow into any nonresidential building, any CNG container
43 with a capacity greater than 8.7 SCF, except as authorized by the commissioner.
- 44
- 45 8. store CNG containers on the roof of any building.
46

- 1 9. handle or use on the roof of any building CNG containers with a capacity greater than 8.7
2 SCF of gas, except as authorized by the commissioner.
3
- 4 10. store, handle or use CNG in or on motor vehicles, except as temporary storage incidental
5 to transportation, or as a fuel for generating motive power for a motor vehicle, or otherwise
6 authorized by the commissioner.
7
- 8 11. store, handle or use CNG for a stationary installation in any area where access to piped
9 natural gas from a public utility is available, except as authorized by the commissioner.
10
- 11 12. store, handle or use CNG in any equipment used or previously used for LPG, except as
12 may be authorized by the commissioner on an emergency basis.
13
- 14 13. store, handle or use CNG for space heating or water heating, except as authorized by the
15 commissioner.
16
- 17 14. use nonmetallic pipe, tubing and components for any installation, appliance or equipment
18 using CNG, except as authorized by the commissioner.
19
- 20 15. store, handle or use CNG at bazaars, carnivals, street fairs and similar outdoor events,
21 including public gathering places.
22
- 23 16. store, handle, use or sell any CNG that has not been satisfactorily odorized with mercaptans
24 or other approved chemical.]
25

26 **SECTION 5808**
27 **HYDROGEN FUEL GAS ROOMS**
28

29 **5808.1 Scope.** This section shall govern the generation, storage, handling and use of gaseous
30 hydrogen.
31

32 **5808.2 General.** Devices, equipment and systems designed or used to generate gaseous hydrogen
33 shall be installed and operated in hydrogen fuel gas rooms, except as otherwise provided in this
34 code or approved by the department.
35

36 **5808.3 Prohibition.** It shall be unlawful to:
37

- 38 1. install or operate devices, equipment or systems that generate gaseous hydrogen in any
39 location other than a hydrogen fuel gas room, except as otherwise provided by this code or
40 approved by the department.
41
- 42 2. install or operate devices, equipment or systems that generate gaseous hydrogen for purposes
43 other than immediate use and incidental storage, except as otherwise provided in this code
44 or approved by the department.
45
- 46 3. install or operate a hydrogen fuel gas room below grade.
47

1 **5808.4 Design and installation.** Hydrogen fuel gas rooms shall be designed and installed in
2 accordance with the Building Code and NFPA 2. Design and installation documents shall be
3 submitted for review and approval to the Department of Buildings and the department.
4

5 **SECTION FC [3509] 5809**
6 **METHANE RECOVERY FROM LANDFILLS**
7

8 **[3509.1] 5809.1 Recovery operations.** The commissioner shall promulgate rules relating to the
9 recovery of methane gas from landfills, to ensure the safe recovery and processing thereof.
10

11 **SECTION FC [3510] 5810**
12 **MICROTURBINES**
13

14 **[3510.1] 5810.1 Scope.** This section shall govern the design, installation, operation and
15 maintenance of microturbines when the aggregate electrical energy produced by all microturbines
16 on or within a single building, including building roofs and setbacks, does not exceed 2,000 kW.
17

18 **[3510.2] 5810.2 Permits.** Permits shall be required as set forth in FC105.6.
19

20 **[3510.3] 5810.3 Supervision.** The operation of a microturbine during regular business hours shall
21 be under the personal supervision of a certificate of fitness holder. At all other times, a
22 microturbine shall be under the general supervision of a certificate of fitness holder. Certificate of
23 fitness holders shall be trained by the manufacturer or other qualified and knowledgeable person
24 in the safe operation of the equipment, including how to safely shut down the equipment in the
25 event of an emergency.
26

27 **[3510.3.1] 5810.3.1 Alarm monitoring.** The alarms initiated from the operation of a
28 microturbine shall be annunciated both locally and remotely as required by the construction
29 codes, including the Building Code and Mechanical Code, and the Electrical Code. The remote
30 panel shall be located in a continuously supervised location on the premises.
31

32 **[3510.4] 5810.4 Design and installation.** Microturbines shall be designed and installed in
33 accordance with the construction codes, including the Building Code and the Mechanical Code,
34 and the Electrical Code. A copy of the design and installation documents for microturbine
35 installations approved by the Department of Buildings shall be submitted to the department prior
36 to installation.
37

38 **[3510.5] 5810.5 Operation and maintenance.** Facilities housing microturbines shall be operated
39 and maintained in compliance with the requirements of FC [3510.5.1] 5810.5.1 through [3510.5.4]
40 5810.5.4.
41

42 **[3510.5.1] 5810.5.1 Signage and diagrams.** Signage and diagrams shall be provided in
43 compliance with the requirements of FC [3510.5.1.1] 5810.5.1.1 through [3510.5.1.3]
44 5810.5.1.3.
45

1 [3510.5.1.1] **5810.5.1.1 Emergency gas shutoff valve.** The fail safe emergency natural
2 gas shutoff valve shall have a durable sign conspicuously posted near such valve that reads:
3 “MICROTURBINE EMERGENCY GAS SHUTOFF.”
4

5 [3510.5.1.2] **5810.5.1.2 Fuel shutoff valve diagram.** A durable diagram shall be
6 conspicuously posted on all doors and other entrances to a microturbine room or area
7 indicating the location of all manual and automatic natural gas shutoff valves.
8

9 [3510.5.1.3] **5810.5.1.3 Gas piping.** A durable sign shall be conspicuously posted on or
10 near each door or other entrance to a room or outdoor area in which a microturbine is
11 located, and on or adjacent to the microturbine itself, that reads: “HIGH PRESSURE
12 NATURAL GAS.”
13

14 [3510.5.2] **5810.5.2 Secured location.** The microturbine shall be located in an area protected
15 from unauthorized entry. Doors to rooms containing a microturbine shall be kept locked, but a
16 key to such locks shall be readily available on the premises to certificate of fitness holders,
17 maintenance personnel, and emergency responders.
18

19 [3510.5.3] **5810.5.3 Combustible materials.** Combustible material shall not be stored and
20 combustible waste shall not be allowed to accumulate in rooms or within 10 feet (3048 mm)
21 of outdoor areas in which microturbines are located.
22

23 [3510.5.4] **5810.5.4 Service contract.** The owner of any microturbine installation shall
24 maintain a service contract with the microturbine manufacturer or other qualified service
25 company as long as the installation exists on the premises. A copy of the service contract shall
26 be maintained on the premises and made available for inspection by any department
27 representative.
28

29 **SECTION FC 5811**
30 **COMPRESSED NATURAL GAS**

31
32 **5811.1 Scope.** This section shall govern the storage, handling and use of compressed natural gas
33 (CNG).
34

35 **Exceptions:**

36
37 1. Storage, handling and use of CNG, including dispensing, for use as a fuel in motor
38 vehicles, as set forth in FC Chapter 23.
39

40 2. The storage, handling and use of CNG in connection with special effects.
41

42 **5811.2 General.** Compressed natural gas shall be stored, handled and used in accordance with this
43 chapter, including this section, and the rules.
44

45 **5811.3 General prohibitions.** It shall be unlawful to:
46

- 1 1. fill a CNG container with CNG or transfer CNG from one container to another, except as
2 authorized by FC2308.
3
- 4 2. store, handle or use CNG in any container with a capacity greater than 381 SCF.
5
- 6 3. store, handle or use CNG in a basement, cellar or other area below grade, except as
7 authorized by the commissioner.
8
- 9 4. store, handle or use CNG without a permit when such storage, handling or use exceeds the
10 quantities set forth in FC105.6.
11
- 12 5. store CNG in any outdoor or indoor storage facility, or store, handle or use CNG for a
13 stationary CNG installation, that has not been approved.
14
- 15 6. store, handle or use in, or bring or allow into any residential occupancy, or on any lot
16 containing a building used for a residential occupancy, any CNG container with a capacity
17 greater than 8.7 SCF, except as authorized by the commissioner.
18
- 19 7. store, handle or use in, or bring or allow into any nonresidential building, any CNG container
20 with a capacity greater than 8.7 SCF, except as authorized by the commissioner.
21
- 22 8. store CNG containers on the roof of any building.
23
- 24 9. handle or use on the roof of any building CNG containers with a capacity greater than
25 8.7 SCF of gas, except as authorized by the commissioner.
26
- 27 10. store, handle or use CNG in or on motor vehicles, except as temporary storage incidental
28 to transportation, or as a fuel for generating motive power for a motor vehicle, or otherwise
29 authorized by the commissioner.
30
- 31 11. store, handle or use CNG for a stationary installation in any area where access to piped
32 natural gas from a public utility is available, except as authorized by the commissioner.
33
- 34 12. store, handle or use CNG in any equipment used or previously used for LPG, except as
35 may be authorized by the commissioner on an emergency basis.
36
- 37 13. store, handle or use CNG for space heating or water heating, except as authorized by the
38 commissioner.
39
- 40 14. use nonmetallic pipe, tubing and components for any installation, appliance or equipment
41 using CNG, except as authorized by the commissioner.
42
- 43 15. store, handle or use CNG at bazaars, carnivals, street fairs and similar outdoor events,
44 including public gathering places.
45
- 46 16. store, handle, use or sell any CNG that has not been satisfactorily odorized with mercaptans
47 or other approved chemical.

1
2
3 **CHAPTER 59**
4 **FLAMMABLE SOLIDS**

5
6 **SECTION FC [3601] 5901**
7 **GENERAL**
8

9 **[3601.1] 5901.1 Scope.** This chapter shall govern the storage, handling and use of flammable
10 solids.

11
12 **[3601.2] 5901.2 Permits.** Permits shall be required as set forth in FC105.6.

13
14 **[3601.3] 5901.3 General.** Flammable solids shall be stored, handled and used in accordance with
15 this chapter.

16
17 **[3601.4] 5901.4 Supervision.** The handling and use of flammable solids in quantities requiring a
18 permit shall be performed under the personal supervision of a person holding a certificate of
19 fitness. The storage of flammable solids in quantities requiring a permit shall be under the general
20 supervision of a person holding a certificate of fitness.

21
22 **SECTION FC [3602] 5902**
23 **DEFINITIONS**
24

25 **[3602.1] 5902.1 Definition[s].** The following term shall, for the purposes of this chapter and as
26 used elsewhere in this code, have the meaning [shown herein] set forth in FC202.

27
28 **FLAMMABLE SOLID.** [A solid, other than a blasting agent or other explosive, whether in
29 elemental or alloy form, that is capable of causing fire through friction, absorption or moisture,
30 spontaneous chemical change, or heat retained from manufacturing or processing, or which has an
31 ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when
32 ignited as to create a serious hazard. A chemical shall be considered a flammable solid if upon
33 testing using the method prescribed in CPSC regulations, as set forth in 16 CFR Section 1500.44,
34 it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second
35 along its major axis.]

36
37 **SECTION FC [3603] 5903**
38 **GENERAL REQUIREMENTS**
39

40 **[3603.1] 5903.1 Quantities not exceeding the maximum allowable quantity per control area.**
41 The storage, handling and use of flammable solids in amounts not exceeding the maximum
42 allowable quantity per control area as indicated in [FC2703.1] 5003.1 shall be in accordance with
43 FC [2701] 5001, [2703] 5003, [3601] 5901 and this section.

44
45 **[3603.2] 5903.2 Quantities exceeding the maximum allowable quantity per control area.** The
46 storage, handling and use of flammable solids exceeding the maximum allowable quantity per

1 control area as indicated in [FC2703.1] 5003.1 shall be in accordance with FC Chapter [27] 50,
2 this chapter, and NFPA 484.

3 4 **SECTION FC [3604] 5904** 5 **STORAGE** 6

7 **[3604.1] 5904.1 Indoor storage.** Indoor storage of flammable solids in amounts exceeding the
8 maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1)
9 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004, this chapter, and NFPA
10 484.

11
12 **[3604.1.1] 5904.1.1 Pile size limits and location.** Flammable solids stored in quantities greater
13 than 1,000 cubic feet (28 m³) shall be separated into piles each not larger than 1,000 cubic feet
14 (28 m³).

15
16 **[3604.1.2] 5904.1.2 Aisles.** Aisle widths between piles shall not be less than the height of the
17 piles or 10 feet (3048 mm), whichever is greater.

18
19 **[3604.1.3] 5904.1.3 Basement storage.** Flammable solids shall not be stored in basements or
20 other areas below grade.

21
22 **[3604.2] 5904.2 Outdoor storage.** Outdoor storage of flammable solids in amounts exceeding the
23 maximum allowable quantities per control area indicated in FC Table [2703.1.1(3)] 5003.1.1(3)
24 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004, this chapter, and NFPA
25 484.

26
27 **[3604.2.1] 5904.2.1 Distance from storage to exposures.** Outdoor storage of flammable
28 solids shall not be located within 20 feet (6096 mm) of a building, lot line, public street, private
29 road or means of egress. A 2-hour fire barrier without openings or penetrations and extending
30 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such
31 distance. The fire barrier shall either be an independent structure, or the exterior wall of the
32 building adjacent to the storage area.

33
34 **[3604.2.2] 5904.2.2 Pile size limits.** Outdoor storage of flammable solids shall be separated
35 into piles not larger than 5,000 cubic feet (141 m³) each. Piles shall be separated by aisles with
36 a minimum width of not less than one-half the pile height or 10 feet (3048 mm), whichever is
37 greater.

38
39 **[3604.3] 5904.3 Combustible material and combustible waste.** Combustible material and
40 combustible waste, including packing materials and oily rags, shall not be stored in the same area
41 as that where solid combustible metal scraps or powders are stored.

42 43 **SECTION FC [3605] 5905** 44 **HANDLING AND USE** 45

46 **[3605.1] 5905.1 General.** The handling and use of flammable solids in amounts exceeding the
47 maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or

1 [2703.1.1(3)] 5003.1.1(3) shall be in accordance with FC [2701] 5001, [2703] 5003, [2705] 5005,
2 this chapter, and NFPA 484.

3
4
5 **CHAPTER 60**
6 **HIGHLY TOXIC AND TOXIC MATERIALS**

7
8 **SECTION FC [3701] 6001**
9 **GENERAL**

10
11 **[3701.1] 6001.1 Scope.** This chapter shall govern the storage, handling and use of highly toxic and
12 toxic materials and ozone gas generators.

13
14 **Exceptions:**

- 15
16 1. Storage and display in Group M and storage in Group S occupancies complying with the
17 requirements of [FC2703.11] FC5003.11.
18
19 2. Storage, handling or use for agricultural purposes, including as a pesticide, herbicide,
20 fertilizer or similar application, when approved for such use by the federal, state or city
21 regulatory agency having jurisdiction and when such storage, handling or use is in
22 accordance with the manufacturer's instructions.
23
24 3. Storage, handling or personal or domestic use as a pesticide, herbicide, fertilizer in and
25 around a residential dwelling, when approved for such use by the federal, state or city
26 regulatory agency having jurisdiction and when such storage, handling or use is in
27 accordance with the manufacturer's instructions.
28

29 **[3701.2] 6001.2 Permits.** Permits shall be required as set forth in FC105.6.

30
31 **[3701.3] 6001.3 General.** Highly toxic and toxic materials and ozone gas generators shall be
32 stored, handled and used in accordance with this chapter. Highly toxic and toxic materials that are
33 compressed gases shall additionally comply with the requirements of FC Chapter [30] 53.
34

35 **[3701.4] 6001.4 Highly toxic and toxic material mixtures.** The level of toxicity of highly toxic
36 and toxic materials may be reduced by diluting such materials with other materials, such as water,
37 to a degree that the resulting mixture may no longer be highly toxic or toxic. A mixture containing
38 any amount of highly toxic and/or toxic material is presumed to be a highly toxic or toxic material,
39 as applicable, unless it is otherwise certified and labeled by the manufacturer.
40

41 **[3701.5] 6001.5 Supervision.** The handling and use of highly toxic and toxic materials in
42 quantities requiring a permit shall be under the personal supervision of a certificate of fitness
43 holder. The storage of highly toxic and toxic materials in quantities requiring a permit shall be
44 under the general supervision of a certificate of fitness holder.
45

46 **[3701.6] 6001.6 Prohibition.** It shall be unlawful to compress highly toxic and toxic materials.
47

SECTION FC [3702] 6002
DEFINITIONS

[3702.1] 6002.1 Definitions. The following terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

CONTAINMENT SYSTEM. [A gas-tight recovery system comprised of devices or equipment which, when placed over or around the portion of the compressed gas container that is leaking, stops or controls the escape of gas from the container.]

CONTAINMENT VESSEL. [A gas-tight vessel which, when installed or placed over or around a leaking compressed gas container, confines the container and the gas leaking therefrom.]

EXCESS FLOW VALVE. [A valve inserted into a compressed gas container that is designed to shut off the flow of gas in the event that its predetermined flow is exceeded.]

HIGHLY TOXIC MATERIAL. [A chemical that is lethal at the following doses or concentration:

1. A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or
2. A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each; or
3. A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.]

OZONE GAS GENERATOR. [Equipment which produces ozone.]

REDUCED FLOW VALVE. [A valve equipped with a restricted flow orifice and inserted into a compressed gas container that is designed to reduce the maximum flow from the valve under full-flow conditions. The maximum flow rate from the valve is determined with the valve allowed to flow to atmosphere with no other piping or fittings attached.]

TOXIC MATERIAL. [A chemical that is lethal at the following doses or concentration:

1. A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each; or

- 1 2. A chemical that has a median lethal dose (LD₅₀) of more than 200 milligrams per kilogram
2 but not more than 1,000 milligrams per kilogram of body weight when administered by
3 continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin
4 of albino rabbits weighing between 2 and 3 kilograms each; or
5
6 3. A chemical that has a median lethal concentration (LC₅₀) in air of more than 200 parts per
7 million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2
8 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when
9 administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to
10 albino rats weighing between 200 and 300 grams each.

11 **Exception:** Chlorine. Although chlorine is, by definition, a toxic material, for purposes of
12 this code it shall be classified as a highly toxic material.]
13
14

15 **SECTION FC [3703] 6003**
16 **HIGHLY TOXIC AND TOXIC SOLIDS AND LIQUIDS**
17

18 **[3703.1] 6003.1 Indoor storage, handling and use.** The indoor storage, handling and use of
19 highly toxic and toxic materials shall comply with the requirements of FC [3703.1.1] 6003.1.1
20 through [3703.1.5.3.] 6003.1.5.3.
21

22 **[3703.1.1] 6003.1.1 Quantities not exceeding the maximum allowable quantity per control**
23 **area.** The indoor storage, handling or use of highly toxic and toxic solids or liquids in amounts
24 not exceeding the maximum allowable quantity per control area indicated in FC Table
25 [2703.1.1(2)] 5003.1.1(2) shall be in accordance with FC [2701] 5001, [2703] 5003 and [3701]
26 6001.
27

28 **[3703.1.2] 6003.1.2 Quantities exceeding the maximum allowable quantity per control**
29 **area.** The indoor storage, handling or use of highly toxic and toxic solids or liquids in amounts
30 exceeding the maximum allowable quantity per control area set forth in FC Table [2703.1.1(2)]
31 5003.1.1(2) shall be in accordance with [FC3701] FC6001, FC [3703.1.3] 6003.1.3 through
32 [3703.1.5.3] 6003.1.5.3 and FC Chapter [27] 50.
33

34 **[3703.1.3] 6003.1.3 Treatment system—highly toxic liquids.** Exhaust scrubbers or other
35 systems for processing vapors of highly toxic liquids shall be provided where a spill or
36 accidental release of such liquids can be expected to release highly toxic vapors at normal
37 temperature and pressure. Treatment systems and other processing systems shall be installed
38 in accordance with the construction codes, including the Mechanical Code.
39

40 **[3703.1.4] 6003.1.4 Indoor storage.** Indoor storage of highly toxic and toxic solids and liquids
41 shall comply with the requirements of FC [3703.1.4.1] 6003.1.4.1 and [3703.1.4.2] 6003.1.4.2.
42

43 **[3703.1.4.1] 6003.1.4.1 Floors.** In addition to the requirements set forth in [FC2704.12]
44 FC5004.12, floors of storage areas shall be of liquid-tight construction.
45

46 **[3703.1.4.2] 6003.1.4.2 Separation—highly toxic solids and liquids.** In addition to the
47 requirements set forth in [FC2703.9.8] FC5003.9.8, highly toxic solids and liquids in

1 storage shall be located in approved hazardous material storage cabinets or isolated from
2 other hazardous material storage by construction in accordance with the construction
3 codes, including the Building Code.
4

5 **[3703.1.5] 6003.1.5 Indoor handling and use.** Indoor handling and use of highly toxic and
6 toxic solids and liquids shall be in accordance with FC [3703.1.5.1] 6003.1.5.1 through
7 [3703.1.5.3] 6003.1.5.3.
8

9 **[3703.1.5.1] 6003.1.5.1 Liquid transfer.** Highly toxic and toxic liquids shall be transferred
10 in accordance with [FC2705.1.10] FC5005.1.10.
11

12 **[3703.1.5.2] 6003.1.5.2 Exhaust ventilation for open systems.** Mechanical exhaust
13 ventilation shall be provided for highly toxic and toxic liquids used in open systems in
14 accordance with [FC2705.2.1.1] 5005.2.1.1.
15

16 **Exception:** Liquids or solids that do not generate highly toxic or toxic fumes, mists or
17 vapors.
18

19 **[3703.1.5.3] 6003.1.5.3 Exhaust ventilation for closed systems.** Mechanical exhaust
20 ventilation shall be provided for highly toxic and toxic liquids used in closed systems in
21 accordance with [FC2705.2.2.2] FC5005.2.2.2.
22

23 **Exception:** Liquids or solids that do not generate highly toxic or toxic fumes, mists or
24 vapors.
25

26 **[3703.2] 6003.2 Outdoor storage, handling and use.** Outdoor storage, handling and use of highly
27 toxic and toxic materials shall be in accordance with FC [3703.2.1] 6003.2.1 through [3703.2.6]
28 6003.2.6.
29

30 **[3703.2.1] 6003.2.1 Quantities not exceeding the maximum allowable quantity per control**
31 **area.** The outdoor storage, handling or use of highly toxic and toxic solids or liquids in amounts
32 not exceeding the maximum allowable quantity per control area indicated in FC Table
33 [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001, [2703] 5003 and [3701]
34 6001.
35

36 **[3703.2.2] 6003.2.2 Quantities exceeding the maximum allowable quantity per control**
37 **area.** The outdoor storage, handling or use of highly toxic and toxic solids or liquids in amounts
38 exceeding the maximum allowable quantity per control area set forth in FC Table [2703.1.1(4)]
39 5003.1.1(4) shall be in accordance with FC [3701] 6001 and [3703.2] 6003.2 and FC Chapter
40 [27] 50.
41

42 **[3703.2.3] 6003.2.3 General outdoor requirements.** The general requirements applicable to
43 the outdoor storage of highly toxic or toxic solids and liquids shall be in accordance with FC
44 [3703.2.3.1] 6003.2.3.1 and [3703.2.3.2] 6003.2.3.2.
45

46 **[3703.2.3.1] 6003.2.3.1 Location.** Outdoor storage, handling or use of highly toxic or toxic
47 solids and liquids shall not be located within 20 feet (6096 mm) of lot lines, public streets,

1 private roads, exit discharges or exterior wall openings. A 2-hour fire barrier wall without
2 openings or penetrations extending not less than 30 inches (762 mm) above and to the sides
3 of the storage is allowed in lieu of such distance. The fire barrier wall shall be either an
4 independent structure or the exterior wall of the building adjacent to the storage area.
5

6 **[3703.2.3.2] 6003.2.3.2 Treatment system—highly toxic liquids.** Exhaust scrubbers or
7 other systems for processing vapors of highly toxic liquid shall be installed where a spill
8 or accidental release of such liquids can be expected to release highly toxic vapors at
9 normal temperature and pressure (NTP). Treatment systems and other processing systems
10 shall be installed in accordance with the construction codes, including the Mechanical
11 Code.
12

13 **[3703.2.4] 6003.2.4 Outdoor storage piles.** Outdoor storage piles of highly toxic and toxic
14 solids and liquids shall be separated into piles not larger than 2,500 cubic feet (71 m³). Aisle
15 widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm),
16 whichever is greater.
17

18 **[3703.2.5] 6003.2.5 Weather protection—outdoor storage or use.** Where overhead weather
19 protection is provided for outdoor storage or use of highly toxic and toxic liquids or solids, and
20 the weather protection is attached to a building or structure, the storage or use area shall either
21 be protected throughout by a sprinkler system, or storage or use vessels shall be fire-resistance
22 rated. Weather protection shall be provided in accordance with [FC2704.13] FC5004.13 for
23 storage and [FC2705.3.9] FC5005.3.9 for use.
24

25 **[3703.2.6] 6003.2.6 Outdoor liquid transfer.** Highly toxic and toxic liquids shall be
26 transferred in accordance with [FC2705.1.10] FC5005.1.10.
27

28 **SECTION FC [3704] 6004**
29 **HIGHLY TOXIC AND TOXIC COMPRESSED GASES**
30

31 **[3704.1] 6004.1 General.** The storage, handling and use of highly toxic and toxic compressed
32 gases shall comply with the requirements of this section.
33

34 **[3704.1.1] 6004.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be
35 unlawful to store, handle or use highly toxic and toxic compressed gases in:
36

- 37 1. Group A, E, I, R or U occupancies.
- 38
- 39 2. Group B office occupancies, F, M or S occupancies, or any other areas of such
40 occupancies that are accessible to the public.
41

42 **[3704.1.2] 6004.1.2 Gas cabinets.** Gas cabinets containing highly toxic or toxic compressed
43 gases shall comply with the requirements of [FC2703.8.6] FC5003.8.6 and shall be ventilated
44 in accordance with the Mechanical Code.
45

1 [3704.1.2.1] **6004.1.2.1 Capacity limits.** The maximum number of containers located in a
2 single gas cabinet shall not exceed three, except that cabinets containing containers not
3 over 1 pound (0.454 kg) net contents are allowed to contain up to 100 containers.
4

5 [3704.1.2.2] **6004.1.2.2 Fire protection.** Gas cabinets required by FC [3704.2] 6004.2 or
6 [3704.3] 6004.3 shall be protected by a sprinkler system. Alternative fire extinguishing
7 systems shall not be used in lieu of a sprinkler system.
8

9 [3704.1.3] **6004.1.3 Exhausted enclosures.** Exhausted enclosures containing highly toxic or
10 toxic compressed gases shall be ventilated in accordance with the Mechanical Code.
11

12 [3704.1.3.1] **6004.1.3.1 Fire protection.** Exhausted enclosures required by FC [3704.2]
13 6004.2 or [3704.3] 6004.3 shall be protected by a sprinkler system. Alternative fire
14 extinguishing systems shall not be used in lieu of a sprinkler system.
15

16 [3704.2] **6004.2 Indoor storage, handling and use.** The indoor storage, handling and use of
17 highly toxic or toxic compressed gases shall be in accordance with FC [3704.2.1] 6004.2.1 through
18 [3704.2.2.10.3] 6004.2.2.10.3.
19

20 [3704.2.1] **6004.2.1 Applicability.** The applicability of regulations governing the indoor
21 storage, handling and use of highly toxic and toxic compressed gases shall be as set forth in
22 FC [3704.2.1.1] 6004.2.1.1 through [3704.2.1.3] 6004.2.1.3.
23

24 [3704.2.1.1] **6004.2.1.1 Quantities not exceeding the maximum allowable quantity per**
25 **control area.** The indoor storage, handling or use of highly toxic and toxic gases in
26 amounts not exceeding the maximum allowable quantity per control area set forth in FC
27 Table [2703.1.1(2)] 5003.1.1(2) shall be in accordance with FC [2701] 5001, [2703] 5003,
28 [3701] 6001 and [3704.1] 6004.1.
29

30 [3704.2.1.2] **6004.2.1.2 Quantities exceeding the maximum allowable quantity per**
31 **control area.** The indoor storage, handling or use of highly toxic and toxic gases in
32 amounts exceeding the maximum allowable quantity per control area set forth in FC Table
33 [2703.1.1(2)] 5003.1.1(2) shall be in accordance with FC [3701] 6001, [3704.1] 6004.1,
34 [3704.2] 6004.2 and FC Chapter [27] 50.
35

36 [3704.2.1.3] **6004.2.1.3 Ozone gas generators.** The indoor use of ozone gas-generating
37 equipment shall be in accordance with [FC3705] FC6005.
38

39 [3704.2.2] **6004.2.2 General indoor requirements.** The general requirements applicable to
40 the indoor storage, handling and use of highly toxic and toxic compressed gases shall be in
41 accordance with FC [3704.2.2.1] 6004.2.2.1 through [3704.2.2.10.3] 6004.2.2.10.3.
42

43 [3704.2.2.1] **6004.2.2.1 Container location.** Portable containers shall be located within
44 gas cabinets, exhausted enclosures or gas rooms. All other containers shall be located
45 within gas rooms or exhausted enclosures.
46

1 [3704.2.2.2] **6004.2.2.2 Ventilated areas.** The room or other area in which gas cabinets or
2 exhausted enclosures are located shall be provided with exhaust ventilation. Gas cabinets
3 or exhausted enclosures shall not be used as the sole means of exhaust for any room or
4 area.

5
6 [3704.2.2.3] **6004.2.2.3 Leaking containers.** One or more gas cabinets or exhausted
7 enclosures shall be available on the premises to capture the gas from the containers until
8 such time as the leaking container can be removed from the premises and disposed of
9 lawfully.

10
11 **Exceptions:**

- 12
13 1. Where containers are located within gas cabinets or exhausted enclosures.
14
15 2. Where approved containment vessels or containment systems are provided in
16 accordance with the following requirements:
17
18 2.1. Containment vessels or containment systems shall be capable of fully
19 containing or terminating a release.
20
21 2.2. Trained personnel shall be available at an approved location.
22
23 2.3. Containment vessels or containment systems shall be capable of being
24 transported to the leaking container.

25
26 [3704.2.2.3.1] **6004.2.2.3.1 Location.** Gas cabinets and exhausted enclosures shall be
27 located in gas rooms and connected to an exhaust system.
28

29 [3704.2.2.4] **6004.2.2.4 Local exhaust for portable containers.** A means of local exhaust
30 shall be provided to capture leaks from portable containers. The local exhaust shall consist
31 of portable ducts or collection systems designed to be applied to the site of a leak in a valve
32 or fitting on the container. The local exhaust system shall be located in a gas room. Exhaust
33 shall be directed to a treatment system in accordance with [FC3704.2.2.7] FC6004.2.2.7.
34

35 [3704.2.2.5] **6004.2.2.5 Piping and controls—stationary containers.** In addition to the
36 requirements of [FC2703.2.2] FC5003.2.2, piping and controls on stationary containers
37 shall comply with the following requirements:
38

- 39 1. Pressure relief devices shall be vented to a treatment system designed in accordance
40 with [FC3704.2.2.7] FC6004.2.2.7.

41
42 **Exception:** Pressure relief devices on outdoor containers provided exclusively for
43 relieving pressure due to fire exposure are not required to be vented to a treatment
44 system provided that:

- 45
46 1. The material in the container is not flammable.
47

1 2. The container is not located in a diked area with other containers containing
2 combustible materials.

3
4 3. The container is located not less than 30 feet (9144 mm) from combustible
5 materials or structures or is shielded by a fire barrier complying with the
6 requirements of [FC3704.3.2.1.1] FC6004.3.2.1.1.

7
8 2. Filling or dispensing connections shall be provided with a means of local exhaust.
9 Such exhaust shall be designed to capture fumes and vapors. The exhaust shall be
10 directed to a treatment system in accordance with [FC3704.2.2.7] FC6004.2.2.7.

11
12 3. Stationary containers shall be provided with a means of excess flow control on all
13 container inlet or outlet connections.

14
15 **Exceptions:**

16
17 1. Inlet connections designed to prevent backflow.

18
19 2. Pressure relief devices.

20
21 **[3704.2.2.6] 6004.2.2.6 Gas rooms.** Gas rooms shall comply with the requirements of
22 FC2703.8.4 and both of the following requirements:

23
24 1. The exhaust ventilation from gas rooms shall be directed to an exhaust system.

25
26 2. Gas rooms shall be protected throughout by a sprinkler system. Alternative fire
27 extinguishing systems shall not be used in lieu of a sprinkler system.

28
29 **[3704.2.2.7] 6004.2.2.7 Treatment systems.** The exhaust ventilation from gas cabinets,
30 exhausted enclosures and gas rooms, and local exhaust systems required by FC
31 [3704.2.2.4] 6004.2.2.4 and [3704.2.2.5] 6004.2.2.5 shall be directed to a treatment system.
32 The treatment system shall be utilized to handle the accidental release of gas and to process
33 exhaust ventilation. The treatment system shall be designed in accordance with FC
34 [3704.2.2.7.1] 6004.2.2.7.1 through [3704.2.2.7.5] 6004.2.2.7.5 and Chapter 5 of the
35 Mechanical Code.

36
37 **Exceptions:**

38
39 1. Highly toxic and toxic gases—storage. A treatment system is not required for
40 containers in storage when the following controls are provided:

41
42 1.1. Valve outlets are equipped with gas-tight outlet plugs or caps.

43
44 1.2. Handwheel-operated valves have handles secured to prevent movement.

45
46 1.3. Approved containment vessels or containment systems are provided in
47 accordance with [FC3704.2.2.3] FC6004.2.2.3.

1
2 2. Toxic gases—use. Treatment systems are not required for toxic gases supplied
3 by portable containers not exceeding 1,700 pounds [(772 kg)] (771 kg) water
4 capacity when the following controls are provided:
5

6 2.1. A listed or approved gas detection system with a sensing interval not
7 exceeding 5 minutes.
8

9 2.2. A listed or approved automatic-closing fail-safe valve located immediately
10 adjacent to container valves. The fail-safe valve shall close when gas is
11 detected at the permissible exposure limit (PEL) by a gas detection system
12 monitoring the exhaust system at the point of discharge from the gas cabinet,
13 exhausted enclosure, ventilated enclosure or gas room. The gas detection
14 shall comply with the requirements of [FC3704.2.2.10] FC6004.2.2.10.
15

16 **[3704.2.2.7.1] 6004.2.2.7.1 Design.** Treatment systems shall be capable of diluting,
17 adsorbing, absorbing, containing, neutralizing, burning or otherwise processing the
18 contents of the largest compressed gas container. Where a total containment system is
19 used, the system shall be designed to handle the maximum anticipated pressure of
20 release to the system when it reaches equilibrium.
21

22 **[3704.2.2.7.2] 6004.2.2.7.2 Performance.** Treatment systems shall be designed to
23 reduce the maximum allowable discharge concentrations of the gas to one-half
24 immediate dangerous to life and health (IDLH) at the point of discharge to the
25 atmosphere. Where more than one gas is emitted to the treatment system, the treatment
26 system shall be designed to handle the worst-case release based on the release rate, the
27 quantity and the IDLH for all compressed gases stored or used.
28

29 **[3704.2.2.7.3] 6004.2.2.7.3 Sizing.** Treatment systems shall be sized to process the
30 maximum worst-case release of gas based on the maximum flow rate of release and the
31 entire contents from the largest container utilized.
32

33 **[3704.2.2.7.4] 6004.2.2.7.4 Stationary containers.** Stationary containers shall be
34 labeled with the maximum rate of release for the compressed gas contained based on
35 valves or fittings that are inserted directly into the container. Where multiple valves or
36 fittings are provided, the maximum flow rate of release for valves or fittings with the
37 highest flow rate shall be indicated. Where liquefied compressed gases are in contact
38 with valves or fittings, the liquid flow rate shall be utilized for computation purposes.
39 Flow rates indicated on the label shall be converted to SCF.
40

41 **[3704.2.2.7.5] 6004.2.2.7.5 Portable containers.** The maximum flow rate of release
42 for portable containers shall be calculated based on the total release from the container
43 within 5 minutes for containers with nonliquefied content and 30 minutes for containers
44 with liquefied content. When portable containers are equipped with approved excess
45 flow or reduced flow valves, the worst-case release shall be determined by the
46 maximum achievable flow from the valve as determined by the valve manufacturer or
47 compressed gas supplier. Reduced flow and excess flow valves shall be permanently

1 marked by the valve manufacturer to indicate the maximum design flow rate. Such
2 markings shall indicate the flow rate for air under normal temperature and pressure.
3

4 **[3704.2.2.8] 6004.2.2.8 Emergency power.** Emergency power shall be provided in
5 accordance with the Electrical Code and the Building Code where any of the following
6 systems are required:
7

- 8 1. Exhaust ventilation system.
- 9
- 10 2. Treatment system.
- 11
- 12 3. Gas detection system.
- 13
- 14 4. Smoke detection system.
- 15
- 16 5. Temperature control system.
- 17
- 18 6. Fire alarm system.
- 19
- 20 7. Emergency alarm system.
- 21

22 **Exception:** Emergency power is not required for mechanical exhaust ventilation,
23 treatment systems and temperature control systems where approved fail-safe
24 engineered systems are installed.
25

26 **[3704.2.2.9] 6004.2.2.9 Automatic fire detection system—highly toxic compressed**
27 **gases.** An approved automatic fire detection system shall be installed in rooms or areas
28 where highly toxic compressed gases are stored or used. Activation of the detection system
29 shall sound a local alarm. The fire detection system shall comply with the requirements of
30 the Building Code.
31

32 **[3704.2.2.10] 6004.2.2.10 Gas detection system.** A gas detection system shall be provided
33 to detect the presence of gas at or below the permissible exposure limit (PEL) or ceiling
34 limit of the gas for which detection is provided. The system shall be capable of monitoring
35 the discharge from the treatment system at or below one-half the IDLH limit.
36

37 **Exception:** A gas detection system is not required for toxic gases when the
38 physiological warning properties for the gas are at a level below the accepted PEL for
39 the gas.
40

41 **[3704.2.2.10.1] 6004.2.2.10.1 Alarms.** The gas detection system shall initiate a local
42 alarm and transmit a signal to a continuously attended control station on the premises
43 whenever it detects the presence of the gas in the atmosphere. The alarm shall be both
44 visual and audible and shall provide warning both inside and outside the area where
45 gas is detected.
46

1 **Exception:** Signal transmission to a continuously attended control station is not
2 required where not more than one container of highly toxic or toxic gas is stored.
3

4 **[3704.2.2.10.2] 6004.2.2.10.2 Shutoff of gas supply.** The gas-detection system shall
5 automatically close the shutoff valve at the source on gas supply piping and tubing
6 related to the system being monitored for whichever gas is detected.
7

8 **Exception:** Automatic shutdown is not required for reactors utilized for the
9 production of highly toxic or toxic compressed gases where such reactors are:
10

- 11 1. Operated at pressures less than 15 pounds per square inch gauge (psig)
12 (103.4 kPa).
- 13 2. Continuously attended.
- 14 3. Provided with readily accessible emergency shutoff valves.
15

16 **[3704.2.2.10.3] 6004.2.2.10.3 Valve closure.** When the gas-detection sampling point
17 initiating the gas-detection system alarm is at a use location or within a gas valve
18 enclosure of a branch line downstream of a piping distribution manifold, the shutoff
19 valve in the gas valve enclosure for the branch line located in the piping distribution
20 manifold enclosure shall automatically close. Under all other circumstances, shutoff
21 valves shall comply with the following automatic closure requirements:
22

- 23 1. When the gas-detection sampling point initiating the gas detection system alarm
24 is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet
25 or exhausted enclosure for the specific gas detected shall automatically close.
26
- 27 2. Where the gas-detection sampling point initiating the gas detection system alarm
28 is within a gas room and compressed gas containers are not in gas cabinets or
29 exhausted enclosures, the shutoff valves on all gas lines for the specific gas
30 detected shall automatically close.
31
- 32 3. Where the gas-detection sampling point initiating the gas detection system alarm
33 is within a piping distribution manifold enclosure, the shutoff valve for the
34 container of specific gas detected supplying the manifold shall automatically
35 close.
36

37 **[3704.3] 6004.3 Outdoor storage, handling and use.** The outdoor storage, handling and use of
38 highly toxic and toxic compressed gases shall be in accordance with FC [3704.3.1] 6004.3.1
39 through [3704.3.4] 6004.3.4.
40

41 **[3704.3.1] 6004.3.1 Applicability.** The outdoor storage, handling and use of highly toxic and
42 toxic compressed gases shall be in accordance with FC [3704.3.1.1] 6004.3.1.1 through
43 [3704.3.1.3] 6004.3.1.3.
44
45
46

1 **[3704.3.1.1] 6004.3.1.1 Quantities not exceeding the maximum allowable quantity per**
2 **control area.** The outdoor storage, handling or use of highly toxic and toxic gases in
3 amounts not exceeding the maximum allowable quantity per control area set forth in FC
4 Table [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [2701] 5001, [2703] 5003
5 and [3701] 6001.

6
7 **[3704.3.1.2] 6004.3.1.2 Quantities exceeding the maximum allowable quantity per**
8 **control area.** The outdoor storage, handling or use of highly toxic and toxic gases in
9 amounts exceeding the maximum allowable quantity per control area set forth in FC Table
10 [2703.1.1(4)] 5003.1.1(4) shall be in accordance with FC [3701] 6001 and [3704.3] 6004.3
11 and FC Chapter [27] 50.

12
13 **[3704.3.1.3] 6004.3.1.3 Ozone gas generators.** The outdoor use of ozone gas-generating
14 equipment shall be in accordance with [FC3705] FC6005.

15
16 **[3704.3.2] 6004.3.2 General outdoor requirements.** The outdoor storage, handling and use
17 of highly toxic and toxic compressed gases shall be in accordance with FC [3704.3.2.1]
18 6004.3.2.1 through [3704.3.2.7] 6004.3.2.7.

19
20 **[3704.3.2.1] 6004.3.2.1 Location.** Outdoor storage, handling or use of highly toxic or toxic
21 compressed gases shall be located in accordance with FC [3704.3.2.1.1] 6004.3.2.1.1
22 through [3704.3.2.1.3] 6004.3.2.1.3.

23
24 **Exception:** Compressed gases located in gas cabinets complying with the requirements
25 of FC [2703.8.6] 5003.8.6 and [3704.1.2] 6004.1.2 and located 5 feet (1524 mm) or
26 more from buildings and 25 feet (7620 mm) or more from an exit discharge.

27
28 **[3704.3.2.1.1] 6004.3.2.1.1 Distance limitation to exposures.** Outdoor storage,
29 handling or use of highly toxic or toxic compressed gases shall not be located within
30 75 feet (22 860 mm) of a lot line, public street, private road, exit discharge or building
31 not associated with the manufacture or distribution of such gases, unless all of the
32 following conditions are met:

- 33
34 1. Storage is shielded by a 2-hour fire-resistant barrier which interrupts the line of
35 sight between the storage and the exposure.
36
37 2. The 2-hour fire-resistant barrier shall be located at least 5 feet (1524 mm) from
38 any exposure.
39
40 3. The 2-hour fire-resistant barrier shall not have more than two sides at
41 approximately 90-degree (1.57 rad) directions, or three sides with connecting
42 angles of approximately 135 degrees (2.36 rad).

43
44 **[3704.3.2.1.2] 6004.3.2.1.2 Openings in exposed buildings.** Where the storage,
45 handling or use area is located within 75 feet (22 860 mm) of a building not associated
46 with the manufacture or distribution of highly toxic or toxic compressed gases,
47 openings into such building other than for piping are not allowed above the height of

1 the top of the 2-hour fire-resistant barrier or within 50 feet (15 240 mm) horizontally
2 from the storage area whether or not shielded by a fire barrier.

3
4 **[3704.3.2.1.3] 6004.3.2.1.3 Air intakes.** Any area used for storage, handling or use
5 shall not be located within 75 feet (22 860 mm) of air intakes.

6
7 **[3704.3.2.2] 6004.3.2.2 Leaking containers.** The requirements of [FC3704.2.2.3]
8 FC6004.2.2.3 shall apply to outdoor containers. Gas cabinets and exhausted enclosures
9 shall be located within or immediately adjacent to outdoor storage, handling or use areas.

10
11 **[3704.3.2.3] 6004.3.2.3 Local exhaust for portable containers.** Local exhaust for outdoor
12 portable containers shall be provided in accordance with [FC3704.2.2.4] FC6004.2.2.4.

13
14 **[3704.3.2.4] 6004.3.2.4 Piping and controls—stationary containers.** Piping and controls
15 for outdoor stationary containers shall be in accordance with [FC3704.2.2.5] FC6004.2.2.5.

16
17 **[3704.3.2.5] 6004.3.2.5 Treatment systems.** The treatment system requirements set forth
18 in [FC3704.2.2.7] FC6004.2.2.7 shall apply to highly toxic or toxic gases located outdoors.

19
20 **[3704.3.2.6] 6004.3.2.6 Emergency power.** The requirements for emergency power set
21 forth in [FC3704.2.2.8] FC6004.2.2.8 shall apply to highly toxic or toxic gases located
22 outdoors.

23
24 **[3704.3.2.7] 6004.3.2.7 Gas detection system.** The gas detection system requirements set
25 forth in [FC3704.2.2.10] FC6004.2.2.10 shall apply to highly toxic or toxic gases located
26 outdoors.

27
28 **[3704.3.3] 6004.3.3 Outdoor storage weather protection for portable containers.** Weather
29 protection in accordance with [FC2704.13] FC5004.13 shall be provided for portable
30 containers located outdoors and not within gas cabinets or exhausted enclosures. The storage
31 area shall be protected throughout by a sprinkler system.

32
33 **Exception:** A sprinkler system is not required when:

- 34
35 1. all materials under the weather protection structure, including hazardous materials and
36 the containers in which they are stored, are noncombustible.
- 37
38 2. the weather protection structure is located not less than 30 feet (9144 mm) from
39 combustible materials or structures or is separated from such materials or structures using
40 a fire barrier complying with the requirements of [FC3704.3.2.1.1] FC6004.3.2.1.1.

41
42 **[3704.3.4] 6004.3.4 Outdoor use of portable containers.** Portable containers in outdoor use
43 shall be located in gas cabinets or exhausted enclosures.

44
45 **SECTION FC [3705] 6005**
46 **OZONE GAS GENERATORS**

1 **[3705.1] 6005.1 Scope.** This section shall govern the design, installation, operation and
2 maintenance of ozone gas generators with a maximum ozone-generating capacity of ½ pound (0.23
3 kg) or more over a 24-hour period.

4
5 **Exceptions:**

- 6
7 1. Ozone-generating equipment used in Group R-3 occupancies.
8
9 2. Ozone-generating equipment used in Group H-5 occupancies in compliance with FC
10 Chapters [18] 27 and [27] 50 and the provisions of FC Chapter [37] 60 governing highly
11 toxic gases.
12

13 **[3705.2] 6005.2 Design.** Ozone gas generators shall be designed, manufactured and tested in
14 accordance with NEMA 250.
15

16 **[3705.3] 6005.3 Location.** Ozone gas generators shall be located in approved cabinets or ozone
17 generator rooms in accordance with FC [3705.3.1] 6005.3.1 or [3705.3.2] 6005.3.2.
18

19 **[3705.3.1] 6005.3.1 Cabinets.** Ozone cabinets shall be constructed of approved materials and
20 compatible with ozone. Cabinets shall display an approved sign that reads: OZONE GAS
21 GENERATOR—HIGHLY TOXIC—OXIDIZER.
22

23 **[3705.3.1.1] 6005.3.1.1 Seismic design.** Cabinets shall be braced for seismic activity in
24 accordance with the Building Code.
25

26 **[3705.3.1.2] 6005.3.1.2 Ventilation.** Cabinets shall be mechanically ventilated in
27 accordance with the Mechanical Code.
28

29 **[3705.3.2] 6005.3.2 Ozone gas generator rooms.** Ozone gas-generator rooms shall be
30 mechanically ventilated in accordance with the Mechanical Code. Ozone gas generator rooms
31 shall be equipped with a continuous gas detection system which will shut off the generator and
32 sound a local audible and visible alarm when concentrations above the permissible exposure
33 limit occur.
34

35 **[3705.3.2.1] 6005.3.2.1 Signage.** Ozone gas-generator rooms shall not be normally
36 occupied, and such rooms shall be kept free of combustible and hazardous material storage.
37 An approved sign that reads, “OZONE GAS GENERATOR—HIGHLY TOXIC—
38 OXIDIZER,” shall be posted on or near each entrance door to an ozone gas-generator room.
39

40 **[3705.4] 6005.4 Piping, valves and fittings.** Piping, valves, fittings and related components used
41 to convey ozone shall be in accordance with FC [3705.4.1] 6005.4.1 through [3705.4.3] 6005.4.3.
42

43 **[3705.4.1] 6005.4.1 Piping.** Only welded stainless steel piping or tubing shall be used.
44

45 **Exceptions:**

- 46
47 1. Double-walled piping.

1
2 2. Piping, valves, fittings and related components located in exhausted enclosures.
3

4 **[3705.4.2] 6005.4.2 Materials.** Materials shall be compatible with ozone and shall be rated for
5 the design operating pressures.
6

7 **[3705.4.3] 6005.4.3 Signage or marking.** Piping shall be marked, or identified by a durable
8 sign posted on or near the piping that reads, as follows: “OZONE GAS—HIGHLY TOXIC—
9 OXIDIZER.”
10

11 **[3705.5] 6005.5 Automatic shutdown.** Ozone gas generators shall be designed to shut down
12 automatically under the following conditions:
13

- 14 1. When the dissolved ozone concentration in the water being treated is above saturation when
15 measured at the point where the water is exposed to the atmosphere.
16
- 17 2. When the process using generated ozone is shut down.
18
- 19 3. When the gas detection system detects ozone.
20
- 21 4. Failure of the ventilation system for the cabinet or ozone-generator room.
22
- 23 5. Failure of the gas-detection system.
24

25 **[3705.6] 6005.6 Manual shutdown.** Manual shutdown controls shall be provided at the ozone gas
26 generator and, when the generator is in a room, within 10 feet (3048 mm) of the main exit or exit
27 access door.
28

29
30 **CHAPTER 61**
31 **LIQUEFIED PETROLEUM GASES**
32

33 **SECTION FC [3801] 6101**
34 **GENERAL**
35

36 **[3801.1] 6101.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
37 LPG and the installation and operation of LPG equipment relating to such systems.
38

39 **Exceptions:**
40

- 41 1. Use of LPG or LPG mixtures as a refrigerant in a refrigerating system regulated by the
42 construction codes, including the Mechanical Code, and FC606.
43
- 44 2. Storage and use of LPG in connection with special effects.
45
- 46 3. Outdoor storage and use for private, noncommercial barbecues within the lot line of a
47 Group R-3 occupancy, as set forth in FC307.

1
2 **[3801.2] 6101.2 Permits.** Permits shall be required as set forth in FC105.6.
3

4 **[3801.2.1] 6101.2.1 Deliveries.** Distributors shall not deliver LPG containers to any location
5 in quantities requiring a permit unless a permit for such installation, storage or use has been
6 issued for that location.
7

8 **[3801.3] 6101.3 Design and installation documents.** Design and installation documents for LPG
9 storage facilities and stationary installations shall be submitted to and approved by the department
10 in accordance with FC105.4.
11

12 **[3801.4] 6101.4 General.** LPG shall be stored, handled and used, and devices, equipment and
13 systems utilizing LPG shall be designed, installed, operated and maintained, in accordance with
14 this chapter, the rules and NFPA 58.
15

16 **[3801.5] 6101.5 Supervision.** The storage, handling and use of LPG shall be supervised in
17 accordance with FC [3801.5.1] 6101.5.1 through [3801.5.8] 6101.5.9.
18

19 **[3801.5.1] 6101.5.1 Connecting and disconnecting of LPG containers.** The connecting and
20 disconnecting of LPG containers with a capacity greater than 16.4 ounces (0.465 kg) shall be
21 conducted by a person holding a certificate of fitness.
22

23 **[3801.5.2] 6101.5.2 Tar kettles.** The storage, handling and use of a tar kettle that requires a
24 permit shall be under the personal supervision of a person holding a certificate of fitness.
25

26 **[3801.5.3] 6101.5.3 Torch operations.** Torch operations using LPG containers with a capacity
27 greater than 16.4 ounces (0.465 kg) LPG shall be performed by a person holding a certificate
28 of fitness.
29

30 **[3801.5.4] 6101.5.4 Curing concrete, drying plaster and similar applications.** The use of
31 LPG for curing concrete, drying plaster and similar applications shall be under the personal
32 supervision of a person holding a certificate of fitness.
33

34 **[3801.5.5] 6101.5.5 Manhole operations.** The storage, handling and use of LPG at manhole
35 operations shall be under the personal supervision of a person holding a certificate of fitness.
36

37 **[3801.5.6] 6101.5.6 Street fairs and similar outdoor gatherings.** The storage, handling and
38 use of LPG at street fairs and similar outdoor gatherings shall be under the personal supervision
39 of a person holding a certificate of fitness.
40

41 **[3801.5.7] 6101.5.7 Hot air balloon tethering operation.** The storage, handling and use of
42 LPG for hot air balloon tethering operations shall be under the personal supervision of a person
43 holding a certificate of fitness and a United States Federal Aviation Administration license,
44 except as may otherwise be provided in the rules.
45

1 **[3801.5.8] 6101.5.8 Outdoor storage for sale.** Except for automated container exchange
2 systems subject to FC6109.15.1, outdoor storage of LPG for sale at mercantile establishments
3 shall be under the personal supervision of a person holding a certificate of fitness.
4

5 **6101.5.9 General supervision.** Except as otherwise provided in FC [3801.5.1] 6101.5.1
6 through [3801.5.7] 6101.5.8, the storage and use of LPG in quantities requiring a permit shall
7 be under the general supervision of a person holding a certificate of fitness.
8

9 **SECTION FC [3802] 6102**
10 **DEFINITIONS**

11
12 **[3802.1] 6102.1 [Definition]Definitions.** The following terms shall, for the purposes of this
13 chapter and as used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
14

15 **AUTOMATED CONTAINER EXCHANGE SYSTEM.**

16
17 **LIQUEFIED PETROLEUM GAS (LPG).** [A material which is composed predominantly of the
18 following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or
19 isobutane) and butylenes. Methylacetylene-propadiene mixtures (MAPP-gas) shall be deemed to
20 be an LPG.]
21

22 **SECTION FC [3803] 6103**
23 **INSTALLATION OF EQUIPMENT**

24
25 **[3803.1] 6103.1 General.** LPG equipment shall be installed in accordance with the construction
26 codes, including the Fuel Gas Code, the rules and NFPA 58, except as otherwise provided in this
27 chapter.
28

29 **[3803.2] 6103.2 Indoor storage, handling and use of LPG containers.** The storage, handling
30 and use of LPG containers indoors shall be in accordance with FC [3803.2.1] 6103.2.1 and
31 [3803.2.2] 6103.2.2.
32

33 **[3803.2.1] 6103.2.1 Portable containers.** Portable LPG containers, as defined in NFPA 58,
34 shall not be stored, handled or used indoors except as authorized by the commissioner, NFPA
35 58 and FC [3803.2.1.1] 6103.2.1.1 through [3803.2.1.8] 6103.2.1.8.
36

37 **[3803.2.1.1] 6103.2.1.1 Use in basement, pit or other area below grade.** LPG containers
38 shall not be used in a cellar, basement, pit or other area below grade where heavier-than-
39 air gas might collect. LPG containers shall not be used in an above-grade underfloor space
40 or basement unless such location is provided with an approved means of ventilation.
41

42 **Exceptions:**

- 43
44 1. Use with self-contained torch assemblies in accordance with [FC3803.2.1.6]
45 FC6103.2.1.6 and the rules.
46
47 2. Manhole operations in accordance with the rules.

1
2 **[3803.2.1.2] 6103.2.1.2 Construction site heating.** Portable containers may be used in
3 buildings, or parts thereof, undergoing construction, in accordance with NFPA 58, FC
4 313.5 and [1403] 3303, and the rules.

5
6 **[3803.2.1.3] 6103.2.1.3 Group F occupancies.** Portable LPG containers shall not be
7 stored, handled or used indoors in Group F occupancies, except as the commissioner may
8 authorize by rule.

9
10 **[3803.2.1.4] 6103.2.1.4 Group E and I occupancies.** Portable LPG containers shall not
11 be allowed in Group E and I occupancies, except as set forth in this section and the rules.
12 In Group E and I occupancies, portable LPG containers are allowed to be used for research
13 purposes. Such containers shall not be used in classrooms. Such containers shall not exceed
14 16.4 ounces (0.465 kg) of LPG. Where more than one such container is present in the same
15 room, each container shall be separated from other containers by a distance of not less than
16 20 feet (6096 mm).

17
18 **[3803.2.1.5] 6103.2.1.5 Group A occupancies.** Portable LPG containers may be brought
19 into a building on a temporary basis for use in conducting a demonstration, or in connection
20 with a trade show or other public exhibition. Such use, and incidental storage and handling,
21 shall be in accordance with the rules, and the containers shall be promptly removed from
22 the premises upon completion of the demonstration or exhibition. Where more than one
23 LPG container is in use in the same room, and are fueling different devices or equipment,
24 the containers shall be separated from each other by a distance of not less than 20 feet
25 (6096 mm).

26
27 **[3803.2.1.6] 6103.2.1.6 Use with self-contained torch assemblies.** Portable LPG
28 containers are allowed to be used to supply approved self-contained torch assemblies. Such
29 containers shall not exceed 16.4 ounces (0.465 kg) of LPG.

30
31 **[3803.2.1.7] 6103.2.1.7 Use for food preparation.** Use of LPG for commercial cooking is
32 allowed only when authorized by this code or the rules.

33
34 **[3803.2.1.8] 6103.2.1.8 Residential storage.** LPG container storage in Group R-2 and R-
35 3 occupancies shall not exceed four containers per dwelling unit, each container having a
36 capacity not exceeding 16.4 ounces (0.465 kg) of LPG. Storage of such LPG containers in
37 a basement, cellar or other area below grade is prohibited.

38
39 **[3803.2.2] 6103.2.2 Industrial vehicles.** Containers on industrial vehicles shall comply with
40 the requirements of FC309, NFPA 58, and the rules.

41
42 **[3803.3] 6103.3 Location of equipment and piping.** Equipment and piping shall not be installed
43 in locations where such equipment and piping is prohibited by the construction codes, including
44 the Fuel Gas Code, or the rules.

45
46 **SECTION FC [3804] 6104**

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RESERVED

**SECTION FC [3805] 6105
PROHIBITED STORAGE, HANDLING AND USE OF LPG**

[3805.1] 6105.1 Unapproved equipment. LPG shall not be used for the purpose of operating any device, equipment or system unless such device, equipment or system is approved for use with LPG.

[3805.2] 6105.2 Release to the atmosphere. LPG shall not be released to the atmosphere except as authorized by the commissioner.

[3805.3] 6105.3 General prohibitions. It shall be unlawful to:

1. store, handle or use LPG in any container with a capacity greater than 100 pounds (45.4 kg) of LPG.
2. store, handle or use LPG in a basement, cellar or other area below grade, except as authorized by the commissioner.
3. store LPG in any outdoor or indoor storage facility, or store, handle or use LPG for a stationary LPG installation that has not been approved.
4. store, handle or use LPG without a permit when such storage, handling or use exceeds the quantities set forth in FC105.6.
5. store, handle or use in, or bring or allow into, any residential occupancy, or on any lot containing a building used for a residential occupancy, any LPG container with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
6. store, handle or use in, or bring or allow into, any nonresidential building, any LPG container with a capacity greater than 16.4 ounces (0.465 kg) LPG, except as authorized by the commissioner.
7. store LPG containers on the roof of any building.
8. handle or use on the roof of any building LPG containers with a capacity greater than 16.4 ounces (0.465 kg), except as authorized by the commissioner.
9. store, handle or use LPG in or on motor vehicles, except as temporary storage incidental to transportation, or as a fuel for generating motive power for a motor vehicle, or as otherwise authorized by the commissioner.
10. store, handle or use LPG for a stationary LPG installation in any area where access to piped natural gas from a public utility is available, except as authorized by the commissioner.

- 1 11. store, handle or use LPG in any equipment used or previously used for natural gas, except
2 as may be authorized by the commissioner on an emergency basis.
3
- 4 12. store, handle or use LPG for space heating or water heating, except as authorized by the
5 commissioner.
6
- 7 13. store, handle or use LPG in or for any appliance that withdraws or utilizes LPG in a liquid
8 form except as authorized by the commissioner.
9
- 10 14. use nonmetallic pipe, tubing and components for any installation, appliance or equipment
11 using LPG, except as authorized by the commissioner.
12
- 13 15. store LPG containers with a capacity greater than 16.4 ounces (0.465 kg) LPG indoors in
14 any residential occupancy and in any building where an outdoor location for such LPG
15 container storage is available.
16
- 17 16. store or operate a floor maintenance machine utilizing LPG indoors.
18
- 19 17. manufacture LPG.
20
- 21 18. dispense LPG and fill LPG containers as set forth in [FC3806] FC6106.
22

23 **SECTION FC [3806] 6106**
24 **DISPENSING AND FILLING**

26 **[3806.1] 6106.1 Dispensing and filling.** It shall be unlawful to dispense LPG, fill a container with
27 LPG, or transfer LPG in any state from one container to another.
28

29 **SECTION FC [3807] 6107**
30 **SAFETY PRECAUTIONS AND DEVICES**

31
32 **[3807.1] 6107.1 Safety devices.** Safety devices on LPG containers, equipment and systems shall
33 not be tampered with or otherwise rendered inoperable and the service unsafe.
34

35 **[3807.2] 6107.2 Smoking and other sources of ignition.** “No Smoking” signs complying with
36 the requirements of FC310 shall be posted when required by the commissioner. Smoking is
37 prohibited in accordance with FC Chapter 3. Control of other sources of ignition shall comply with
38 the requirements of FC Chapter 3 and NFPA 58.
39

40 **[3807.3] 6107.3 Clearance to combustibles.** LPG containers shall be kept a minimum of 10 feet
41 (3048 mm) from vegetation, rubbish and other combustible waste and combustible materials.
42

43 **[3807.4] 6107.4 Protecting containers from vehicles.** Where exposed to vehicular damage due
44 to proximity to alleys, driveways or parking areas or when required by the commissioner, LPG
45 containers, regulators and piping shall be protected in accordance with FC312.
46

47 **SECTION FC [3808] 6108**

1 **PORTABLE FIRE EXTINGUISHERS**

2
3 [3808.1] **6108.1** Reserved.

4
5 [3808.2] **6108.2** **Portable fire extinguishers.** Portable fire extinguishers complying with the
6 requirements of FC906 shall be provided as specified in NFPA 58 and the rules.

7
8 **SECTION FC [3809] 6109**
9 **STORAGE OF PORTABLE LPG CONTAINERS**

10
11 [3809.1] **6109.1** **General.** Storage of portable LPG containers shall comply with the requirements
12 of FC [3809.2] **6109.2** through [3809.14] **6109.14**, and shall be approved by the commissioner.

13
14 **Exceptions:**

- 15
16 1. Containers that have not previously contained LPG.
17
18 2. Containers stored for use at construction sites.

19
20 [3809.2] **6109.2** **Exposure hazards.** Containers in storage shall be stored in locations that
21 minimize exposure to physical damage, tampering or excessive temperature rise.

22
23 [3809.3] **6109.3** **Position.** Containers in storage having individual capacity greater than 1 pound
24 (0.454 kg) of LPG shall be positioned with the pressure relief valve in direct communication with
25 the vapor space of the container.

26
27 [3809.4] **6109.4** **Separation from means of egress.** Containers shall not be stored or left
28 unattended near exit access doors, exits, stairways, exit discharge areas, or other areas designed or
29 used as a means of egress.

30
31 [3809.5] **6109.5** **Quantity.** Empty containers that have been in LPG service shall be considered as
32 full containers for the purpose of determining the maximum quantities of LPG allowed in FC
33 [3809.9] **6109.9** and [3809.11] **6109.11**.

34
35 [3809.6] **6109.6** **Storage on roofs.** Containers shall not be stored, or connected for use in a
36 stationary LPG installation, on the roof of any building or structure.

37
38 [3809.7] **6109.7** **Storage in basement, pit or other area below grade.** LPG containers shall not
39 be stored in a cellar, basement, pit or other area below grade.

40
41 [3809.8] **6109.8** **Protection of valves on containers in storage.** Container valves shall be
42 protected by screw-on-type caps or collars which shall be securely in place on all containers stored
43 regardless of whether they are full, partially full or empty. Container outlet valves shall be closed.

44
45 [3809.9] **6109.9** **Storage within buildings accessible to the public.** LPG containers constructed
46 in accordance with the United States Department of Transportation (DOTn) specifications with a
47 maximum capacity of 16.4 ounces (0.465 kg) of LPG used in completely self-contained hand

1 torches and similar devices are allowed to be stored for sale or displayed in a building accessible
 2 to the public. Buildings shall be protected by a sprinkler system in storage and display areas when
 3 quantities exceed permit amounts. The quantity of LPG shall not exceed 200 pounds (91 kg).

4
 5 **[3809.10] 6109.10 Storage within buildings not accessible to the public.** The quantity of LPG
 6 containers allowed in one storage location in a building not accessible to the public, such as an
 7 industrial building, shall not exceed a maximum capacity of 300 pounds (136 kg) of LPG. Where
 8 LPG containers are stored in more than one location on the same floor of a building, the storage
 9 areas shall be separated by a minimum of 300 feet (91 440 mm).

10
 11 **Exception:** Storage of LPG at construction sites shall be in accordance with the rules.

12
 13 **[3809.11.] 6109.11** Reserved.

14
 15 **[3809.12] 6109.12 Location of outdoor storage.** Outdoor storage, including storage of containers
 16 for sale and containers connected for use, shall be located not less than 20 feet (6096 mm) from
 17 building openings, 20 feet (6096 mm) from any motor vehicle fuel dispenser and 10 feet (3048
 18 mm) from any combustible material and, as applicable, in accordance with FC Table [3809.12]
 19 **6109.12.** Outdoor storage of LPG shall be limited to not more than 400 pounds (181.6 kg) of LPG
 20 and shall be located at or above grade level.

21
 22 **Exception:** Storage of LPG at construction sites shall be in accordance with the rules.

23
 24 **[3809.12.1] 6109.12.1 Proximity to hazards.** Storage shall not be located where the stored
 25 LPG would be exposed to the following hazards in the event of the failure of their structure or
 26 containment systems:

- 27
 28 1. Electric power lines.
 29
 30 2. Piping containing flammable or combustible liquids.
 31
 32 3. Piping containing flammable gases.
 33
 34 4. Piping containing oxidizing materials.

35
 36
 37 **FC TABLE [3809.12] 6109.12**
DISTANCES FROM OUTDOOR LPG STORAGE AREA TO EXPOSURES

TYPE OF OUTDOOR EXPOSURE	LPG STORAGE AREA MORE THAN 100 POUNDS LPG UP TO MAXIMUM 400 POUNDS LPG MINIMUM DISTANCE TO EXPOSURE (FEET)
Building or structure of combustible construction	10
Subway entrance, exit or other opening	25
Flammable and combustible liquids Aboveground – 1,000 gallons or less	10 ^a
Flammable and combustible liquids Aboveground – in excess of 1,000 gallons	20 ^a
Flammable and combustible liquids Below ground tank – 1,000 gallons or less	10 ^a
Flammable and combustible liquids Below ground tank – 1,000 gallons or less Vent or fill opening of tank	15 ^a

Flammable and combustible liquids Below ground tank – in excess of 1,000 gallons	15 ^a
Flammable and combustible liquids Below ground tank – in excess of 1,000 gallons Vent or fill opening of tank	15 ^a
Flammable gas storage area, 1,500 SCF or less	10 ^a
Flammable gas storage area, More than 1,500 SCF up to maximum 3,500 SCF	20 ^a
Oxygen storage – 20,000 SCF or less	In accordance with NFPA 51 ^a
Oxygen storage – in excess of 20,000 SCF	In accordance with NFPA 55 ^a
Fast-burning solids, such as ordinary lumber, excelsior or paper	10 ^a
Slow-burning solids, such as heavy timber or coal	10 ^a
Air compressor intakes or inlets to heating, ventilating or air-conditioning equipment	5
Group A occupancies and public gathering places	25
Public sidewalks and parked motor vehicles	10
Public streets, private roads and lot lines	10 ^a

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³, 1 gallon = 3.785 L.

a. The minimum required distances may be reduced to 5 feet when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

[3809.13] 6109.13 Protection of containers. Containers shall be stored within a suitable enclosure or otherwise protected against tampering. Vehicular protection shall be provided as required by the commissioner.

[3809.14] 6109.14 Electrical equipment. Except as otherwise provided in NFPA 58, electrical equipment within 3 feet (914 mm) in any direction of an outdoor LPG facility shall comply with the Class I, Division 2 wiring requirements of the Electrical Code for hazardous locations, unless electrical equipment is separated from such area by a wall or other solid partition having no openings.

6109.15 LPG container storage for sale. Outdoor storage of LPG for sale at mercantile establishments, including LPG container exchange stations, in areas accessible to the public, shall comply with the following requirements:

1. Each storage facility shall store no more than 400 pounds (181.6 kg) of propane, with individual container capacity of no more than 20 pounds (9.1 kg).
2. Containers shall be secured in a locked, fenced enclosure, ventilated listed cabinet or other approved location in accordance with the rules, or an automated container exchange system pursuant to FC6109.15.1.
3. Containers shall be accessible only by certificate of fitness holders or by use of an automated exchange system in accordance with FC6109.15.1.
4. A sign shall be posted at or near each entrance to the mercantile establishment stating “DO NOT BRING LPG CONTAINERS INTO THE BUILDING” or similar approved wording.

1 5. A durable sign shall be conspicuously posted at or near the cylinder storage enclosure or
2 cabinet identifying the vendor/supplier of the LPG containers and providing emergency
3 contact information for the vendor/supplier.
4

5 **6109.15.1 Automated container exchange systems.** An automated container exchange
6 system shall comply with the following additional requirements:
7

8 1. The system shall operate only during regular business hours under the general
9 supervision of authorized personnel holding a certificate of fitness.
10

11 2. The system shall be designed and located with a full, unobstructed view of the system
12 from within the mercantile establishment, either directly or with the use of mirrors or an
13 approved closed-circuit television installation. The owner of the mercantile
14 establishment shall take reasonable steps to ensure that system is monitored to prevent
15 tampering or misuse.
16

17 3. The system shall only allow access to a single container per transaction.
18

19 4. The systems shall be designed such that containers can be placed inside only when they
20 are oriented in the upright position.
21

22 5. The system's electrical components and all other electrical equipment within 3 feet
23 (914 mm) of the system shall comply with the requirements for Class I, Division 2
24 equipment set forth in the Electrical Code.
25

26 6. The system shall be equipped with a manual override control that enables authorized
27 personnel to access the stored containers and/or disable the system from automated
28 container exchange. The system shall not be capable of returning to automated operation
29 after a manual override until the system has been inspected and reset by a trained and
30 knowledgeable person employed by the company supplying and servicing the system.
31

32 7. The system shall be inspected by a trained and knowledgeable person on a regular basis,
33 but at least once a day, to confirm that there is no odor or other evidence of a gas leak,
34 all compartments are closed and locked, and the system appears to be in good working
35 order. If the system is not in good working order, the certificate of fitness holder and the
36 company supplying and servicing the system shall be immediately notified and prompt
37 corrective action shall be taken. Gas leaks shall be reported to the department by calling
38 911.
39

40
41 **CHAPTER 62**
42 **ORGANIC PEROXIDES**
43
44 **SECTION FC [3901] 6201**
45 **GENERAL**
46

1 [3901.1] **6201.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
2 organic peroxides.

3
4 [3901.2] **6201.2 Permits.** Permits shall be required for organic peroxides as set forth in FC105.6.

5
6 [3901.3] **6201.3 General.** Organic peroxides shall be manufactured, stored, handled and used in
7 accordance with this chapter and FC Chapter [27] 50.

8
9 [3901.4] **6201.4 Prohibited manufacture, storage, handling and use.** It shall be unlawful to
10 manufacture, store, handle and/or use unclassified detonable organic peroxides except as
11 specifically authorized by FC Chapter [33] 56.

12
13 [3901.5] **6201.5 Supervision.** The handling and use of organic peroxides in quantities requiring a
14 permit shall be under the personal supervision of a certificate of fitness holder. The storage of
15 organic peroxides in quantities requiring a permit shall be under the general supervision of a
16 certificate of fitness holder.

17
18 **SECTION FC [3902] 6202**
19 **DEFINITIONS**
20

21 [3902.1] **6202.1 Definition.** The following term shall, for the purposes of this chapter and as used
22 elsewhere in this code, have the meanings [shown herein] set forth in FC202.

23
24 **ORGANIC PEROXIDE.** [An organic compound having a double oxygen or peroxy (-O-O-) in
25 its chemical structure. Organic peroxides can present an explosion hazard (detonation or
26 deflagration), can be shock sensitive, can be susceptible to decomposition into various unstable
27 compounds over an extended period of time and are classified as follows based upon their
28 hazardous properties:

29
30 **Class I.** Organic peroxides that are capable of deflagration but not detonation.

31
32 **Class II.** Organic peroxides that burn very rapidly and that pose a moderate reactivity hazard.

33
34 **Class III.** Organic peroxides that burn rapidly and that pose a moderate reactivity hazard.

35
36 **Class IV.** Organic peroxides that burn in the same manner as ordinary combustibles and that
37 pose a minimal reactivity hazard.

38
39 **Class V.** Organic peroxides that burn with less intensity than ordinary combustibles or do not
40 sustain combustion and that pose no reactivity hazard.

41
42 **Unclassified detonable.** Organic peroxides that are capable of detonation and pose an
43 extremely high-explosion hazard through rapid explosive decomposition.]

44
45 **SECTION FC [3903] 6203**
46 **GENERAL REQUIREMENTS**
47

1 **[3903.1] 6203.1 Quantities not exceeding the maximum allowable quantity per control area.**
2 The storage, handling and use of organic peroxides in amounts not exceeding the maximum
3 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with
4 FC [2701] 5001, [2703] 5003, [3901] 6201, [3903] 6203 and [3906] 6206.

5
6 **[3903.1.1] 6203.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be
7 unlawful to store, handle or use Class I organic peroxides:

- 8
9 1. in Group A, E, I, R or U occupancies.
10
11 2. in offices in Group B, F, M or S occupancies, and any areas of such occupancies that are
12 accessible to the public.

13
14 **[3903.2] 6203.2 Quantities exceeding the maximum allowable quantity per control area.** The
15 storage, handling and use of organic peroxides in amounts exceeding the maximum allowable
16 quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with FC
17 Chapter [27] 50 and this chapter.

18
19 **[3903.3] 6203.3 Multiple hazard sign.** Where more than one class of organic peroxide
20 formulations is stored in immediate proximity to one another, such area shall be provided with
21 hazard identification signs pursuant to FC Chapter [27] 50 for the most severe class present.

22
23 **[3903.4] 6203.4 Multiple class storage.** Except as otherwise specifically provided in this code,
24 where more than one class of organic peroxide is stored in the same control area, the maximum
25 quantity allowed of each organic peroxide shall be limited as follows: the maximum quantity shall
26 be reduced by multiplying the maximum allowable quantity for each such material by the
27 proportional amount that such material bears to the total quantity of organic peroxide stored in the
28 control area. The total of the proportional amounts shall not exceed 100 percent.

29
30 **[3903.5] 6203.5 Temperature-sensitive material.** Where the required storage temperature range,
31 as specified by the manufacturer, extends beyond normal ambient temperatures, high or low
32 temperature limit switches, as applicable, shall be provided in addition to normal temperature
33 controls. These limit switches shall actuate an alarm in a supervised area to ensure reporting to the
34 fire department.

35
36 **SECTION FC [3904] 6204**
37 **STORAGE**
38

39 **[3904.1] 6204.1 Indoor storage.** Indoor storage of organic peroxides in amounts exceeding the
40 maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1)
41 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter.

42
43 **[3904.1.1] 6204.1.1 Detached storage.** Storage of organic peroxides shall be in a detached
44 building when required by [FC2703.8.2] FC5003.8.2.

1 **[3904.1.2] 6204.1.2 Distance from detached storage buildings to exposures.** In addition to
 2 the requirements of the Building Code, detached storage buildings shall be located in
 3 accordance with FC Table [3904.1.2] 6204.1.2.

4
 5 **FC TABLE [3904.1.2] 6204.1.2**
 6 **ORGANIC PEROXIDES—DISTANCE FROM DETACHED STORAGE BUILDINGS OR OUTDOOR STORAGE AREAS TO**
 7 **EXPOSURES**

ORGANIC PEROXIDE CLASS	MAXIMUM STORAGE QUANTITY (POUNDS) AT MINIMUM SEPARATION DISTANCE					
	Distance to buildings, lot lines, public streets, private roads or means of egress			Distance between individual detached storage buildings or individual outdoor storage areas		
	50 feet	100 feet	150 feet	20 feet	75 feet	100 feet
I	2,000	20,000	175,000	2,000	20,000	175,000
II	100,000	200,000	No Limit	100,000 ^a	No Limit	No Limit
III	200,000	No Limit	No Limit	200,000 ^a	No Limit	No Limit
IV	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
V	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit

8 For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

9 a. When the amount of organic peroxide stored exceeds this amount, the minimum separation shall be 50 feet.

10
 11 **[3904.1.3] 6204.1.3 Liquid-tight floor.** In addition to the requirements of [FC2704.12]
 12 FC5004.12, floors of storage areas shall be of liquid-tight construction.

13
 14 **[3904.1.4] 6204.1.4 Electrical wiring and equipment.** In addition to the requirements of
 15 [FC2703.9.4] FC5003.9.4, electrical wiring and equipment in storage areas for Class I or II
 16 organic peroxides shall comply with the requirements of the Electrical Code for electrical Class
 17 I, Division 2 locations.

18
 19 **[3904.1.5] 6204.1.5 Smoke detection.** An approved supervised smoke detection system in
 20 accordance with the construction codes, including the Building Code, shall be provided in
 21 rooms or areas where Class I, II or III organic peroxides are stored. Activation of the smoke
 22 detection system shall sound a local alarm.

23
 24 **Exception:** A smoke detection system shall not be required in detached storage buildings
 25 equipped throughout with a fire extinguishing system.

26
 27 **[3904.1.6] 6204.1.6 Maximum quantities.** Maximum allowable quantities per building in a
 28 mixed occupancy building shall not exceed the amounts set forth in FC Table [2703.8.2]
 29 5003.8.2. Maximum allowable quantities per building in a detached storage building shall not
 30 exceed the amounts specified in FC Table [3904.1.2] 6204.1.2.

31
 32 **[3904.1.7] 6204.1.7 Storage arrangement.** Storage arrangements for organic peroxides shall
 33 be in accordance with FC Table [3904.2.4] 6204.2.4 and shall comply with the following
 34 requirements:

- 35
 36 1. Containers and packages in storage areas shall be closed.
 37
 38 2. Bulk storage shall not be in piles or bins.
 39
 40 3. A minimum 2-foot (610 mm) clear space shall be maintained between storage and
 41 uninsulated metal walls.
 42

1 4. Fifty-five-gallon (208 L) drums shall not be stored more than one drum high.
2

3 **[3904.1.8] 6204.1.8 Location in building.** Class I or II organic peroxides shall be stored on
4 the ground floor. Class III organic peroxides shall not be stored in basements or other areas
5 below grade.
6

7 **[3904.1.9] 6204.1.9 Contamination.** Organic peroxides shall be stored in their original DOTn
8 shipping containers. Organic peroxides shall be stored in a manner to prevent contamination.
9

10 **[3904.1.10] 6204.1.10 Explosion control.** Indoor storage rooms, areas and buildings
11 containing Class I organic peroxides shall be provided with explosion control in accordance
12 with FC911 and the construction codes, including the Building Code.
13

14 **[3904.1.11] 6204.1.11 Emergency power.** Emergency power in accordance with the
15 construction codes, including the Building Code and Electrical Code, shall be provided for
16 storage areas of Class I organic peroxides.
17

18 **[3904.1.12] 6204.1.12 Smoke and heat venting.** Storage areas for Class I organic peroxides
19 shall be provided with smoke and heat venting in accordance with FC910 and the construction
20 codes, including the Building Code.
21

22 **[3904.2] 6204.2 Outdoor storage.** Outdoor storage of organic peroxides in amounts exceeding
23 the maximum allowable quantities per control area indicated in FC Table [2703.1.1(3)]
24 5003.1.1(3) shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this
25 chapter.
26

27 **[3904.2.1] 6204.2.1 Distance from storage to exposures.** Outdoor storage areas for organic
28 peroxides shall be located in accordance with FC Table [3904.1.2] 6204.1.2.
29

30 **[3904.2.2] 6204.2.2 Electrical wiring and equipment.** In addition to the requirements of
31 [FC2703.9.4] FC5003.9.4, electrical wiring and equipment in outdoor storage areas containing
32 Class I or II organic peroxides shall comply with the requirements of the Electrical Code for
33 electrical Class I, Division 2 locations.
34

35 **[3904.2.3] 6204.2.3 Maximum quantities.** Maximum allowable quantities of organic
36 peroxides in outdoor storage shall be in accordance with FC Table [3904.1.2] 6204.1.2.
37

38 **[3904.2.4] 6204.2.4 Storage arrangement.** Storage arrangements shall be in accordance with
39 FC Table [3904.2.4] 6204.2.4.
40

41 **[3904.2.5] 6204.2.5 Separation.** In addition to the requirements of [FC2703.9.8] 5003.9.8,
42 outdoor storage areas for organic peroxides in amounts exceeding those specified in FC Table
43 [2703.8.2] 5003.8.2 shall be located a minimum distance of 50 feet (15 240 mm) from other
44 hazardous material storage.
45

46 **FC TABLE [3904.2.4] 6204.2.4**
47 **STORAGE REQUIREMENTS FOR ORGANIC PEROXIDES**

ORGANIC PEROXIDE	PILE CONFIGURATION	MAXIMUM
------------------	--------------------	---------

CLASS	Maximum width (feet)	Maximum height (feet)	Minimum distance to next pile (feet)	Minimum distance to walls (feet)	QUANTITY PER BUILDING
I	6	8	4 ^a	4 ^b	Note c
II	10	8	4 ^a	4 ^b	Note c
III	10	8	4 ^a	4 ^b	Note c
IV	16	10	3 ^{a,d}	4 ^b	No Requirement
V	No Requirement	No Requirement	No Requirement	No Requirement	No Requirement

For SI: 1 foot = 304.8 mm.

a. At least one main aisle with a minimum width of 8 feet shall divide the storage area.

b. Distance to noncombustible walls is allowed to be reduced to 2 feet.

c. For detached storage buildings or outdoor storage areas, see FC Table [3904.1.2] 6204.1.2 for maximum quantities. For indoor storage, see FC Table [2703.8.2] 5003.8.2 for maximum quantities.

d. The distance shall not be less than one-half the pile height.

SECTION FC [3905] 6205 HANDLING AND USE

[3905.1] 6205.1 General. Organic peroxides in amounts exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or [2703.1.1(3)] 5003.1.1(3) shall be handled and used in accordance with FC [2701] 5001, [2703] 5003, [2705] 5005 and this chapter.

SECTION FC [3906] 6206 MANUFACTURING RESTRICTIONS

[3906.1] 6206.1 Organic peroxides classified as a Class IV material. Organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

[3906.1.1] 6206.1.1 Manufacture of organic peroxides classified as a Class IV material. It shall be unlawful to manufacture organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

[3906.1.2] 6206.1.2 Storage of organic peroxides classified as a Class IV material. It shall be unlawful to store organic peroxides classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.

CHAPTER 63 OXIDIZERS, OXIDIZING GASES AND OXIDIZING CRYOGENIC FLUIDS

SECTION FC [4001] 6301 GENERAL

[4001.1] 6301.1 Scope. This chapter shall govern the manufacture, storage, handling and use of solid and liquid oxidizers, oxidizing gases and oxidizing cryogenic fluids.

Exceptions:

1
2 1. Display and storage in Group M and storage in Group S occupancies in accordance with
3 [FC2703.11] FC5003.11.

4
5 2. Storage, handling and use of liquid oxygen in a residential or residential health care
6 setting in a Group I-1, I-4 or R occupancy in accordance with [FC4006] FC6306.

7
8 **[4001.2] 6301.2 Permits**. Permits shall be required as set forth in FC105.6.

9
10 **[4001.3] 6301.3 General**. Oxidizers shall be manufactured, stored, handled and used in accordance
11 with this chapter and FC Chapter [27] 50.

12
13 **[4001.3.1] 6301.3.1 Oxidizing gases**. Oxidizing gases shall additionally comply with the
14 requirements of FC Chapter [30] 53.

15
16 **[4001.3.2] 6301.3.2 Ammonium nitrate**. Oxidizers containing ammonium nitrate shall
17 additionally comply with the requirements of NFPA [490] 400.

18
19 **[4001.3.3] 6301.3.3 Bulk oxygen systems**. Bulk oxygen systems at industrial and institutional
20 consumer sites shall additionally comply with the requirements of NFPA 55.

21
22 **[4001.3.4] 6301.3.4 Bulk nitrous oxide systems**. Bulk nitrous oxide systems at industrial and
23 institutional consumer sites shall additionally comply with the requirements of CGA G-8.1.

24
25 **[4001.3.5] 6301.3.5 Oxidizing cryogenic fluids**. Oxidizing cryogenic fluids shall additionally
26 comply with the requirements of FC Chapter [32] 55.

27
28 **[4001.4] 6301.4 Supervision**. The handling and use of oxidizers in quantities requiring a permit
29 shall be under the personal supervision of a certificate of fitness holder. The storage of oxidizers
30 in quantities requiring a permit shall be under the general supervision of a certificate of fitness
31 holder.

32
33 **SECTION FC [4002] 6302**
34 **DEFINITIONS**

35
36 **[4002.1] 6302.1 Definitions**. The following terms shall, for the purposes of this chapter and as
37 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.

38
39 **BULK NITROUS OXIDE SYSTEM**. [A system comprised of stationary or portable nitrous
40 oxide storage containers, pressure regulators, safety devices, vaporizers, manifolds,
41 interconnecting piping and/or other devices or equipment, up to the point where nitrous oxide at
42 service pressure first enters the supply line, that has a storage capacity of more than 28,000 SCF
43 (793 m³) of nitrous oxide in liquid or gaseous state, including unconnected reserves in or at the
44 same building, structure or premises.]

45
46 **BULK OXYGEN SYSTEM**. [A system comprised of stationary or portable oxygen storage
47 containers, pressure regulators, safety devices, vaporizers, manifolds, interconnecting piping

1 and/or other devices or equipment, up to the point where oxygen at service pressure first enters the
2 supply line, that has a storage capacity of more than 20,000 SCF (566 m³) of oxygen in liquid or
3 gaseous state, including unconnected reserves in or at the same building, structure or premises.]
4

5 **LIQUID OXYGEN AMBULATORY CONTAINER.** [A liquid oxygen container with a
6 capacity not exceeding 0.396 gallons (1.5 liters) that constitutes a medical device, as that term is
7 defined in Chapter 9 of Title 21 of the United States Code § 321, that is designed to be filled from
8 a liquid oxygen home care container, and that is designed for portable use to supply oxygen for
9 medical purposes, and that is used for such purpose.]
10

11 **LIQUID OXYGEN HOME CARE CONTAINER.** [A liquid oxygen container with a capacity
12 not exceeding 15.8 gallons (60 liters) that constitutes a medical device, as that term is defined
13 in Chapter 9 of Title 21 of the United States Code § 321, and that is designed and used for medical
14 purposes in a residential or resident health care setting in a Group I-1, I-4 or R occupancy.]
15

16 **OXIDIZER.** [A material that readily yields oxygen or other oxidizing gas, or that readily reacts
17 to promote or initiate combustion of combustible materials and, if heated or contaminated, can
18 result in vigorous self-sustained decomposition, classified as follows:]
19

20 **Class 1.** [An oxidizer that causes a readily measurable increase in the burning rate of
21 combustible materials with which it comes in contact, but less than a moderate increase.]
22

23 **Class 2.** [An oxidizer that causes a moderate increase in the burning rate of combustible
24 materials with which it comes in contact.]
25

26 **Class 3.** [An oxidizer that causes a severe increase in the burning rate of combustible materials
27 with which it comes in contact.]
28

29 **Class 4.** [An oxidizer that can undergo an explosive reaction due to contamination or exposure
30 to thermal or physical shock and causes a severe increase in the burning rate of combustible
31 materials with which it comes in contact.]
32

33 **OXIDIZING CRYOGENIC FLUID.** [An oxidizing gas in the cryogenic state.]
34

35 **OXIDIZING GAS.** [A gas that can support and accelerate combustion of other materials more
36 than air does.]
37

38 **SECTION FC [4003] 6303** 39 **GENERAL REQUIREMENTS** 40

41 **[4003.1] 6303.1 Quantities not exceeding the maximum allowable quantity per control area.**
42 The storage, handling and use of oxidizers in amounts not exceeding the maximum allowable
43 quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with FC [2701]
44 5001, [2703] 5003, [4001] 6301, [4003] 6303, and [4007] 6307 and with FC Chapters [30] 53 and
45 [32] 55, as applicable.
46

1 **[4003.1.1] 6303.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be
2 unlawful to store, handle or use:

- 3
- 4 1. Class 4 oxidizers in Group A, E, I, R or U occupancies.
- 5
- 6 2. Class 4 liquid and solid oxidizers in offices in Group B, F, M or S occupancies, and any
7 areas of such occupancies that are accessible to the public.
- 8
- 9 3. Oxidizing gases in portable containers exceeding an individual capacity of 250 SCF
10 (7 m³) for maintenance purposes, patient care or operation of equipment in Group A and
11 E occupancies; Group B occupancy offices; and Group I and R occupancies, except as
12 authorized by [FC4006] 6306.
- 13

14 **[4003.1.2] 6303.1.2 Emergency shutoff.** Oxidizing gas piping systems shall be provided with
15 approved manual or automatic emergency shutoff valves that can be activated at each point of
16 use and each source.

17

18 **[4003.1.2.1] 6303.1.2.1 Shutoff at source.** A manual or automatic fail-safe emergency
19 shutoff valve shall be installed on supply piping at the container or other source of supply.
20 Manual or automatic valves on the containers supplying the oxidizing gas may serve as the
21 emergency shutoff valve when the containers are the sole source of supply and are not
22 manifolded.

23

24 **[4003.1.2.2] 6303.1.2.2 Shutoff at point of use.** A manual or automatic emergency shutoff
25 valve shall be installed on the supply piping at the point of use or at a point where the
26 equipment using the gas is connected to the supply system.

27

28 **[4003.1.3] 6303.1.3 Ignition source control.** Ignition sources in areas containing oxidizing
29 gases shall be controlled in accordance with [FC2703.7] FC5003.7.

30

31 **[4003.2] 6303.2 Quantities exceeding the maximum allowable quantity per control area.** The
32 storage, handling and use of oxidizers in amounts exceeding the maximum allowable quantity per
33 control area indicated in [FC2703.1] FC5003.1 shall be in accordance with FC Chapter [27] 50
34 and this chapter.

35

36 **[4003.3] 6303.3 Multiple hazard sign.** Where more than one class of oxidizer is stored in
37 immediate proximity to one another, such area shall be provided with hazard identification signs
38 pursuant to FC Chapter [27] 50 for the most severe class present.

39

40 **[4003.4] 6303.4 Multiple class storage.** Except as otherwise specifically provided in this code,
41 where more than one class of oxidizer is stored in the same control area, the maximum quantity
42 allowed of each oxidizer shall be limited as follows: the maximum quantity shall be reduced by
43 multiplying the maximum allowable quantity for each such material by the proportional amount
44 that such material bears to the total quantity of oxidizer stored in the control area. The total of the
45 proportional amounts shall not exceed 100 percent.

1 **[4003.5] 6303.5 Filling of portable containers.** Portable containers of oxidizing gases shall be
2 filled at a compressed gas dispensing facility, except that:

3
4 1. liquid oxygen home care containers alternatively may be filled outdoors from a cargo tank
5 designed to supply such containers. When a liquid oxygen home care container is filled from
6 a cargo tank on an asphalt or combustible surface, a drip pan compatible with liquid oxygen
7 shall be provided under home care container fill and vent connections during the filling
8 process to minimize the risk of ignition of the combustible surface; and

9
10 2. liquid oxygen ambulatory containers alternatively may be filled in the residence or
11 residential health care setting from the liquid oxygen home care container designed for such
12 purpose, in accordance with the manufacturer's instructions.

13
14 **[4003.5.1] 6303.5.1 Smoking prohibited.** Smoking shall be prohibited in rooms or areas
15 where liquid oxygen containers are filled.

16
17 **SECTION FC [4004] 6304**
18 **STORAGE**

19
20 **[4004.1] 6304.1 Indoor storage.** Indoor storage of oxidizers in amounts exceeding the maximum
21 allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) shall be in
22 accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter.

23
24 **[4004.1.1] 6304.1.1 Detached storage.** Storage of liquid and solid oxidizers shall be in a
25 detached building when required by [FC2703.8.2] FC5003.8.2.

26
27 **[4004.1.2] 6304.1.2 Distance from detached storage buildings to exposures.** In addition to
28 the requirements of the construction codes, including the Building Code, detached storage
29 buildings shall be located in accordance with FC Table [4004.1.2] 6304.1.2.

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**FC TABLE [4004.1.2] 6304.1.2
OXIDIZER (LIQUIDS AND SOLIDS)—DISTANCE FROM DETACHED STORAGE BUILDINGS AND OUTDOOR STORAGE
AREAS TO EXPOSURES**

OXIDIZER CLASS	WEIGHT (pounds)	MINIMUM DISTANCE TO BUILDINGS, LOT LINES, PUBLIC STREETS, PRIVATE ROADS OR BUILDING EXITS (feet)
1	Note a	Not Required
2	Note a	35
3	Note a	50
4	Up to 10	50
	greater than 10 up to 100	75
	greater than 100 up to 500	100
	greater than 500 up to 1,000	125
	greater than 1,000 up to 3,000	200
	greater than 3,000 up to 5,000	300
	greater than 5,000 up to 10,000	400
	over 10,000	As required by the commissioner

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. Any quantity over the amount required for detached storage in accordance with [FC2703.8.2] FC5003.8.2, or over the outdoor maximum allowable quantity for outdoor control areas.

[4004.1.3] 6304.1.3 Explosion control. Any room or other area in which Class 4 liquid or solid oxidizers are stored shall be provided with explosion control in accordance with FC911 and the construction codes, including the Building Code.

[4004.1.4] 6304.1.4 Sprinkler system. Solid and liquid oxidizer storage areas shall be protected by a sprinkler system in accordance with NFPA [430] 400.

[4004.1.5] 6304.1.5 Liquid-tight floor. In addition to [FC2704.12] FC5004.12, floors of storage areas for liquid and solid oxidizers shall be of liquid-tight construction.

[4004.1.6] 6304.1.6 Smoke detection. An approved supervised smoke detection system in accordance with the construction codes, including the Building Code shall be installed in liquid and solid oxidizer storage areas. Such smoke detection system shall be monitored by an approved central station.

Exception: Detached storage buildings protected by a fire extinguishing system.

[4004.1.6.1] 6304.1.6.1 Smoke and heat venting. Smoke and heat venting shall be provided in accordance with FC910 and the construction codes, including the Building Code.

[4004.1.7] 6304.1.7 Storage conditions. The maximum quantity of oxidizers that may be stored in a detached storage [buildings] building shall not exceed the quantities set forth in FC Tables [4004.1.7(1)] 6304.1.7(1) through [4004.1.7(4)] 6304.1.7(4).

[4004.1.7.1] 6304.1.7.1 Liquid and solid oxidizers. The storage configuration for liquid and solid oxidizers shall be as set forth in FC Tables [4004.1.7(1)] 6304.1.7(1) through [4004.1.7(4)] 6304.1.7(4).

[4004.1.7.2] 6304.1.7.2 Class 2 oxidizers. Class 2 oxidizers shall not be stored in basements, cellars or other areas below grade, except when such storage is in stationary tanks.

1
2 [4004.1.7.3] **6304.1.7.3 Class 3 and 4 oxidizers.** Class 3 and 4 oxidizers in amounts
3 exceeding the maximum allowable quantity per control area set forth in [FC2703.1]
4 FC5003.1 shall be stored on the ground floor only.

5
6
7 **FC TABLE [4004.1.7(1)] 6304.1.7(1)**
STORAGE REQUIREMENTS FOR CLASS 1 OXIDIZER (LIQUIDS AND SOLIDS) IN COMBUSTIBLE CONTAINERS^a

STORAGE CONFIGURATION	LIMITS (feet)
Piles	
Maximum length	No Limit
Maximum width	50
Maximum height	20
Minimum distance to next pile	3
Minimum distance to walls	2
Maximum quantity per pile	No Limit
Maximum quantity per building	No Limit

8 For SI: 1 foot = 304.8 mm.

9 a. Storage in noncombustible containers or in bulk in detached storage buildings is not limited as to quantity or arrangement.

10
11
12 **FC TABLE [4004.1.7(2)] 6304.1.7(2)**
STORAGE REQUIREMENTS FOR CLASS 2 OXIDIZER (LIQUIDS AND SOLIDS)^{a,b}

STORAGE CONFIGURATION	LIMITS		
	Segregated storage	Cutoff storage rooms ^c	Detached building
Piles			
Maximum width	16 feet	25 feet	25 feet
Maximum height	10 feet	12 feet	12 feet
Minimum distance to next pile	Note d	Note d	Note d
Minimum distance to walls	2 feet	2 feet	2 feet
Maximum quantity per pile	20 tons	50 tons	200 tons
Maximum quantity per building	200 tons	500 tons	No Limit

13 For SI: 1 foot = 204.8 mm, 1 ton = 0.907185 metric ton.

14 a. Storage in noncombustible containers is not limited as to quantity or arrangement, except that piles shall be at least 2 feet from walls in buildings
15 protected throughout by a sprinkler system and 4 feet from walls in buildings not protected throughout by a sprinkler system; the distance
16 between piles shall not be less than the pile height.

17 b. Quantity limits shall be reduced by 50 percent in buildings or portions of buildings used for retail sales.

18 c. Cutoff storage rooms shall be separated from the remainder of the building by 2-hour fire barriers.

19 d. Aisle width shall not be less than the pile height.

20
21
22 **FC TABLE [4004.1.7(3)] 6304.1.7(3)**
STORAGE REQUIREMENTS FOR CLASS 3 OXIDIZER (LIQUIDS AND SOLIDS)^{a,b}

STORAGE CONFIGURATION	LIMITS		
	Segregated storage	Cutoff storage rooms ^c	Detached building
Piles			
Maximum width	12 feet	16 feet	20 feet
Maximum height	8 feet	10 feet	10 feet
Minimum distance to next pile	Note d	Note d	Note d
Minimum distance to walls	4 feet	4 feet	4 feet
Maximum quantity per pile	20 tons	30 tons	150 tons
Maximum quantity per building	100 tons	500 tons	No Limit

23 For SI: 1 foot = 204.8 mm, 1 ton = 0.907185 metric ton.

24 a. Storage in noncombustible containers is not limited as to quantity or arrangement, except that piles shall be at least 2 feet from walls in sprinklered
25 buildings and 4 feet from walls in nonsprinklered buildings; the distance between piles shall not be less than the pile height.

26 b. Quantity limits shall be reduced by 50 percent in buildings or portions of buildings used for retail sales.

27 c. Cutoff storage rooms shall be separated from the remainder of the building by 2-hour fire barriers.

28 d. Aisle width shall not be less than the pile height.

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**FC TABLE [4004.1.7(4)] 6304.1.7(4)
STORAGE REQUIREMENTS FOR CLASS 4 OXIDIZER (LIQUIDS AND SOLIDS)**

STORAGE CONFIGURATION	LIMITS (feet)
Piles	
Maximum length	10
Maximum width	4
Maximum height	8
Minimum distance to next pile	8
Maximum quantity per building	No Limit

For SI: 1 foot = 304.8 mm.

[4004.1.8] 6304.1.8 Separation of Class 4 oxidizers from other materials. In addition to the requirements in [FC2703.9.8] FC5003.9.8, Class 4 oxidizer liquids and solids shall be separated from other hazardous materials by not less than a 1-hour fire barrier or stored in hazardous materials storage cabinets. Detached storage buildings for Class 4 oxidizer liquids and solids shall be located a minimum of 50 feet (15 240 mm) from other hazardous materials storage.

[4004.1.9] 6304.1.9 Contamination. Liquid and solid oxidizers shall not be stored on or against combustible surfaces. Liquid and solid oxidizers shall be stored in a manner to prevent contamination.

[4004.2] 6304.2 Outdoor storage. Outdoor storage of oxidizers in amounts exceeding the maximum allowable quantities per control area set forth in FC Table [2703.1.1(3)] 5003.1.1(3) shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter.

[4004.2.1] 6304.2.1 Distance from storage to exposures for liquid and solid oxidizers. Outdoor storage areas for liquid and solid oxidizers shall be located in accordance with FC Table [4004.1.2] 6304.1.2.

[4004.2.2] 6304.2.2 Distance from storage to exposures for oxidizing gases. Outdoor storage areas for oxidizing gases shall be located in accordance with FC Table [4004.2.2] 6304.2.2.

[4004.2.2.1] 6304.2.2.1 Oxidizing cryogenic fluids. Outdoor storage areas for oxidizing cryogenic fluids shall be located in accordance with FC Chapter [32] 55.

**FC TABLE [4004.2.2] 6304.2.2
OXIDIZING GASES—DISTANCE FROM STORAGE TO EXPOSURES^a**

QUANTITY OF GAS STORED SCF	DISTANCE TO A BUILDING NOT ASSOCIATED WITH THE MANUFACTURE OR DISTRIBUTION OF OXIDIZING GASES OR PUBLIC STREET, PRIVATE ROAD OR LOT LINE (feet)	DISTANCE BETWEEN STORAGE AREAS (feet)
greater than 3,000 up to 50,000	5	5
greater than 50,000 up to 100,000	10	10
greater than 100,000	15	15

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³.

34

1 a. The distances do not apply when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the
2 storage container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure
3 shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.
4

5 **[4004.2.3] 6304.2.3 Storage configuration for liquid and solid oxidizers.** Storage
6 configuration for liquid and solid oxidizers shall be in accordance with FC Tables [4004.1.7(1)]
7 6304.1.7(1) through [4004.1.7(4)] 6304.1.7(4).
8

9 **[4004.2.4] 6304.2.4 Storage configuration for oxidizing gases.** Storage configuration for
10 oxidizing gases shall be in accordance with FC Table [4004.2.2] 6304.2.2.
11

12 **SECTION FC [4005] 6305** 13 **HANDLING AND USE** 14

15 **[4005.1] 6305.1 Scope.** Oxidizers in amounts exceeding the maximum allowable quantity per
16 control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or [2703.1.1(3)] 5003.1.1(3) shall be
17 handled and used in accordance with FC [2701] 5001, [2703] 5003, [2705] 5005 and this chapter.
18

19 **SECTION FC [4006] 6306** 20 **LIQUID OXYGEN FOR RESIDENTIAL HEALTH CARE USE** 21

22 **[4006.1] 6306.1 General.** Liquid oxygen home care containers and liquid oxygen ambulatory
23 containers used for medical purposes in residential health care settings in Group I-1, I-4 and R
24 occupancies shall be stored, handled and used in accordance with the manufacturer's instructions
25 and labeling and in compliance with the requirements of this section. Storage, handling and use of
26 liquid oxygen, including liquid oxygen home care containers and liquid oxygen ambulatory
27 containers, in Group I-1, I-4 and R occupancies, other than in dwelling units and sleeping rooms,
28 shall be in accordance with FC [4001] 6301 through [4005] 6305 and FC Chapter [27] 50.
29

30 **[4006.2] 6306.2 Supplier requirements.** Persons engaged in the business of supplying liquid
31 oxygen home care containers and liquid oxygen ambulatory containers shall provide to the person
32 who will be using the liquid oxygen:
33

- 34 1. the manufacturer's instructions, and informational materials detailing the safe storage,
35 handling and use of the containers in accordance with this section, including the prohibition
36 set forth in [FC4006.3.4] FC6306.3.4 relating to LPG storage, handling and use;
37
- 38 2. unless the person who will be using the liquid oxygen is already in possession of such a
39 device suitable for the container being supplied, a base, hand truck or other device or devices
40 designed to support the container in an upright or other approved position, to secure the
41 container from movement, and to enable the container to be safely handled; and
42
- 43 3. two signs that read, "OXYGEN — NO SMOKING," and instruct the person who will be
44 using the liquid oxygen to conspicuously post one sign in the living area of the dwelling unit
45 and one in the person's sleeping room, to remind all occupants of the dwelling unit and all
46 visitors of the danger of fire associated with smoking near an oxygen supply.
47

1 **[4006.3] 6306.3 Storage, handling and use requirements.** Liquid oxygen home care containers
2 and liquid oxygen ambulatory containers shall be stored, handled and used in residential dwelling
3 units and residential health care dwelling units or sleeping rooms in Group I-1, I-4 and R
4 occupancies in compliance with the requirements of FC [4006.3.1] 6306.3.1 through [4006.3.4]
5 6306.3.4.

6
7 **[4006.3.1] 6306.3.1 Quantity limits.** The maximum aggregate quantity of liquid oxygen that
8 may be stored, handled and used in a residential dwelling unit or residential health care
9 dwelling unit or sleeping room shall be limited to 31.6 gallons (120 L).

10
11 **[4006.3.2] 6306.3.2 Storage and use locations.** Containers shall not be stored or used in any
12 location in the dwelling unit or sleeping room where they obstruct egress from the room; can
13 be struck by a door or falling object; are exposed to a heat source, including a radiator,
14 baseboard heater, steam pipe, portable electric heater, or halogen lamp; or are exposed to any
15 open flame or other ignition source, including a stove or torch.

16
17 **[4006.3.3] 6306.3.3 Securing and handling containers.** Liquid oxygen home care containers
18 and liquid oxygen ambulatory containers shall be kept in an upright or other approved position,
19 secured from movement, and handled in accordance with the manufacturer's instructions,
20 using the base, hand truck or other device or devices supplied for such purpose or other suitable
21 device. Liquid oxygen ambulatory containers may be hand carried.

22
23 **[4006.3.4] 6306.3.4 Prohibition.** LPG containers shall not be stored, handled or used in any
24 room in the dwelling unit or sleeping room in which liquid oxygen home care containers and
25 liquid oxygen ambulatory containers are being stored or are in use.

26
27 **[4006.4] 6306.4 Filling of containers.** Liquid oxygen home care containers and liquid oxygen
28 ambulatory containers shall be filled in accordance with [FC4003.5] FC6303.5.

29
30 **[4006.5] 6306.5 Smoking prohibited.** Smoking shall be prohibited in rooms or areas where liquid
31 oxygen is in use.

32
33 **[4006.6] 6306.6 Signage.** Where required by the department, an approved sign shall be affixed to
34 a lower quadrant of the public corridor side of the door, within 12 inches (305 mm) from the
35 bottom of the door, indicating the presence of liquid oxygen home care containers within the
36 dwelling unit or sleeping room.

37
38 **SECTION FC [4007] 6307**
39 **MANUFACTURING RESTRICTIONS**
40

41 **[4007.1] 6307.1 Oxidizers classified as a Class IV material.** Oxidizers classified as a Class IV
42 material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing
43 processes or other production in manufacturing districts only when authorized by a special permit
44 pursuant to Section 42-276 of the Zoning Resolution.

1 [4007.1.1] **6307.1.1 Manufacture of oxidizers classified as a Class IV material.** It shall be
2 unlawful to manufacture oxidizers classified as a Class IV material as defined in Section 42-
3 272 of the Zoning Resolution.

4
5 [4007.1.2] **6307.1.2 Storage of oxidizers classified as a Class IV material.** It shall be
6 unlawful to store oxidizers classified as a Class IV material as defined in Section 42-272 of the
7 Zoning Resolution, except that accessory storage authorized by a special permit pursuant to
8 Section 42-276 of the Zoning Resolution shall be allowed.

9
10
11 **CHAPTER 64**
12 **PYROPHORIC MATERIALS**
13
14 **SECTION FC [4101] 6401**
15 **GENERAL**

16
17 [4101.1] **6401.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
18 pyrophoric materials.

19
20 [4101.2] **6401.2 Permits.** Permits shall be required as set forth in FC105.6.

21
22 [4101.3] **6401.3 General.** Pyrophoric materials shall be manufactured, stored, handled and used
23 in accordance with this chapter. Pyrophoric materials that are compressed gases shall additionally
24 comply with the requirements of FC Chapter [30] 53.

25
26 [4101.4] **6401.4 Prohibitions.** It shall be unlawful to:

- 27
28 1. Manufacture, store, handle and/or use detonable pyrophoric materials, except as specifically
29 authorized in compliance with the requirements of FC Chapter [33] 56.
30
31 2. Compress any pyrophoric material that is a gas.

32
33 [4101.5] **6401.5 Supervision.** The handling and use of pyrophoric materials in quantities requiring
34 a permit shall be under the personal supervision of a certificate of fitness holder. The storage of
35 pyrophoric materials in quantities requiring a permit shall be under the general supervision of a
36 certificate of fitness holder.

37
38 **SECTION FC [4102] 6402**
39 **DEFINITIONS**

40
41 [4102.1] **6402.1 Definition.** The following term shall, for the purposes of this chapter and as used
42 elsewhere in this code, have the meaning [shown herein] set forth in FC202.

43
44 **PYROPHORIC MATERIAL.** [A material with an autoignition temperature in air, at or below a
45 temperature of 130°F (54°C).]

46
47 **SECTION FC [4103] 6403**

1
2
3 **GENERAL REQUIREMENTS**

4 **[4103.1] 6403.1 Quantities not exceeding the maximum allowable quantity per control area.**

5 The storage, handling and use of pyrophoric materials in amounts not exceeding the maximum
6 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with
7 FC [2701] 5001, [2703] 5003, [4101] 6401, [4103] 6403 and [4106] 6406.

8 **[4103.1.1] 6403.1.1 Emergency shutoff.** Compressed gas systems conveying pyrophoric
9 gases shall be provided with approved manual or automatic emergency shutoff valves that can
10 be activated at each point of use and each source.

11
12 **[4103.1.1.1] 6403.1.1.1 Shutoff at source.** [An] A manual or automatic fail-safe
13 emergency shutoff valve shall be installed on supply piping at the container or other source
14 of supply. The shutoff valve shall be operated by a remotely located manually activated
15 shutdown control located not less than 15 feet (4572 mm) from the source of supply.
16 Manual or automatic container valves on the containers supplying the pyrophoric material
17 may serve as the emergency shutoff valve when the containers are the sole source of supply
18 and are not manifolded.

19
20 **[4103.1.1.2] 6403.1.1.2 Shutoff at point of use.** A manual or automatic emergency shutoff
21 valve shall be installed on the supply piping at the point of use or at a point where the
22 equipment using the gas is connected to the supply system.

23
24 **[4103.2] 6403.2 Quantities exceeding the maximum allowable quantity per control area.**

25 The storage, handling and use of pyrophoric materials in amounts exceeding the maximum
26 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance
27 with FC Chapter [27] 50 and this chapter.

28
29 **SECTION FC [4104] 6404**
30 **STORAGE**

31
32 **[4104.1] 6404.1 Indoor storage.** Indoor storage of pyrophoric materials in amounts exceeding the
33 maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1),
34 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter. The
35 storage of silane gas and gas mixtures with a silane gas concentration of 1.37 percent or more by
36 volume, shall be in accordance with CGA G-13.

37
38 **[4104.1.1] 6404.1.1 Liquid-tight floor.** In addition to the requirements of [FC2704.12]
39 FC5004.12, floors of storage areas containing pyrophoric liquids shall be of liquid-tight
40 construction.

41
42 **[4104.1.2] 6404.1.2 Pyrophoric solids and liquids.** Storage of pyrophoric solids and liquids
43 shall be limited to a maximum area of 100 square feet (9.3 m²) per pile. Storage shall not
44 exceed 5 feet (1524 mm) in height. Individual containers shall not be stacked. Aisles between
45 storage piles shall be a minimum of 10 feet (3048 mm) in width. Individual tanks or containers
46 shall not exceed 500 gallons (1893 L) in capacity.

1 [4104.1.3] **6404.1.3 Pyrophoric gases.** Storage of pyrophoric gases shall be in detached
2 buildings where required by [FC2703.8.2] FC5003.8.2.

3
4 [4104.1.4] **6404.1.4 Separation from incompatible materials.** In addition to the requirements
5 of [FC2703.9.8] FC5003.9.8, indoor storage of pyrophoric materials shall be isolated from
6 incompatible hazardous materials by 1-hour fire barriers with openings protected in accordance
7 with the construction codes, including the Building Code.

8
9 **Exception:** Storage in approved hazardous materials storage cabinets constructed in
10 accordance with [FC2703.8.7] FC5003.8.7.

11
12 [4104.2] **6404.2 Outdoor storage.** Outdoor storage of pyrophoric materials in amounts exceeding
13 the maximum allowable quantity per control area indicated in FC Table [2703.1.1(3)] 5003.1.1(3)
14 shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this chapter. The
15 storage of silane gas, and gas mixtures with a silane gas concentration of 1.37 percent or more by
16 volume, shall be in accordance with CGA G-13.

17
18 [4104.2.1] **6404.2.1 Distance from storage to exposures.** The separation of pyrophoric solids,
19 liquids and gases from buildings, lot lines, public streets, private roads or means of egress shall
20 be in accordance with the following:

- 21
22 1. Solids and liquids. Two times the separation required by FC Chapter [34] 57 for Class
23 IB flammable liquids.
24
25 2. Gases. The location and maximum amount of pyrophoric gas per storage area shall be
26 in accordance with FC Table [4104.2.1] 6404.2.1.

27
28 **FC TABLE [4104.2.1] 6404.2.1**
29 **PYROPHORIC GASES—DISTANCE FROM STORAGE TO EXPOSURES^a**

MAXIMUM AMOUNT PER STORAGE AREA (cubic feet)	MINIMUM DISTANCE BETWEEN STORAGE AREAS (feet)	MINIMUM DISTANCE TO LOT LINES (feet)	MINIMUM DISTANCE TO PUBLIC STREETS AND PRIVATE ROADS (feet)	MINIMUM DISTANCE TO BUILDINGS ON THE SAME PROPERTY		
				Nonrated construction or openings within 25 feet	Two-hour construction and no openings within 25 feet	Four-hour construction and no openings within 25 feet
250	5	25	5	5	0	0
2,500	10	50	10	10	5	0
7,500	20	100	20	20	10	0

30 For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³.

31 a. The minimum required distances shall be reduced to 5 feet when protective structures having a minimum fire resistance of 2 hours interrupt the
32 line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the
33 protective structure shall allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

34
35 [4104.2.2] **6404.2.2 Fire protection.** When overhead construction is provided for sheltering
36 outdoor storage areas of pyrophoric materials, the storage areas shall be protected throughout
37 by a fire extinguishing system.

38
39 **SECTION FC [4105] 6405**
40 **HANDLING AND USE**

41
42 [4105.1] **6405.1 General.** Pyrophoric materials in amounts exceeding the maximum allowable
43 quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or [2703.1.1(3)]

1 5003.1.1(3) shall be handled and used in accordance with FC [2701] 5001, [2703] 5003, [2705]
2 5005 and this chapter.

3
4 **[4105.2] 6405.2 Fire protection.** When overhead construction is provided for sheltering of
5 outdoor use areas of pyrophoric materials, the use areas shall be protected throughout by a fire
6 extinguishing system.

7
8 **[4105.3] 6405.3 Silane gas.** The handling and use of silane gas, and gas mixtures with a silane gas
9 concentration of 1.37 percent or more by volume, shall be in accordance with CGA G-13.

10
11 **SECTION FC [4106] 6406**
12 **MANUFACTURING RESTRICTIONS**

13
14 **[4106.1] 6406.1 Pyrophoric materials classified as a Class IV material.** Pyrophoric materials
15 classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be
16 utilized in manufacturing processes or other production in manufacturing districts only when
17 authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

18
19 **[4106.1.1] 6406.1.1 Manufacture of pyrophoric materials classified as a Class IV material.**
20 It shall be unlawful to manufacture pyrophoric materials classified as a Class IV material as
21 defined in Section 42-272 of the Zoning Resolution.

22
23 **[4106.1.2] 6406.1.2 Storage of pyrophoric materials classified as a Class IV material.** It
24 shall be unlawful to store pyrophoric materials classified as a Class IV material as defined in
25 Section 42-272 of the Zoning Resolution, except accessory storage authorized by a special
26 permit pursuant to Section 42-276 of the Zoning Resolution.

27
28
29 **CHAPTER 65**
30 **PYROXYLIN PLASTICS**

31
32 **SECTION FC [4201] 6501**
33 **GENERAL**

34
35 **[4201.1] 6501.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
36 pyroxylin plastic, except cellulose nitrate motion picture film, which shall comply with the
37 requirements of FC306.

38
39 **[4201.2] 6501.2 Permits.** Permits shall be required as set forth in FC105.6.

40
41 **[4201.3] 6501.3 General.** Pyroxylin plastics shall be manufactured, stored, handled and used in
42 accordance with this chapter.

43
44 **[4201.4] 6501.4 Prohibitions.** It shall be unlawful to:

- 45
46 1. Manufacture raw pyroxylin plastics.

1 2. Store raw pyroxylin plastics, except accessory storage authorized by a special permit
2 pursuant to Section 42-276 of the Zoning Resolution.
3

4 **[4201.5] 6501.5 Supervision.** The handling and use of raw pyroxylin plastics in quantities
5 requiring a permit shall be under the personal supervision of a certificate of fitness holder. The
6 storage of raw pyroxylin plastics in quantities requiring a permit shall be under the general
7 supervision of a certificate of fitness holder.
8

9 **SECTION FC [4202] 6502**
10 **DEFINITIONS**

11
12 **[4202.1] 6502.1 Definitions.** The following terms shall, for the purposes of this chapter and as
13 used elsewhere in this code, have the meanings [shown herein] set forth in FC202.
14

15 **FINISHED PYROXYLIN PLASTIC PRODUCTS.** [Any product to which a pyroxylin plastic
16 has been applied that does not require further manufacturing with respect to the application of such
17 pyroxylin plastic or any further application of pyroxylin plastic.]
18

19 **PYROXYLIN PLASTIC.** [Any plastic substance, material or compound, other than cellulose
20 nitrate film, that has soluble cotton or similar cellulose nitrate as a base, by whatever name known,
21 in the form of blocks, sheets, tubes or other fabricated shapes, including raw pyroxylin plastics
22 and finished pyroxylin plastic products.]
23

24 **RAW PYROXYLIN PLASTIC.** [Any pyroxylin plastic in the form of blocks, slabs, rods tubes
25 or other shapes, that is to be used in a manufacturing process.]
26

27 **SECTION FC [4203] 6503**
28 **GENERAL REQUIREMENTS**

29
30 **[4203.1] 6503.1 Displays.** Finished pyroxylin plastic products displayed in areas to which the
31 public has access shall be placed on tables not more than 3 feet (914 mm) wide and 10 feet (3048
32 mm) long. Tables shall be spaced at least 3 feet (914 mm) apart. Where articles are displayed on
33 counters, they shall be arranged in a like manner.
34

35 **[4203.2] 6503.2 Space under tables.** Spaces underneath tables on which finished pyroxylin plastic
36 products are displayed shall be kept free from storage of any kind and accumulation of rubbish or
37 other combustible waste or any other combustible material.
38

39 **[4203.3] 6503.3 Location.** Tables on which finished pyroxylin plastic products are displayed shall
40 be so located that in the event of a fire at the table, the table will not interfere with any means of
41 egress.
42

43 **[4203.4] 6503.4 Lighting.** Lighting shall not be located directly above pyroxylin plastics, unless
44 provided with a suitable guard to prevent heated particles or broken bulb elements from falling.
45

46 **SECTION FC [4204] 6504**
47 **STORAGE, HANDLING AND USE**

1
2 **[4204.1] 6504.1 Pyroxylin plastics in Group F buildings.** Pyroxylin plastics in a Group F
3 building shall be stored, handled and used in accordance with FC [4204.1.1] 6504.1.1 through
4 [4204.1.7] 6504.1.7.

5
6 **[4204.1.1] 6504.1.1 Storage of incoming material.** Where raw pyroxylin plastics in excess of
7 25 pounds (11 kg) are received in a building or fire area, an approved vented cabinet or
8 approved vented vault protected by a sprinkler system shall be provided for the storage of
9 material.

10
11 **[4204.1.2] 6504.1.2 Capacity limitations.** Storage in any one workroom shall not exceed
12 1,000 pounds (454 kg) of raw pyroxylin plastics. A storage cabinet shall not contain more than
13 500 pounds (227 kg). Each compartment shall not contain more than 250 pounds (114 kg).

14
15 **[4204.1.3] 6504.1.3 Storage of additional material.** Raw pyroxylin plastics in excess of that
16 allowed by [FC4204.1.2] FC6504.1.2 shall be kept in vented vaults not exceeding 1,500-cubic-
17 foot capacity (43 m³) of total vault space, and with construction, venting and sprinkler system
18 protection approved by the commissioner.

19
20 **[4204.1.4] 6504.1.4 Heat sources.** Pyroxylin plastics shall not be stored within 2 feet (610
21 mm) of heat-producing appliances, steam pipes, radiators or chimneys.

22
23 **[4204.1.5] 6504.1.5 Accumulation of material.** In factories manufacturing pyroxylin plastic
24 products, approved vented cabinets, vaults or storage rooms protected by a sprinkler system
25 shall be provided to prevent the accumulation in workrooms of raw pyroxylin plastics in
26 process and finished pyroxylin plastic products.

27
28 **[4204.1.6] 6504.1.6 Operators.** In workrooms of factories manufacturing finished pyroxylin
29 plastic products, operators shall not be stationed closer together than 3 feet (914 mm), and the
30 amount of material per operator shall not exceed one-shift's supply and shall be limited to the
31 capacity of three tote boxes, including material awaiting removal or use.

32
33 **[4204.1.7] 6504.1.7 Waste material.** Waste pyroxylin plastics, such as shavings, chips,
34 turnings, sawdust, edgings and trimmings, shall be kept under water in metal receptacles until
35 removed from the premises.

36
37 **[4204.2] 6504.2 Fire protection.** The storage, handling or use of pyroxylin plastic in quantities
38 exceeding 100 pounds (45 kg) shall be located in a building or part thereof protected throughout
39 by a sprinkler system, except for storage exclusively of finished pyroxylin plastic products in a
40 quantity not exceeding 6,000 pounds (2724 kg).

41
42 **[4204.3] 6504.3 Sources of ignition.** Sources of ignition shall not be allowed in rooms in which
43 pyroxylin plastics in excess of 25 pounds (11 kg) are stored, handled or used.

44
45 **[4204.4] 6504.4 Heating.** Rooms in which pyroxylin plastics are handled or stored shall be heated
46 by low-pressure steam or hot water radiators. Radiators shall be not less than 4 inches (102 mm)
47 above the floor. All steam pipes and risers within 6 feet (1829 mm) of the floor shall be protected

1 with noncombustible pipe covering. All heating radiators, coils, boilers, pipes and other heating
2 apparatus situated so as to come in contact with any combustible material, including the tops of
3 radiators, shall be protected with ¼-inch (6-mm) mesh galvanized steel of No. 20 U.S. gauge or
4 equivalent. The tops of such guards shall slope so as to prevent their use as a shelf.

5
6 **[4204.5] 6504.5 Prohibitions.** It shall be unlawful to store, handle or use raw pyroxylin plastics
7 as follows:

- 8
9 1. In any building situated within 50 feet (15 240 mm) of the nearest wall of a building occupied
10 as a school, hospital, or Group A occupancy.
11
12 2. In any Group R occupancy.
13
14 3. In any building of combustible construction as defined in Section 602 of the Building Code.
15

16 **SECTION FC [4205] 6505**
17 **MANUFACTURING RESTRICTIONS**

18
19 **[4205.1] 6505.1 Raw pyroxylin plastics.** Raw pyroxylin plastics shall be treated as a Class IV
20 material as defined in Section 42-272 of the Zoning Resolution. Raw pyroxylin plastics may be
21 utilized in manufacturing processes or other production in manufacturing districts only when
22 authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.
23

24
25 **CHAPTER 66**
26 **UNSTABLE (REACTIVE) MATERIALS**

27
28 **SECTION FC [4301] 6601**
29 **GENERAL**

30
31 **[4301.1] 6601.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
32 unstable (reactive) materials, except for the display and storage of unstable (reactive) materials in
33 Group M and storage of unstable (reactive) materials in Group S occupancies complying with the
34 requirements of [FC2703.11] FC5003.11.
35

36 **[4301.2] 6601.2 Permits.** Permits shall be required as set forth in FC105.6.
37

38 **[4301.3] 6601.3 General.** Unstable (reactive) materials shall be manufactured, stored, handled and
39 used in accordance with this chapter. Unstable (reactive) materials that are compressed gases shall
40 additionally comply with the requirements of FC Chapter [30] 53.
41

42 **[4301.4] 6601.4 Prohibited manufacture, storage, handling and use.** It shall be unlawful to
43 manufacture, store, handle and/or use detonable unstable (reactive) materials except as specifically
44 authorized by FC Chapter [33] 56.
45

46 **[4301.5] 6601.5 Supervision.** The handling and use of unstable (reactive) materials in quantities
47 requiring a permit shall be under the personal supervision of a certificate of fitness holder. The

1 storage of unstable (reactive) materials in quantities requiring a permit shall be under the general
2 supervision of a certificate of fitness holder.

3
4 **SECTION FC [4302] 6602**
5 **DEFINITIONS**
6

7 **[4302.1] 6602.1 Definition.** The following term shall, for the purposes of this chapter and as used
8 elsewhere in this code, have the meanings [shown herein] set forth in FC202.

9
10 **UNSTABLE (REACTIVE) MATERIAL.** [A material, other than an explosive, which in the pure
11 state or as commercially produced, will vigorously polymerize, decompose, condense or become
12 self-reactive and undergo other violent chemical changes, including explosion, when exposed to
13 heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in
14 contact with incompatible materials. Unstable (reactive) materials are classified as follows:
15

16 **Class 1.** Materials that in themselves are normally stable but which can become unstable at
17 elevated temperatures and pressures.
18

19 **Class 2.** Materials that in themselves are normally unstable and readily undergo violent
20 chemical change but do not detonate. This class includes materials that can undergo chemical
21 change with rapid release of energy at normal temperatures and pressures, and that can undergo
22 violent chemical change at elevated temperatures and pressures.
23

24 **Class 3.** Materials that in themselves are capable of detonation or of explosive decomposition
25 or explosive reaction but which require a strong initiating source or which must be heated
26 under confinement before initiation. This class includes materials that are sensitive to thermal
27 or mechanical shock at elevated temperatures and pressures.
28

29 **Class 4.** Materials that in themselves are readily capable of detonation or explosive
30 decomposition or explosive reaction at normal temperatures and pressures. This class includes
31 materials that are sensitive to mechanical or localized thermal shock at normal temperatures
32 and pressures.]
33

34 **SECTION FC [4303] 6603**
35 **GENERAL REQUIREMENTS**
36

37 **[4303.1] 6603.1 Quantities not exceeding the maximum allowable quantity per control area.**
38 The storage, handling and use of unstable (reactive) materials in amounts not exceeding the
39 maximum allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in
40 accordance with FC [2701] 5001, [2703] 5003, [4301] 6601, [4303] 6603 and [4306] 6606.
41

42 **[4303.1.1] 6603.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be
43 unlawful to store, handle or use:
44

- 45 1. Class 3 and 4 unstable (reactive) materials in Group A, E, I, R or U occupancies.
46

1 2. Class 3 and 4 unstable (reactive) materials in offices in Group B, F, M or S occupancies,
2 or any other areas of such occupancies that are accessible to the public.
3

4 **[4303.2] 6603.2 Quantities exceeding the maximum allowable quantity per control area.** The
5 storage, handling and use of unstable (reactive) materials in amounts exceeding the maximum
6 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with
7 FC Chapter [27] 50 and this chapter.
8

9 **[4303.3] 6603.3 Multiple hazard sign.** Where two or more classes of unstable (reactive) materials
10 are stored in immediate proximity to one another, such area shall be provided with hazard
11 identification signs pursuant to FC Chapter [27] 50 for the most severe class present.
12

13 **[4303.4] 6603.4 Multiple class storage.** Except as otherwise specifically provided in this code,
14 where more than one class of unstable (reactive) materials is stored in the same control area, the
15 maximum quantity allowed of each unstable (reactive) material shall be limited as follows: the
16 maximum quantity shall be reduced by multiplying the maximum allowable quantity for each such
17 material by the proportion that such material bears to the total quantity of unstable (reactive)
18 material stored in the control area. The total of the proportional amounts shall not exceed 100
19 percent.
20

21 **[4303.5] 6603.5 Temperature-sensitive material.** Where the required storage temperature range,
22 as specified by the manufacturer, extends beyond normal ambient temperatures, high or low
23 temperature limit switches, as applicable, shall be provided in addition to normal temperature
24 controls. These limit switches shall activate an alarm in a supervised area to ensure reporting to
25 the fire department.
26

27 **SECTION FC [4304] 6604**
28 **STORAGE**
29

30 **[4304.1] 6604.1 Indoor storage.** Indoor storage of unstable (reactive) materials in amounts
31 exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)]
32 5003.1.1(1) shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this
33 chapter.
34

35 **[4304.1.1] 6604.1.1 Detached storage.** Storage of unstable (reactive) materials shall be in a
36 detached building when required in [FC2703.8.2] FC5003.8.2.
37

38 **[4304.1.2] 6604.1.2 Explosion control.** Indoor storage rooms, areas and buildings containing
39 Class 3 or 4 unstable (reactive) materials shall be provided with explosion control in
40 accordance with FC911 and the construction codes, including the Building Code.
41

42 **[4304.1.3] 6604.1.3 Liquid-tight floor.** In addition to [FC2704.12] FC5004.12, floors of
43 storage areas for liquids and solids shall be of liquid-tight construction.
44

45 **[4304.1.4] 6604.1.4 Storage configuration.** Unstable (reactive) materials stored in quantities
46 greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than 500 cubic

1 feet (14 m³). Aisle width shall not be less than the height of the piles or 4 feet (1219 mm),
2 whichever is greater.

3
4 **Exception:** Materials stored in tanks.

5
6 **[4304.1.5] 6604.1.5 Location.** Unstable (reactive) materials shall not be stored in basements
7 or other areas below grade.

8
9 **[4304.1.6] 6604.1.6 Smoke and heat venting.** Smoke and heat venting shall be provided in
10 accordance with FC910 and the construction codes, including the Building Code.

11
12 **[4304.2] 6604.2 Outdoor storage.** Outdoor storage of unstable (reactive) materials in amounts
13 exceeding the maximum allowable quantities per control area indicated in FC Table [2703.1.1(3)]
14 5003.1.1(3) shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this
15 chapter.

16
17 **[4304.2.1] 6604.2.1 Distance to exposures from Class 3 and 4 (detonable) material outdoor**
18 **storage areas.** Outdoor storage of Class 3 (detonable) or 4 unstable (reactive) material shall
19 be in accordance with FC Table [3304.5.2(3)] 5604.5.2(3). The number of pounds of material
20 listed in the table shall be the net weight of the material present. Alternatively, the number of
21 pounds of material shall be based on a trinitrotoluene (TNT) equivalent weight.

22
23 **[4304.2.2] 6604.2.2 Distance to exposures from Class 3 (deflagratable) material outdoor**
24 **storage areas.** Outdoor storage of deflagratable Class 3 unstable (reactive) materials shall be
25 in accordance with FC Table [3304.5.2(4)] 5604.5.2(4). The number of pounds of material
26 listed shall be the net weight of the material present.

27
28 **[4304.2.3] 6604.2.3 Distance to exposures from Class 1 and 2 material outdoor storage**
29 **areas.** Outdoor storage of Class 1 or 2 unstable (reactive) materials shall not be within 20 feet
30 (6096 mm) of buildings not associated with the manufacture or distribution of such materials,
31 lot lines, public streets, private roads or means of egress. The minimum required distance shall
32 not apply when fire barriers that have no openings or penetrations and have a minimum fire-
33 resistance rating of 2 hours interrupt the line of sight between the storage and the exposure.
34 The fire barrier shall either be an independent structure, or the exterior wall of the building
35 adjacent to the storage area.

36
37 **[4304.2.4] 6604.2.4 Storage configuration.** Piles of unstable (reactive) materials shall not
38 exceed 1,000 cubic feet (28 m³).

39
40 **[4304.2.5] 6604.2.5 Aisle widths.** Aisle widths between piles shall not be less than one-half
41 the height of the pile or 10 feet (3048 mm), whichever is greater.

42
43 **SECTION FC [4305] 6605**
44 **HANDLING AND USE**

45
46 **[4305.1] 6605.1 General.** Unstable (reactive) materials in amounts exceeding the maximum
47 allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or

1 [2703.1.1(3)] 5003.1.1(3) shall be handled and used in accordance with FC [2701] 5001, [2703]
2 5003, [2705] 5005 and this chapter.

3
4 **SECTION FC [4306] 6606**
5 **MANUFACTURING RESTRICTIONS**
6

7 **[4306.1] 6606.1 Unstable (reactive) material classified as a Class IV material.** Unstable
8 (reactive) material classified as a Class IV material as defined in Section 42-272 of the Zoning
9 Resolution may be utilized in manufacturing processes or other production in manufacturing
10 districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning
11 Resolution.
12

13 **[4306.1.1] 6606.1.1 Manufacture of unstable (reactive) material classified as a Class IV**
14 **material.** It is unlawful to manufacture unstable (reactive) material classified as a Class IV
15 material as defined in Section 42-272 of the Zoning Resolution.
16

17 **[4306.1.2] 6606.1.2 Storage of unstable (reactive) materials classified as a Class IV**
18 **material.** It shall be unlawful to store unstable (reactive) material classified as a Class IV
19 material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage
20 authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be
21 allowed.
22

23
24 **CHAPTER 67**
25 **WATER-REACTIVE SOLIDS AND LIQUIDS**
26

27 **SECTION FC [4401] 6701**
28 **GENERAL**
29

30 **[4401.1] 6701.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of
31 water-reactive solids and liquids, except for the display and storage of water-reactive solids and
32 liquids in Group M occupancies complying with the requirements of [FC2703.11] FC5003.11, and
33 storage of water-reactive solids and liquids in Group S occupancies complying with the
34 requirements of [FC2703.11] FC5003.11.
35

36 **[4401.2] 6701.2 Permits.** Permits shall be required as set forth in FC105.6.
37

38 **[4401.3] 6701.3 General.** Water-reactive solids and liquids shall be manufactured, stored, handled
39 and used in accordance with this chapter.
40

41 **[4401.4] 6701.4 Prohibited manufacture, storage, handling and use.** It shall be unlawful to
42 manufacture, store, handle or use detonable water-reactive solids and liquids, except as specifically
43 authorized by FC Chapter [33] 56.
44

45 **[4401.5] 6701.5 Supervision.** The handling and use of water-reactive solids and liquids in
46 quantities requiring a permit shall be under the personal supervision of a certificate of fitness

1 holder. The storage of water-reactive solids and liquids in quantities requiring a permit shall be
2 under the general supervision of a certificate of fitness holder.

3
4 **SECTION FC [4402] 6702**
5 **DEFINITIONS**
6

7 **[4402.1] 6702.1 Definition.** The following term shall, for the purposes of this chapter and as used
8 elsewhere in this code, have the meaning [shown herein] set forth in FC202.

9
10 **WATER-REACTIVE MATERIAL.** [A material that explodes, violently reacts, produces
11 flammable, toxic or other hazardous gases, and/or generates enough heat to cause autoignition or
12 ignition of combustible materials upon exposure to water or moisture. Water-reactive materials are
13 classified as follows:

14
15 **Class 1.** Materials that react with water with some release of energy, but not violently.

16
17 **Class 2.** Materials that react violently with water or cause water to boil upon contact; produce
18 flammable, toxic or other hazardous gases upon contact with water; or upon contact with water
19 generate sufficient heat to cause autoignition or ignition of adjoining combustible materials.

20
21 **Class 3.** Materials that react explosively with water without requiring heat or confinement.]

22
23 **SECTION FC [4403] 6703**
24 **GENERAL REQUIREMENTS**
25

26 **[4403.1] 6703.1 Quantities not exceeding the maximum allowable quantity per control area.**
27 The storage, handling and use of water-reactive solids and liquids in amounts not exceeding the
28 maximum allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in
29 accordance with FC [2701] 5001, [2703] 5003, [4401] 6701, [4403] 6703 and [4406] 6706.

30
31 **[4403.1.1] 6703.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be
32 unlawful to store, handle or use:

- 33
34 1. Class 3 water-reactive solids and liquids in Group A, E, I, R or U occupancies.
35
36 2. Class 3 water-reactive solids and liquids in offices in Group B, F, M or S occupancies,
37 or any other areas of such occupancy accessible to the public.
38

39 **[4403.2] 6703.2 Quantities exceeding the maximum allowable quantity per control area.** The
40 storage, handling and use of water-reactive solids and liquids in amounts exceeding the maximum
41 allowable quantity per control area indicated in [FC2703.1] FC5003.1 shall be in accordance with
42 FC Chapter [27] 50 and this chapter.
43

44 **[4403.3] 6703.3 Multiple hazard sign.** Where more than one class of water-reactive solids and
45 liquids is stored in immediate proximity to one another, such area shall be provided with hazard
46 identification signs pursuant to FC Chapter [27] 50 for the most severe class present.
47

1 **[4403.4] 6703.4 Multiple class storage.** Except as otherwise specifically provided in this code,
2 where more than one class of water-reactive solids and liquids is stored in the same control area,
3 the maximum quantity allowed of each water-reactive solid or liquid shall be limited as follows:
4 the maximum quantity shall be reduced by the maximum allowable quantity for each such solid or
5 liquid by the proportion that such solid or liquid bears to the total quantity of water-reactive solid
6 and liquid stored in the control area. The total of the proportional amounts shall not exceed 100
7 percent.

8
9 **SECTION FC [4404] 6704**
10 **STORAGE**

11
12 **[4404.1] 6704.1 Indoor storage.** Indoor storage of water-reactive solids and liquids in amounts
13 exceeding the maximum allowable quantity per control area indicated in FC Table [2703.1.1(1)]
14 5003.1.1(1), shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004 and this
15 chapter.

16
17 **[4404.1.1] 6704.1.1 Detached storage.** Storage of water-reactive solids and liquids shall be in
18 a detached building when required by [FC2703.8.2] FC5003.8.2.

19
20 **[4404.1.2] 6704.1.2 Liquid-tight floor.** In addition to the provisions of [FC2704.12]
21 FC5004.12, floors in storage areas for water-reactive solids and liquids shall be of liquid-tight
22 construction.

23
24 **[4404.1.3] 6704.1.3 Waterproof room.** Rooms or areas used for the storage of water-reactive
25 solids and liquids shall be constructed in a manner which resists the penetration of water
26 through the use of waterproof materials. Piping carrying water for other than sprinkler systems
27 shall not be within such rooms or areas.

28
29 **[4404.1.4] 6704.1.4 Water-tight containers.** When Class 2 and/or Class 3 water-reactive
30 solids and liquids are stored in areas protected by a sprinkler system, the materials shall be
31 stored in closed water-tight containers.

32
33 **[4404.1.5] 6704.1.5 Storage configuration.** Water-reactive solids and liquids stored in
34 quantities greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than
35 500 cubic feet (14 m³). Aisle widths between piles shall not be less than the height of the pile
36 or 4 feet (1219 mm), whichever is greater.

37
38 **Exception:** Water-reactive solids and liquids stored in tanks.

39
40 **[4404.1.5.1] 6704.1.5.1 Class 2 storage in basements or other areas below grade.** Class
41 2 water-reactive solids and liquids shall not be stored in basements or other areas below
42 grade unless such materials are stored in closed water-tight containers or tanks.

43
44 **[4404.1.5.2] 6704.1.5.2 Class 3 storage in basements or other areas below grade.** Class
45 3 water-reactive solids and liquids shall not be stored in basements or other areas below
46 grade.

1 **[4404.1.5.3] 6704.1.5.3 Flammable liquids.** Class 2 or Class 3 water-reactive solids and
2 liquids shall not be stored with flammable liquids.

3
4 **[4404.1.6] 6704.1.6 Explosion control.** Indoor storage rooms, areas and buildings containing
5 Class 2 or Class 3 water-reactive solids and liquids shall be provided with explosion control in
6 accordance with FC911 and the construction codes, including the Building Code.

7
8 **[4404.1.7] 6704.1.7 Smoke and heat venting.** Rooms or areas for the storage of water-reactive
9 solids and liquids shall be provided with smoke and heat venting in accordance with FC910
10 and the construction codes, including the Building Code.

11
12 **[4404.2] 6704.2 Outdoor storage.** Outdoor storage of water-reactive solids and liquids in
13 quantities exceeding the maximum allowable quantity per control area indicated in FC Table
14 [2703.1.1(3)] 5003.1.1(3) shall be in accordance with FC [2701] 5001, [2703] 5003, [2704] 5004
15 and this chapter.

16
17 **[4404.2.1] 6704.2.1 General.** Outdoor storage of water-reactive solids and liquids shall be
18 within tanks or closed water-tight containers and shall be in accordance with FC [4404.2.2]
19 6704.2.2 through [4404.2.5] 6704.2.5.

20
21 **[4404.2.2] 6704.2.2 Distance to exposures from Class 3 material outdoor storage areas.**
22 Class 3 water-reactive solids and liquids shall not be stored within 75 feet (22 860 mm) of
23 buildings, lot lines, public streets, private roads or means of egress.

24
25 **[4404.2.3] 6704.2.3 Distance to exposures from Class 1 and Class 2 material outdoor**
26 **storage areas.** Outdoor storage of Class 1 and Class 2 water-reactive solids and liquids shall
27 not be within 20 feet (6096 mm) of buildings, lot lines, public streets, private roads or means
28 of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less
29 than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such
30 distance. The wall shall either be an independent structure, or the exterior wall of the building
31 adjacent to the storage area.

32
33 **[4404.2.4] 6704.2.4 Storage conditions.** Class 3 water-reactive solids and liquids shall be
34 limited to piles not greater than 500 cubic feet (14 m³).

35
36 **[4404.2.4.1] 6704.2.4.1 Class 1 and Class 2 piles.** Class 1 and Class 2 water-reactive solids
37 and liquids shall be limited to piles not greater than 1,000 cubic feet (28 m³).

38
39 **[4404.2.4.2] 6704.2.4.2 Aisle widths.** Aisle widths between piles shall not be less than
40 one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

41
42 **[4404.2.5] 6704.2.5 Containment.** Secondary containment shall be provided in accordance
43 with [FC2704.2.2] FC5004.2.2.

44
45 **SECTION FC [4405] 6705**
46 **HANDLING AND USE**
47

1 **[4405.1] 6705.1 General.** Water-reactive solids and liquids in amounts exceeding the maximum
2 allowable quantity per control area indicated in FC Table [2703.1.1(1)] 5003.1.1(1) or
3 [2703.1.1(3)] 5003.1.1(3) shall be handled and used in accordance with FC [2701] 5001, [2703]
4 5003, [2705] 5005 and this chapter.

5
6 **SECTION FC [4406] 6706**
7 **MANUFACTURING RESTRICTIONS**
8

9 **[4406.1] 6706.1 Water-reactive solids and liquids classified as a Class IV material.** Water-
10 reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the
11 Zoning Resolution may be utilized in manufacturing processes or other production in
12 manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of
13 the Zoning Resolution.

14
15 **[4406.1.1] 6706.1.1 Manufacture of water-reactive solids and liquids classified as a Class**
16 **IV material.** It shall be unlawful to manufacture water-reactive solids and liquids classified as
17 a Class IV material as defined in Section 42-272 of the Zoning Resolution.

18
19 **[4406.1.2] 6706.1.2 Storage of water-reactive solids and liquids classified as a Class IV**
20 **material.** It shall be unlawful to store water-reactive solids and liquids classified as a Class IV
21 material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage
22 authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be
23 allowed.

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26 **CHAPTERS 68 THROUGH 79**
27 **RESERVED**
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**CHAPTER 80
REFERENCED STANDARDS**

**SECTION FC [4501] 8001
GENERAL**

[4501.1] **8001.1 Scope.** This chapter lists the standards that are referenced in this code.

[4501.2] **8001.2 Edition.** The edition of each standard referenced in this code shall be as indicated by the standard reference number.

[4501.3] **8001.3 Relationship with code and rules.** The application of the referenced standards and their relationship with the provisions of this code and the rules shall be as set forth in FC102.6.

**SECTION FC [4502] 8002
LIST OF REFERENCED STANDARDS**

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ANSI

American National Standards Institute
25 West 43rd Street, Fourth Floor
New York, NY 10036

Standard Reference Number	Title
Reserved.	

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API

American Petroleum Institute
1220 L Street, Northwest
Washington, DC 20005-4070

Standard Reference Number	Title
Std 650—2007	Welded Steel Tanks for Oil Storage, 11 th edition, including Addendum 1 (2008), Addendum 2 (2009) and Addendum 3 (2011)
Std 653—2009	Tank Inspection, Repair, Alteration, and Reconstruction, 4 th edition, including Addendum 1 (2010) and Addendum 2 (2012)
RP 1604—1996 Reaffirmed [2001]2010	Closure of Underground Petroleum Storage Tanks
Std 2000—2009	Venting Atmosphere and Low Pressure Storage Tanks: Nonrefrigerated and Refrigerated
RP 2028—2002 Reaffirmed 2012	Flame Arrestors in Piping Systems
RP 2350—[2005]2012	Overfill Protection for Storage Tanks in Petroleum Facilities, [3 rd]4 th edition

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ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, NE
Atlanta, GA 30329

Standard Reference Number	Title
15—2013	Safety Standard for Refrigeration Systems

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ASME

The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Standard Reference Number	Title
A13.1—[07]15	Scheme for the Identification of Piping Systems
B31.1—[07]12	Power Piping, including Addendum A (2008) and Addendum B (2009)
B31.3—[08]12	Process Piping
B31.4—[06]12	Pipeline Transportation Systems for [Liquid Hydrocarbons and Other Liquids] <u>Liquids and Slurries</u>
B31.9—[08]17	Building Services Piping [Code for Pressure Piping]
BPVC—2010	ASME Boiler and Pressure Vessel Code, (Sections I, II, IV, V, VI and VIII), <u>including 2011 addenda</u>

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard Reference Number	Title
D 56—05(2010)	Test Method for Flash Point by Tag Closed Tester
D 86—[10a]2012	Test Method for Distillation of Petroleum Products at Atmospheric Pressure
D 92—[05a]12b	Test Method for Flash and Fire Points by Cleveland Open Cup
D 93—[10a]12	Test Method for Flash Point by Pensky-Martens Closed [Up] <u>Cup</u> Tester
D 323—08	Test Method for Vapor Pressure of Petroleum Products (Reid Method)
D 3278—96[(2004)e1](2011)	Test Methods for Flash Point of Liquids by Small Scale Closed-cup Apparatus
E 681—09	Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)
E 1354—[04a]13	Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
E 1529—[10]13	Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
[E 1537—07]	[Test Method for Fire Testing of Upholstered Furniture]
E 1590—[07]13	Test Method for Fire Testing of Mattresses
F 2200—[05]13	Standard Specification for Automated Vehicular Gate Construction

CA

State of California Department of Consumer Affairs
Bureau of Home Furnishings and Thermal Insulation
3485 Orange Grove Avenue
North Highlands, CA 95660-5595

Standard Reference Number	Title
<u>California Technical Bulletin 116</u>	<u>Requirements, Test Procedure and Apparatus for Testing the Flame Retardance of Upholstered Furniture</u>
<u>California Technical Bulletin 117—2013</u>	<u>Requirements, Test Procedure and Apparatus for Testing the Smolder Resistance of Materials Used in Upholstered Furniture</u>
California Technical Bulletin 129—1992	Flammability Test Procedure for Mattresses for Use in Public Buildings
[California Technical Bulletin 133—1991]	[Flammability Test Procedure for Seating Furniture for Use in Public Occupancies]

CGA

Compressed Gas Association
4221 Walney Road, 5th Floor
Chantilly, VA 20151

Standard Reference Number	Title
C-7—[(2004)](2011)	Guide to the Preparation of Precautionary Labeling and Marking of Compressed Gas Containers
G-8.1—(2007)	Nitrous Oxide Systems at Consumer Sites
G-13—(2006)	Storage and Handling of Silane and Silane Mixtures
P-1—(2008)	Safe Handling of Compressed Gases in Containers
P-18—(2006)	Standard for Bulk Inert Gas Systems at Consumer Sites
S-1.1—[(2005)](2011)	Pressure Relief Device Standards—Part 1—Cylinders for Compressed Gases
S-1.2—(2005)	Pressure Relief Device Standards—Part 2—Cargo and Portable Tanks for Compressed Gases
S-1.3—[(2005)](2008)	Pressure Relief Device Standards—Part 3—Stationary Storage Containers for Compressed Gases
V-1—(2005)	Standard for Gas Cylinder Valve Outlet and Inlet Connections

CGR

Coast Guard Regulations
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard Reference Number	Title
Reserved.	

CPSC

Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Standard Reference Number	Title
16 CFR Section 1500.41	Method for Testing Primary Irritant Substances
16 CFR Section 1500.42	Test for Eye Irritants
16 CFR Section 1500.44	Method for Testing Extremely Flammable and Flammable Solids

DOC

U.S. Department of Commerce
100 Bureau Drive, Stop 3460
Gaithersburg, MD 20899

Standard Reference Number	Title
16 CFR Part 1632	Standard for the Flammability of Mattress and Mattress Pads (FF 4—72, Amended)

DOJ

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard Reference Number	Title
27 CFR Part 555	Commerce in Explosives

DOL

U.S. Department of Labor
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard Reference

Number	Title
29 CFR Section 1910.1000	Air Contaminants
29 CFR Section 1910.1200	Hazard Communication

DOTn

U.S. Department of Transportation
Office of Hazardous Material Standards
400 7th Street, Southwest
Washington, DC 20590

Standard Reference

Number	Title
[49 CFR]	[Transportation]
[49 CFR Section 173.52]	[Transportation]
[49 CFR Part 178]	[Transportation]
[49 CFR Part 172]	[Hazardous Materials Tables, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements]
[49 CFR Sections 173.136 & 137]	[Shippers — General Requirements for Shipments and Packagings: Class 8—Assignment of Packing Group]
49 CFR Parts [100-178](100-180)	Hazardous Materials Regulations
49 CFR Parts 190-199	Pipeline Safety
49 CFR Parts 350-399	Federal Motor Carrier Safety Regulations

EN

European Committee for Standardization (EN)
Central Secretariat
Rue de Stassart 36
B-10 50 Brussels

Standard Reference

Number	Title
European Standard EN 1081: 1998	Resilient Floor Coverings—Determination of the Electrical Resistance

EPA

Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Standard Reference

Number	Title
40 CFR Part 112	Oil Pollution Prevention
40 CFR Part 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

FM

Factory Mutual Global Research
Standards Laboratories Department
1301 Atwood Avenue, P.O. Box 7500
Johnston, RI 02919

Standard Reference

Number	Title
ANSI/FM 4996—13	Approval Standard for Classification of Pallets and Other Material Handling Products as Equivalent to Wood Pallets

1 **IIAR** International Institute of Ammonia Refrigeration
 2 1001 N. Fairfax Street, Suite 503
 3 Alexandria, VA 22314

4 Standard
 5 Reference
 6 Number Title

7 IIAR-2—2014 Equipment, Design and Installation of Closed-Circuit Ammonia [Mechanical] Refrigerating Systems
 8 IIAR-6—2019 Inspection, Testing, and Maintenance of Safe Closed-Circuit Ammonia Refrigeration Systems
 9 IIAR-7—2019 Developing Operating Procedures for Closed-Circuit Ammonia Mechanical Refrigerating Systems
 10 IIAR-8—2020 Decommissioning of Closed-Circuit Ammonia Refrigeration Systems
 11 IIAR-9—2020 Minimum System Safety Requirements for Existing Closed-Circuit Ammonia Refrigeration Systems

14 **IKECA** International Kitchen Exhaust Cleaning Association
 15 100 North 20th Street, Suite 400
 16 Philadelphia, PA 19103

17 Standard
 18 Reference
 19 Number Title

20 C10—2011 Standard for Cleaning of Commercial Kitchen Exhaust Systems
 21 ANSI/IKECA

24 **ISO** International Organization for Standardization (ISO)
 25 ISO Central Secretariat
 26 1 ch, de la Voie-Creuse, Case postale 56
 27 CH-1211 Geneva 20, Switzerland

28 Standard
 29 Reference
 30 Number Title

31 ISO 8115—86 Cotton Bales—Dimensions and Density

34 **NEMA** National Electrical Manufacturer’s Association
 35 1300 N. 17th Street
 36 Suite 1847
 37 Rosslyn, VA 22209

38 Standard
 39 Reference
 40 Number Title

41 250—2003 Enclosures for Electrical Equipment (1,000 Volt Maximum)

44 **NFPA** National Fire Protection Association
 45 Batterymarch Park
 46 Quincy, MA 02269

47 Standard
 48 Reference
 49 Number Title

50 [1—09] [Fire Code]
 51 2—16 Hydrogen Technologies Code
 52 10—[07]13 Portable Fire Extinguishers
 53 11—[05]10 Low-, Medium- and High-Expansion Foam
 54 12—[08]11 Carbon Dioxide Extinguishing Systems
 55 12A—[04]09 Halon 1301 Fire Extinguishing Systems
 56 13—[07]16 Installation of Sprinkler Systems
 57 13R—[07]16 [Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height] Standard
 58 for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
 59 15—17 Standard for Water Spray Fixed Systems for Fire Protection
 60 16—[07]15 Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
 61 17—[02]13 Dry Chemical Extinguishing Systems
 62 17A—[02]13 Wet Chemical Extinguishing Systems
 63 20—[07]16 Installation of Stationary Pumps for Fire Protection
 64 22—[08]13 Water Tanks for Private Fire Protection
 65 24—[10]13 Installation of Private Fire Service Mains and their Appurtenances
 66 25—[11]14 Inspection, Testing and Maintenance of Water-Based Fire Protection Systems

30—[08]12	Flammable and Combustible Liquids Code
1 30A—[08]15	Code for Motor Fuel-Dispensing Facilities and Repair Garages
2 30B—[07]15	Manufacture and Storage of Aerosol Products
3 32—[07]16	[Drycleaning Plants] <u>Standard for Drycleaning Facilities</u>
4 33—[07]16	Spray Application Using Flammable or Combustible Materials
5 34—[07]15	Dipping [and], Coating, <u>and Printing</u> Processes Using Flammable or Combustible Liquids
6 35—[05]11	Manufacture of Organic Coatings
7 40—[07]11	Storage and Handling of Cellulose Nitrate [(Motion Picture)]Film
8 45—[04]15	Fire Protection for Laboratories Using Chemicals
9 51—[07]13	Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes
10 52—[06]13	[Compressed Natural Gas (CNG) Vehicular Fuel Systems] <u>Vehicular Natural Gas Fuel Systems Code</u>
11 55—[10]13	Compressed Gases and Cryogenic Fluids Code
12 <u>56—12</u>	<u>Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems</u>
13 58—[08]14	Liquefied Petroleum Gas Code
14 61—[08]13	Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
15 <u>68—2018</u>	<u>Standard on Explosion Protection by Deflagration Venting</u>
16 69—[08]14	Explosion Prevention Systems
17 72—[10]16	National Fire Alarm and Signaling Code
18 76—16	Standard for the Fire Protection of Telecommunications Facilities
19 77—07	Recommended Practice on Static Electricity
20 80—[07]13	Fire Doors and Other Opening Protectives
21 85—[07]15	Boiler and Combustion System Hazards Code
22 86—[07]15	Ovens and Furnaces
23 <u>88A—19</u>	<u>Standard for Parking Structures</u>
24 <u>96—17</u>	<u>Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations</u>
25 99—[05]15	[Health Care Facilities] <u>Health Care Facilities Code</u>
26 105—[07]13	[Installation of Smoke Door Assemblies and Other Opening Protectives] <u>Standard for Smoke Door Assemblies and</u>
27 <u>Other Opening Protectives</u>	
28 110—[05]13	Emergency and Standby Power Systems
29 111—[05]13	Stored Electrical Energy Emergency and Standby Power Systems
30 120—[04]15	Fire Prevention and Control in Coal Mines
31 130—[10]20	Fixed Guideway Transit and Passenger Rail Systems
32 <u>140—18</u>	<u>Standard on Motion Picture and Television Production Studio Soundstages, Approved Production Facilities, and</u>
33 <u>Production Locations</u>	
34 160—[06]11	Use of Flame Effects Before an Audience
35 241—[04]13	Safeguarding Construction, Alteration, and Demolition Operations
36 260—[03]13	Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture
37 261—[03]13	Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by
38 Smoldering Cigarettes	
39 289—[09]13	Method of Fire Test for Individual Fuel Packages
40 303—[06]11	Fire Protection Standard for Marinas and Boatyards
41 <u>307—2021</u>	<u>Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves</u>
42 <u>318—15</u>	<u>Standard for the Protection of Semiconductor Fabrication Facilities</u>
43 <u>326—10</u>	<u>Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning or Repair</u>
44 <u>385—12</u>	<u>Standard for Tank Vehicles for Flammable and Combustible Liquids</u>
45 <u>400—13</u>	<u>Hazardous Materials Code</u>
46 407—[07]12	Aircraft Fuel Servicing
47 [430—04]	[Storage of Liquid and Solid Oxidizers]
48 484—[06]15	Combustible Metals
49 [490—02]	[Storage of Ammonium Nitrate]
50 495—[06]13	Explosive Materials Code
51 498—[06]13	Safe Havens and Interchange Lots for Vehicles Transporting Explosives
52 502—[11]20	Road Tunnels, Bridges and Other Limited Access Highways
53 505—[06]13	Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions,
54 Maintenance, and Operations	
55 <u>652—16</u>	<u>Standard on the Fundamentals of Combustible Dust</u>
56 654—[06]13	Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of
57 Combustible Particulate Solids	
58 655—[07]12	Prevention of Sulfur Fires and Explosions
59 <u>664—12</u>	<u>Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities</u>
60 701—10	Standard Methods of Fire Tests for Flame-Propagation of Textiles and Films
61 704—[07]12	Identification of the Hazards of Materials for Emergency Response
62 720—[09]15	Installation of Carbon Monoxide (CO) Detection and Warning Equipment
63 750—[06]15	Standard on Water Mist Fire Protection Systems
64 780—08	Standard for the Installation of Lightning Protection Systems
65 820—08	Fire Protection in Wastewater Treatment and Collection Facilities
66 850—10	Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations
67 <u>855—20</u>	<u>Standard for the Installation of Stationary Energy Storage Systems</u>
68 1122—[08]13	Model Rocketry
69 1123—[06]14	Fireworks Display
70 1124—[06]17	Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles
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1125—[07]12	Manufacture of Model Rocket and High Power Rocket Motors
1126—[06]11	Use of Pyrotechnics Before a Proximate Audience
1127—[08]13	High Power Rocketry
2001—[08]15	Clean Agent Fire Extinguishing Systems
2010—[10]15	Fixed Aerosol Fire Extinguishing Systems

UL

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

Standard Reference Number	Title
30—95	<u>Metal Safety Cans—with Revisions through [December 2004] July 2009</u>
80—07	<u>Standard for Steel Tanks for Oil-Burner Fuels and Other Combustible Liquids—with revisions through August 2009</u>
142—06	<u>Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids—with revisions through February 12, 2010</u>
268—09	<u>Standard for Smoke Detectors for Fire Alarm Systems</u>
300—05	<u>Fire Testing of Fire Extinguishing Systems for Protection of [Restaurant] Commercial Cooking Equipment—with revisions through July 2010</u>
300A—06	<u>Outline of Investigation for Extinguishing System Units for Residential Range Top Cooking Surfaces</u>
325—02	<u>Door, Drapery, Gate, Louver, and Window Operators and Systems—with Revisions through February 2006</u>
499—05	<u>Standard for Electric Heating Appliances—with revisions through February 2013</u>
864—03	<u>Standard for Control Units and Accessories for Fire Alarm Systems—with revisions through December 2014</u>
900—04	<u>Air Filter Units—with revisions through February 2012</u>
1275—05	<u>Flammable Liquid Storage Cabinets—with Revisions through [May 2006] February 2010</u>
1313—93	<u>Standard for Nonmetallic Safety Cans for Petroleum Products—with Revisions through [May 2003] November 2012</u>
1315—95	<u>Standard for Safety for Metal Waste Paper Containers—with Revisions through [December 2003] September 2012</u>
1564—15	<u>Standard for Industrial Battery Chargers</u>
1741—10	<u>Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources</u>
1973—18	<u>Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications</u>
1975—06	<u>Fire Tests for Foamed Plastics Used for Decorative Purpose</u>
2017—08	<u>Standard for General-Purpose Signaling Devices and Systems—with revisions through May 2011</u>
2075—13	<u>Standard for Gas and Vapor Detectors and Sensors</u>
2085—97	<u>Protected Aboveground Tanks for Flammable and Combustible Liquids—with Revisions through [December 1999] September 2010</u>
2200—12	<u>Standard for Stationary Engine Generator Assemblies—with revisions through June 2013</u>
2208—[05]10	<u>Solvent Distillation Units—with revisions through March 2011</u>
2272—16	<u>Standard for Electrical Systems for Personal E-Mobility Devices</u>
2335—[01]10	<u>Fire Tests of Storage Pallets—with Revisions through September [2004] 2012</u>
2360—00	<u>Standard for Test Methods for Determining the combustibility characteristics of Plastics Used in Semi-Conductor Tool Construction—with revisions through May 2013</u>
2849—20	<u>Standard for Electrical Systems for eBikes</u>
9540—20	<u>Standard for Energy Storage Systems and Equipment</u>
9540A—19	<u>Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems, 4th edition, November 2019</u>

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**APPENDIX A
FEES**

**SECTION FC A01
CERTIFICATES**

A01.1 Certificate fees. Applicants for certificates required pursuant to the provisions of this code or the rules shall pay the fees specified in this section. Fees for certificates shall be per year, except as otherwise indicated. Fees for written and practical examinations shall be per examination.

	Fee
1. Blasting contractor certificate	
Original application	\$105.00
Renewal application	\$50.00
2. Certificate of approval (per application)	
Original application	\$625.00
Amended application	\$625.00
Change of ownership	\$625.00
Change in manufacturing process, chemical composition or design	\$625.00
Renewal application	\$50.00
Change of identification, including change in name of article, model number or name of manufacturer	\$210.00
3. Certificate of fitness	
Original application (including written examination) (for 3 years) (<u>except fire and life safety director</u>)	\$25.00
<u>Fire and life safety director</u>	
Original application (including one written examination) (for 3 years)	\$25.00
Each additional written examination	\$25.00
Practical (on-site) examination for fire <u>and life</u> safety director (<u>fire safety and non-fire emergency components</u>)	[\$445.00] \$750.00
Practical (on-site) examination (<u>fire safety component only</u>)	\$445.00
Practical (on-site) examination [for fire safety/EAP director] (<u>non-fire emergency component only</u>)	\$305.00
Renewal application (without examination)	\$5.00
4. Certificate of license for flammable and combustible liquid storage systems	
Original application (including written examination)	\$145.00
Renewal application (without examination)	\$15.00
5. Certificate of license for liquid motor fuel storage and dispensing systems	
Original application (including written examination)	\$145.00
Renewal application (without examination)	\$15.00
6. Certificate of operation	
Original application	\$3500.00

1	Renewal application	\$2500.00
2		
3	7. Certificate of qualification for refrigerating system operating engineer	
4	Original application (including written examination) (for 3 years)	\$60.00
5	Practical examination	\$225.00
6	Renewal application (without examination)	\$5.00
7		
8	8. Commercial cooking exhaust system servicing company certificate	
9	Original application	\$105.00
10	Renewal application	\$50.00
11		
12	9. Fireworks contractor certificate	
13	Original application	\$110.00
14	Renewal application	\$110.00
15		
16	10. Fumigation and insecticidal fogging operation company certificate	
17	Original application	\$105.00
18	Renewal application	\$50.00
19		
20	11. Portable fire extinguisher sales company certificate	
21	Original application	\$105.00
22	Renewal application	\$50.00
23		
24	12. Portable fire extinguisher servicing company certificate	
25	Original application	\$100.00
26	Renewal application	\$50.00
27		
28	13. Pyrotechnic supplier certificate	
29	Original application	\$105.00
30	Renewal application	\$50.00
31		
32	14. Registration of expeditors	
33	Original registration application	\$105.00
34	Renewal registration application	\$50.00
35		
36	15. Smoke detector maintenance company certificate	
37	Original application	\$105.00
38	Renewal application	\$50.00
39		
40	<u>16. ARC system testing company certificate</u>	
41	<u>Original application</u>	<u>\$105.00</u>
42	<u>Renewal application</u>	<u>\$50.00</u>
43	<u>Original portable radio programming (per radio)</u>	<u>\$75.00</u>
44	<u>Portable radio inspection (per radio)</u>	<u>\$75.00</u>
45		
46	<u>17. Fire alarm system installation, inspection, testing and servicing</u>	
47	<u>Original application</u>	<u>\$105.00</u>

1 per year, except when based on frequency of inspection or hourly rate, as indicated. Hourly rates
 2 are per inspector.

3
 4 **Fee**

5 **1. Aerosol products**

6	Store, handle or use up to and including 2,500 pounds (1135 kg)	\$105.00
7	Store, handle or use more than 2,500 pounds (1135 kg)	\$210.00

8
 9 **2. Alcohol-based hand rubs**

10	<u>Store, handle or use more than 275 gallons (1041 L) of flammable or</u>	
11	<u>combustible alcohol-based hand rubs in portable container designed for</u>	
12	<u>consumer use with a capacity not exceeding 68 fluid ounces (2.01 L), that</u>	
13	<u>does not require handling of the contents</u>	<u>\$105.00</u>

14
 15 **[2]3. Asphalt melters**

16	Store, handle or use an asphalt melter	\$105.00
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17
 18 **[3]4. Assembly occupancies (places of assembly)**

19	Fire safety inspection/permit (frequency of inspection as required by code or	
20	rule)	
21	Occupancy 75 to 149	\$415.00
22	Occupancy 150 to 499	\$520.00
23	Occupancy 500 to 999	\$625.00
24	Occupancy 1,000 to 2,499	\$725.00
25	Occupancy 2,500 to 9,999	\$830.00
26	Occupancy 10,000 or greater, and arenas and stadiums (per hour)	\$210.00

27
 28 **[4]5. Automotive liquid motor fuel-dispensing facilities**

29	[Maintain or] <u>Establish and</u> operate an automotive liquid motor fuel-	
30	dispensing facility	\$105.00
31	Precision test of underground tank and piping (frequency of inspection as	
32	required by code or rule) (per hour)	\$210.00
33	Leak detection functionality test (per hour) (frequency of test as required by	
34	code or rule)	\$210.00
35	Tank test (per site) (frequency of test as required by code or rule)	\$355.00
36	Tank reopening and repair (frequency of inspection as required by code or	
37	rule)	\$320.00
38	Installation and alteration (frequency of inspection as required by code or	
39	rule)	
40	With discharge lines	
41	For tank with capacity of 4,000 gallons (15 140 L) or less	\$980.00
42	Each additional tank	\$210.00
43	For tank with a capacity greater than 4,000 gallons (15 140 L)	\$1,210.00
44	Each additional tank	\$420.00
45	Without discharge lines	
46	For tank with capacity of 4,000 gallons (15 140 L) or less	\$665.00
47	Each additional tank	\$195.00

1	For tank with a capacity greater than 4,000 gallons (15 140 L)	\$840.00
2	Each additional tank	\$385.00
3	Fire extinguishing system test	
4	Initial installation acceptance test (per system) (per hour)	\$210.00
5	Periodic test (frequency of test as required by code or rule) (per system)	
6	(per hour)	\$210.00
7		
8	<u>6. Automotive salvage and wrecking facilities</u>	
9	<u>Establish and operate an automotive salvage and wrecking facility</u>	<u>\$105.00</u>
10		
11	[5]7. Aviation facilities and operations	
12	Maintain or operate an aircraft-fueling vehicle	\$105.00
13	Conduct a helicopter landing at other than an approved heliport, helistop or	
14	airport	\$315.00
15	Conduct a helicopter lift operation	\$315.00
16	Conduct a hot air balloon operation	\$315.00
17		
18	[6]8. Bulk plants and terminals and bulk transfer facilities	
19	Store and/or use flammable and combustible liquids in stationary tanks (per	
20	equivalent unit of storage)	\$70.00
21	Use following algorithm to determine “equivalent unit of storage”:	
22	Equivalent unit of storage = (number of millions of gallons of tank	
23	capacity at facility) + (3 x number of tanks at facility)	
24	Fire protection system inspection (frequency of inspection as required by code	
25	or rule) (per hour)	\$210.00
26	Fire department connection inspection (frequency of inspection as required by	
27	code or rule) (per hour)	\$210.00
28	Periodic inspection and/or test (frequency of inspection as required by code	
29	or rule) (per hour)	\$210.00
30	Installation of devices, equipment and systems (new or altered), including fire	
31	protection systems (frequency of inspection as required by code or rule) (per	
32	hour)	\$210.00
33		
34	[7]9. CNG motor fuel-dispensing facilities	
35	[Maintain or] <u>Establish and operate a CNG motor fuel-dispensing facility</u>	\$625.00
36	Installation of devices, equipment and systems (new or altered), including fire	
37	protection systems (frequency of inspection as required by code or rule) (per	
38	hour)	\$210.00
39		
40	[8]10. Cellulose nitrate film	
41	Store	
42	Up to and including 100,000 feet (30 480 000 mm)	\$105.00
43	More than 100,000 feet (30 480 000 mm)	\$210.00
44	Handle and use	\$105.00
45		
46	[9]11. Coke-fueled salamanders	
47	Store, handle or use coke-fueled salamanders at a construction site	\$105.00

1		
2	[10]12. Combustible dust-producing operations	
3	[Conduct]Establish and operate a combustible dust-producing	
4	[operation]facility	\$105.00
5		
6	[11]13. Combustible fibers	
7	Store less than 20,000 pounds (9080 kg)	\$105.00
8	Store 20,000 pounds (9080 kg) or more	\$210.00
9		
10	[12]14. Combustible liquids (excluding paints, varnishes and lacquers)	
11	Store, handle or use liquids with a flash point of 300°F (149°C) or less	
12	In containers each equal to or less than 55 gallons (208 L):	
13	Up to and including 550 gallons (2082 L)	\$105.00
14	More than 550 gallons (2082 L) up to and including 2,500 gallons	
15	(9463 L)	\$210.00
16	Each additional 2,500 gallons (9463 L) or portion thereof	\$105.00
17	In tanks each larger than 55 gallons (208 L)	
18	Up to and including twenty tanks	\$125.00
19	More than twenty tanks	\$415.00
20	Store, handle or use fuel oil in tanks each larger than 55 gallons (208 L)	
21	In buildings where no oil burner certificate of fitness is required	\$90.00
22	In buildings where an oil burner certificate of fitness is required, or for	
23	any other purpose	
24	Up to and including twenty tanks	\$105.00
25	More than twenty tanks	\$210.00
26	Store kerosene	
27	Store for retail sale	\$105.00
28	Store for wholesale	\$210.00
29	Store for use	\$105.00
30	Store or handle essential oils	
31	Less than 500 pounds (227 kg)	\$50.00
32	500 pounds (227 kg) or more	\$105.00
33	Store, handle or use petroleum products with a flash point exceeding 300°F	
34	(149°C)	
35	In containers each equal to or less than 55 gallons (208 L)	
36	Up to and including 550 gallons (2082 L)	\$105.00
37	More than 550 gallons (2082 L) up to and including 2,500 gallons	
38	(9463 L)	\$210.00
39	Each additional 2,500 gallons (9463 L) or portion thereof	\$105.00
40	In tanks each larger than 55 gallons (208 L)	
41	Up to and including twenty tanks	\$125.00
42	More than twenty tanks	\$415.00
43	Store, handle or use waxes, oils and fats (animal, vegetable or mineral)	
44	More than 400 pounds (182 kg) of wax	\$105.00
45	More than 250 gallons (946 L) of oils and/or fats	\$105.00
46	Manufacture combustible liquid	\$210.00
47	[Manufacture or distill liquor, spirits or alcohol	[\$210.00

1	Store liquors, spirits or alcohol (except retail liquor stores and premises where	
2	alcohol is sold for consumption on the premises)	
3	In containers, each equal to or less than 55 gallons (208 L)	
4	More than 500 gallons (1893 L) up to and including 1,000 gallons	
5	(3785 L)	\$105.00
6	More than 1,000 gallons (3875 L) up to and including 5,000 gallons	
7	(18 925 L)	\$210.00
8	Each additional 5,000 gallons (18 925 L) or portion thereof	\$105.00
9	In tanks each larger than 55 gallons (208 L)	
10	Up to and including ten tanks	\$105.00
11	More than ten tanks]	\$210.00]
12	Store and/or use fuel oil stored on a marine vessel or watercraft moored to or	Included in
13	anchored at privately-owned waterfront property	fees set
14		forth in FC
15		[A03.1(6)]
16		<u>A03.1(8)</u> ;
17		tank on the
18		vessel is
19		treated as a
20		stationary
21		tank
22		
23	Store and use fuel oil on a mobile heating and power generation trailer	
24	(citywide)	\$105.00
25		
26	[13]15. Combustible materials	
27	Store more than 2,000 cubic feet (57 m ³)	\$105.00
28	Store flammable plastic foam	
29	Up to and including 6,000 pounds (2724 kg)	\$105.00
30	More than 6,000 pounds (2724 kg)	\$210.00
31		
32	[13]16. Commercial [cooking systems] kitchen	
33	[Maintain or] <u>Establish and</u> operate each commercial [cooking system]	
34	<u>kitchen or other separate cooking area that is a commercial kitchen</u>	\$70.00
35	Acceptance test of fire extinguishing system	As set forth
36		in FC
37		[A03.1(25)]
38		<u>A03.1(29)</u>
39		
40	[15]17. Compressed gases	
41	Store, handle or use corrosive	\$210.00
42	Store, handle or use flammable (nonliquefied)	\$210.00
43	Store, handle or use flammable (liquefied, noncryogenic, except LPG)	\$210.00
44	<u>Store, handle or use liquefied petroleum gas (LPG) at construction site</u>	<u>\$210.00</u>
45	Store, handle or use nonflammable (nonliquefied)	\$210.00
46	Store, handle or use nonflammable (liquefied, noncryogenic)	\$210.00
47	Store, handle or use anhydrous liquid ammonia	\$210.00

1	<u>Store, handle or use carbon dioxide, low pressure carbon dioxide beverage</u>	
2	<u>dispensing systems</u>	\$105.00
3	Store, handle or use carbon dioxide, <u>all other</u>	\$210.00
4	Store, handle or use acetylene	\$210.00
5	Store, handle or use highly toxic	\$210.00
6	Store, handle or use liquefied chlorine	\$105.00
7	Store, handle or use toxic	\$210.00
8	Store, handle or use unstable (reactive)	\$210.00
9	Store, handle or use water reactive	\$210.00
10	Store, handle or use pyrophoric	\$210.00
11		
12	[16]18. Compressing gases	
13	Maintain or operate a device, equipment or system to compress flammable gas	
14	Compress to a pressure up to and including 15 psig (103.4 kPa)	\$210.00
15	Compress to a pressure more than 15 psig (103.4 kPa)	\$415.00
16	Maintain or operate a device, equipment or system to compress nonflammable	
17	gas	\$210.00
18	Maintain or operate a device, equipment or system to compress atmospheric	
19	air	
20	Up to and including three compressors	\$105.00
21	Each additional six compressors or portion thereof	\$105.00
22		
23	[17]19. Construction sites	
24	Fire safety inspection (annual fee)	\$315.00
25		
26	[18]20. Corrosive materials	
27	Store, handle or use solid	\$50.00
28	Store, handle or use liquid	
29	In portable containers	\$50.00
30	In tanks (each unit of 1,000 gallons (3785 L) or portion thereof)	\$50.00
31		
32	[19]21. Cryogenic fluids	
33	Store, handle or use flammable	\$210.00
34	Store, handle or use nonflammable	
35	Up to and including 1,300 gallons (4921 L)	\$210.00
36	Each additional 3,900 gallons (14 762 L) or portion thereof	\$105.00
37		
38	<u>22. Distilleries</u>	
39	<u>Establish and operate a distillery, including manufacturing or distilling liquor,</u>	
40	<u>spirits or alcohol</u>	\$210.00
41	<u>Store liquor, spirits, raw alcohol or other alcohol (except retail liquor stores</u>	
42	<u>and premises where alcohol is sold for consumption on the premises)</u>	
43	<u>In containers, each equal to or less than 55 gallons (208 L), storage tanks,</u>	
44	<u>or intermediate bulk container</u>	
45	<u>More than 500 gallons (1893 L) up to and including 1500 gallons</u>	
46	<u>(5678 L)</u>	\$105.00
47		

1	<u>More than 1500 gallons (5678 L) up to and including 8,000 gallons</u>	
2	<u>(30 283 L)</u>	<u>\$210.00</u>
3	<u>Each additional 5,000 gallons (18 925 L) or portion thereof in tanks</u>	
4	<u>each larger than 55 gallons (208 L) or intermediate bulk container</u>	<u>\$105.00</u>
5		
6	[20]23. Dry cleaning facilities	
7	[Maintain or] <u>Establish and</u> operate a dry cleaning facility	\$125.00
8		
9	[21]24. Decorations	
10	Fire safety inspection of combustible decorations and scenery in:	
11	An assembly occupancy	Included in
12		fee set forth
13		in FC
14		[A03.1(3)]
15		<u>A03.1(4)</u>
16	Other public gathering places	Included in
17		fee set forth
18		in FC
19		[A03.1(6)]
20		<u>A03.1(68)</u>
21		
22	<u>25. Energy storage systems, stationary</u>	
23	<u>Install and operate a stationary energy storage system</u>	<u>\$210.00</u>
24		
25	[22]26. Explosives	
26	Store, handle and sell explosives at vendor's facility (frequency of inspection	
27	as required by code or rule)	
28	Initial inspection	\$210.00
29	Subsequent inspection (per hour)	\$210.00
30	Store, handle and use explosives at a job site (frequency of inspection as	
31	required by code or rule) (per hour)	\$210.00
32	Store small arms ammunition for sale	
33	Up to and including 25 percent of the maximum allowable code quantities	
34		\$105.00
35	More than 25 percent of the maximum allowable code quantities	\$210.00
36	Store black powder or smokeless propellant	
37	Less than 14 pounds (6.4 kg)	\$50.00
38	14 pounds (6.4 kg) or more	\$105.00
39	Store, sell or offer for sale low explosives at a location other than a vendor's	
40	facility or job site (frequency of inspection as required by code) (per hour)	\$210.00
41		
42	[23]27. Fire apparatus services (as required by code, rule, permit or hazardous	
43	materials release)	
44	Firefighting apparatus (per hour) (per apparatus)	\$525.00
45	Other services	Hourly fee
46		based on
47		cost of

services,
including
travel time,
overtime,
expenses
and
overhead

1
2
3
4
5
6
7
8
9 **[24]28. [Fire department in-building] In-building auxiliary radio**
10 **communication systems and other in-building radio communication**
11 **systems**

12 To maintain and operate an in-building auxiliary radio communication system
13 or other in-building radio communication system \$105.00[
14 [Original application (including acceptance testing) plus \$50.00

per building
floor
included in
application
\$105.00]

15
16
17
18
19 Renewal application]

20
21 **[25]29. Fire protection systems**

22 Acceptance tests

23 Commercial cooking fire extinguishing system (per system)

24 Mechanical only

\$285.00

25 Mechanical and electrical

\$580.00

26 Fire and carbon monoxide alarm and communication systems (per system)
27 (per hour)

\$210.00

28 Fire extinguishing systems, mechanical and electrical, (per system) (per
29 hour)

30 Aerosol

\$210.00

31 Carbon dioxide

\$210.00

32 Clean agent

\$210.00

33 Dry chemical

\$210.00

34 Foam

\$210.00

35 Water mist

\$210.00

36 Wet chemical

\$210.00

37 Fire and booster pumps (per pump) (per hour)

38 Electric driven, mechanical and electrical

\$210.00

39 Engine driven

\$210.00

40 Periodic tests (frequency of inspection as required by code or rule)

41 Sprinkler system

42 One fire department connection

\$320.00

43 Each additional fire department connection

\$275.00

44 Trip test (per valve) (per hour)

\$210.00

45 Flow test

\$105.00

46 Standpipe system

47 One fire department connection

\$365.00

1	Each additional fire department connection	\$210.00
2	Combination sprinkler/standpipe system	
3	One fire department connection	\$365.00
4	Each additional fire department connection	\$210.00
5		
6	[26]30. Fireworks displays	
7	Permit application	\$210.00
8	Site inspection (per hour)	\$210.00
9	Monitoring of fireworks display (including pre-display operations and post-	
10	display safety measures) (per hour)	\$210.00
11		
12	[27]31. Flammable liquids (excluding paint, varnish and lacquer)	
13	Store, handle or use in containers, each equal to or less than 55 gallons	
14	(208 L)	
15	Up to and including 550 gallons (2082 L)	\$105.00
16	More than 550 gallons (2082 L) up to and including 2,500 gallons	
17	(9463 L)	\$210.00
18	Each additional 2,500 gallons (9463 L) or portion thereof	\$105.00
19	Store, handle or use in tanks, each larger than 55 gallons (208 L)	
20	Up to and including ten tanks	\$210.00
21	More than ten tanks	\$415.00
22	Store, handle and use gasoline or other petroleum products in containers, each	
23	equal to or less than 55 gallons (208 L)	
24	Up to and including 55 gallons (208 L)	\$50.00
25	More than 55 gallons (208 L)	\$105.00
26	Store and handle for retail sale	
27	Up to and including 100 gallons (379 L)	\$95.00
28	More than 100 gallons (379 L)	\$105.00
29	<u>Store and use gasoline in quantities exceeding 2½ gallons (9.5 L) in a single</u>	
30	<u>item of portable fuel equipment or an aggregate of 10 gallons (38 L) in all</u>	
31	<u>portable fueled equipment</u>	<u>\$105.00</u>
32	Manufacture flammable liquid	\$210.00
33	Manufacture or distill liquor, spirits or alcohol	[\$210.00]
34		<u>Included in</u>
35		<u>fee set forth</u>
36		<u>in FC</u>
37		<u>A03.1(22)</u>
38		
39	[Store and handle liquors, spirits or alcohol (except retail liquor stores and	
40	premises where alcohol is sold for consumption on the premises)	
41	In containers, each equal to or less than 55 gallons (208 L)	
42	More than 500 gallons (1893 L) up to and including 1,000 gallons	[\$105.00
43	(3785 L)	
44	More than 1,000 gallons (3785 L) up to and including 5,000 gallons	\$210.00
45	(18 925 L)	
46	Each additional 5,000 gallons (18 925 L) or portion thereof	\$105.00
47	In tanks each larger than 55 gallons (208 L)	

1	Up to and including ten tanks	\$105.00
2	More than ten tanks]	\$210.00]
3		
4	[28]32. Flammable solids	
5	Store, handle or use	\$105.00
6	Store, handle and use nitrocellulose products in manufacture	\$210.00
7		
8	33. Fleet fueling	
9	<u>Transfer of Class II and III liquids directly from a cargo tank into the fuel tank</u>	
10	<u>of a motor vehicle</u>	<u>\$210.00</u>
11		
12	[29]34. Floor finishing operations	
13	Conduct a floor finishing operation	\$105.00
14		
15	[30]35. Fruit and crop ripening	
16	[Maintain or] <u>Establish and</u> operate a fruit or crop ripening facility	\$105.00
17		
18	[31]36. Fumigation and insecticidal fogging	
19	[Maintain or] <u>Establish and</u> operate a toxic or flammable fumigation and	
20	insecticidal fogging facility	\$105.00
21		
22	[32]37. High rise office buildings, and hotels and motels	
23	Fire safety inspection (frequency of inspection as required by code or rule)	\$570.00
24		
25	[33]38. Highly toxic materials	
26	Store, handle or use liquid	\$105.00
27	Store, handle or use solid	\$105.00
28		
29	[34]39. Hazardous production materials (HPM)	
30	Store, handle or use hazardous production materials at an HPM facility	\$315.00
31		
32	[35]40. High-piled combustible storage	
33	Maintain or operate a high-piled combustible storage facility	
34	Up to and including 5,000 square feet (465 m ²) of high-piled combustible	
35	storage	\$105.00
36	More than 5,000 square feet (465 m ²) of high-piled combustible storage	\$210.00
37		
38	[36]41. Hot work operations	
39	Citywide operations	\$105.00
40	Site-specific hot work program	\$105.00
41	<u>Use of flammable gas with oxygen</u>	<u>\$105.00</u>
42	<u>Use of flammable gas without oxygen at a construction site</u>	<u>\$105.00</u>
43	<u>Use of electric arc equipment at a construction site</u>	<u>\$105.00</u>
44	<u>Use of any open flame in a torch-applied roof system</u>	<u>\$105.00</u>
45	<u>Public demonstration of hot work, other than in an accredited educational</u>	<u>\$105.00</u>
46	<u>institution or program</u>	
47		

1	<u>42. Hydrogen fuel gas rooms</u>	
2	<u>Establish and operate a hydrogen fuel gas room for the generation, storage,</u>	
3	<u>handling and use of gaseous hydrogen</u>	<u>\$210.00</u>
4		
5	[37]<u>43. Hydrogen motor fuel-dispensing facilities</u>	
6	[Maintain or] <u>Establish and</u> operate a hydrogen motor fuel-dispensing facility	
7		\$105.00
8		
9	[38]<u>44. Industrial furnaces</u>	
10	[Maintain or] <u>Install and</u> operate an industrial furnace	\$105.00
11		
12	[39]<u>45. Inspections, re-inspections and witnessed tests</u>	
13	Inspections or witnessed tests required or authorized by the code or rules, the	
14	fee for which is not otherwise specified herein (per hour)	\$210.00
15	Re-inspections in connection with permit or inspection required or authorized	
16	by code or rule, to confirm correction of violation(s) (per hour)	\$210.00
17	Failure to provide access for a scheduled inspection or witnessed test	\$105.00
18	Late cancellation of a scheduled inspection or witnessed test (notice of less	
19	than one business day)	\$105.00
20		
21	[40]<u>46. Laboratories, non-production</u>	
22	Maintain or operate a non-production laboratory	
23	Original permit (per laboratory unit)	
24	Up to and including 2,500 square feet (232 m ²)	\$210.00
25	More than 2,500 square feet (232 m ²)	\$315.00
26	Renewal permits (per laboratory unit)	
27	Up to and including 2,500 square feet (232 m ²)	\$105.00
28	More than 2,500 square feet (232 m ²)	\$210.00
29		
30	[41]<u>47. Liquefied petroleum gases</u>	
31	Store, handle or use	\$210.00
32		
33	[42]<u>48. Lumber yards</u>	
34	Storage of lumber at lumber yards	\$105.00
35		
36	[43]<u>49. Marine liquid motor fuel-dispensing facilities</u>	
37	[Maintain or] <u>Establish and</u> operate a marine liquid motor fuel-dispensing	
38	facility	\$105.00
39	Precision test of underground tank and piping (frequency of inspection as	
40	required by code or rule) (per hour)	\$210.00
41	Leak detection functionality test (frequency of test as required by code or rule)	
42	(per hour)	\$210.00
43	Tank test (per site) (frequency of test as required by code or rule)	\$355.00
44	Tank reopening and repair (frequency of inspection as required by code or	
45	rule)	\$320.00
46	Installation and alteration (frequency of inspection as required by code or	
47	rule)	

1	With discharge lines	
2	For tank with capacity up to and including 4,000 gallons (15 140 L)	\$980.00
3	Each additional tank	\$210.00
4	For tank with a capacity more than 4,000 gallons (15 140 L)	\$1,210.00
5	Each additional tank	\$420.00
6	Without discharge lines	
7	For tank with capacity up to and including 4,000 gallons (15 140 L)	\$665.00
8	Each additional tank	\$195.00
9	For tank with a capacity more than 4,000 gallons (15 140 L)	\$840.00
10	Each additional tank	\$385.00
11	Fire extinguishing system test	
12	Initial installation acceptance test (per system)	\$750.00
13	Periodic test (frequency of test as required by code or rule) (per system)	\$750.00
14		
15	[44]50. Methane recovery facilities	
16	[Maintain or] <u>Establish and</u> operate a methane recovery facility (per hour)	\$210.00
17	Installation of devices, equipment and systems (new or altered), (frequency of	
18	inspection as required by code or rule) (per hour)	\$210.00
19	Periodic inspection/test (frequency of inspection as required by code or rule)	
20	(per hour)	\$210.00
21		
22	[45]51. Natural gas liquefaction facilities	
23	[Maintain or] <u>Establish and</u> operate natural gas liquefaction facility (per hour)	
24		\$210.00
25	Installation of devices, equipment and systems (new or altered), (frequency of	
26	inspection as required by code or rule) (per hour)	\$210.00
27	Periodic inspection/test (frequency of inspection as required by code or rule)	
28	(per hour)	\$210.00
29		
30	<u>52. Non-tobacco hookah establishments</u>	
31	<u>Establish and operate a non-tobacco hookah establishment</u>	<u>\$105.00</u>
32		
33	[46]53. Open flames	
34	Fire safety inspection for use of an open flame in:	
35	A place of assembly	Included in
36		fee set forth
37		in FC
38		[A03.1(3)]
39		<u>A03.1(4)</u>
40	Other public gathering places	Included in
41		fee set forth
42		in FC
43		[A03.1(61)]
44		<u>A03.1(68)</u>
45	A covered mall (per hour)	\$210.00
46		
47	[47]54. Organic coatings	

1	Manufacture organic coating	\$210.00
2		
3	[48]55. Organic peroxides	
4	Store, handle or use liquid	\$210.00
5	Store, handle or use solid	\$210.00
6		
7	[49]56. Oxidizing materials	
8	Store, handle or use liquid (per hour)	\$210.00
9	Store, handle or use solid (per hour)	\$210.00
10	Store, handle or use hydrogen peroxide, (concentration of 35 percent or more)	
11	Up to and including 150 gallons (568 L) in containers	\$50.00
12	More than 150 (568 L) gallons in containers	\$105.00
13	In bulk, per 1,000 gallons (3785 L) or portion thereof	\$50.00
14		
15	[50]57. Paints, varnishes and lacquers with a flash point of 300°F (149°C) or less	
16		
17	Store, handle or use paint, varnish and lacquer	
18	Up to and including 1,000 gallons (3785 L)	\$105.00
19	More than 1,000 gallons (3785 L)	\$210.00
20	Manufacture, mix or compound	\$210.00
21		
22	[51]58. Plan examinations	
23	Review of design and installation documents, except as otherwise provided in FC A03.1(51)	\$420.00
24		
25	<u>Review of ARC system commissioning plan</u>	
26	<u>Original submission</u>	<u>\$420.00,</u>
27		<u>plus \$50.00</u>
28		<u>per building</u>
29		<u>floor</u>
30		<u>included in</u>
31		<u>application</u>
32	<u>Five-year recertification</u>	<u>\$420.00,</u>
33		<u>plus \$50.00</u>
34		<u>per building</u>
35		<u>floor</u>
36		<u>included in</u>
37		<u>application</u>
38	Review of design and installation documents for commercial cooking systems	\$210.00
39	<u>Review of fire protection plan</u>	<u>\$420.00</u>
40	Review of fire safety and evacuation plan	\$210.00
41	Review of emergency action plan	
42	Original application	\$525.00
43	Amended application (per hour) (total not to exceed \$525.00)	\$210.00
44	Review of combined fire safety and evacuation plan and emergency action plan	
45	Original application	\$630.00
	Amended application (per hour) (total not to exceed \$630.00)	\$210.00

1	Review of professionally certified application	\$210.00
2	<u>Supplemental review of new technology applications (including plans filed</u>	
3	<u>pursuant to FC 102.8 and 104.9) and other applications requiring complex</u>	
4	<u>technical analyses</u>	<u>\$525.00</u>
5	<u>Late plan filing</u>	
6	<u>Filing of design and installation documents for new or altered facility or</u>	
7	<u>installation from the date of commencement of work without approved</u>	<u>50%</u>
8	<u>design and installation documents to one year from such date</u>	<u>surcharge</u>
9	<u>Filing of design and installation documents for new or altered facility or</u>	
10	<u>installation more than one year after the date of commencement of work</u>	<u>100%</u>
11	<u>without approved design and installation documents</u>	<u>surcharge</u>
12		
13	[52]59. Portable fueled space heaters	
14	Store, handle or use	\$210.00
15		
16	[53]60. Pyrophoric materials	
17	Store, handle or use liquid	\$105.00
18	Store, handle or use solid	\$105.00
19		
20	[54]61. Pyroxylin plastics	
21	Store, handle or use raw pyroxylin plastics	\$105.00
22	Use of raw pyroxylin plastics in manufacture of products	\$210.00
23		
24	[55]62. Refrigerating systems	
25	[Maintain or] <u>Install and</u> operate a refrigerating system (per compressor)	\$105.00
26		
27	[56]63. Repair garages	
28	[Maintain or] <u>Establish and</u> operate a repair garage	\$105.00
29		
30	[57]64. Smoking rooms	
31	Fire safety inspection in health care facilities (frequency of inspection as	
32	required by code or rule)	\$105.00
33		
34	[58]65. Special effects	
35	Special effects permit application	\$210.00
36	Production company special effects permit application	\$210.00
37	Site inspection (per hour)	\$210.00
38	Central storage facility permit application	\$210.00
39	Monitoring of special effects operations (per hour)	\$210.00
40		
41	[59]66. Special services	
42	Requests for an inspection, witnessing of test, or other services, at times other	Hourly fee
43	than regular business hours, or other special circumstances	based on
44		cost of
45		services,
46		including
47		travel time,

overtime,
expenses
and
overhead

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[60]67. Spraying and dipping operations		
Conduct a spraying or dipping operation		\$310.00
[61]68. Street fairs and other public gatherings or gathering places		
Review of site plan (per hour)		\$210.00
Fire safety inspection (per hour)		\$210.00
[62]69. Sulfur		
Store, handle or use up to and including 1,500 pounds (681 kg)		\$50.00
Store, handle or use more than 1,500 pounds (681 kg)		\$105.00
[63]70. Tar kettles		
Store, handle or use a tar kettle		\$105.00
[64]71. Tire-rebuilding plants		
[Maintain or] <u>Establish and</u> operate a tire-rebuilding plant		\$210.00
[65]72. Tires, scrap tires and tire byproducts		
Store tires, scrap tires and tire byproducts		\$70.00
[66]73. Toxic materials		
Store, handle or use liquid		\$105.00
Store, handle or use solid		\$105.00
[67]74. Transportation of hazardous materials		
Combustible liquid by motor vehicle		\$105.00
Compressed gas by motor vehicle		\$105.00
Explosives by marine vessel or watercraft (per hour)		\$210.00
Explosives by motor vehicle (per hour)		\$210.00
Firefighting apparatus escort (as required by code or rule) (per hour) (per apparatus)		\$525.00
Flammable liquid by motor vehicle		\$105.00
[68]75. Unstable (reactive) materials		
Store, handle or use liquid		\$105.00
Store, handle or use solid		\$105.00
[69]76. Water-reactive materials		
Store, handle or use liquid		\$105.00
Store, handle or use solid		\$105.00
Store calcium carbide		
Up to and including 600 pounds (272 kg)		\$105.00

1 More than 600 pounds (272 kg) \$210.00

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3
4 **SECTION FC A04**
5 **ADMINISTRATIVE SERVICES**
6

7 **A04.1 Fees for administrative services.** Fees for administrative services shall be as follows:
8

	Fee
9	
10 1. Transcripts and special reports (per transcript or special report) (per	
11 premises)	\$10.00
12	
13 2. Replacement of lost permit or certificate	\$5.00
14	
15 3. Application for modification of certificate (except certificate of approval)	\$5.00
16	
17 4. Violation dismissal notice (per violation)	\$5.00
18	
19 5. Application for modification	\$200.00
20	
21 6. Removal and storage of contraband material (per article, device or	
22 equipment reclaimed)	\$65.00
23	
24 7. Payment returned for insufficient funds (per item)	\$20.00
25	
26 8. Vacate order processing (upon dismissal for compliance)	\$525.00
27	
28 <u>9. Document management for fire alarm system, emergency alarm system,</u>	
29 <u>auxiliary radio communication system or fire extinguishing system</u>	
30 <u>application and for any other application not requiring a work permit</u>	
31 <u>from the Department of Buildings</u> (per application)	<u>\$165.00</u>
32	
33 <u>10. Certification of corrected defects in fire alarm system installations (per</u>	
34 <u>certification)</u>	
35 <u>Certification of defects with or without documentation</u>	<u>\$210.00</u>
36 <u>Certification of required documentation only</u>	<u>\$105.00</u>
37	
38 <u>11. Project authorization</u>	<u>\$105.00</u>
39	

40
41 **SECTION FC A05**
42 **LATE RENEWALS**
43

44 **A05.1 Penalties for late renewals.** Penalties and fees for late renewal of certificates and permits
45 shall be as follows:
46

Fee

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1. Certificates and permits

As set forth
in FC117.3

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APPENDIX B
REFERENCED STANDARD MODIFICATIONS

SECTION FC B01
NATIONAL FIRE PROTECTION ASSOCIATION REFERENCED STANDARDS

B01.1 National Fire Protection Association standards. The provisions of the following National Fire Protection Association (NFPA) standards are modified as follows:

NFPA 11-[2005] 2010. The provisions of NFPA 11-[2005] 2010, Low-, Medium- and High-Expansion Foam, are modified as follows:

1. Delete the language of Section 2.2 and replace with “NFPA Standards. As required by the Fire Code.”

2. Delete Chapter [9] 10 in its entirety.

NFPA 12-[2008] 2011. The provisions of NFPA 12-[2008] 2011, Carbon Dioxide Extinguishing Systems, are modified as follows:

1. Delete the language of Section 2.2 and replace with “NFPA Standards. As required by the Fire Code.”

2. Delete Section [3.3.9] 3.3.10.

[2] 3. Delete Section [3.3.10.1] 3.3.11.1.

[3. Delete Section 4.4.4.3.1 and 4.4.4.3.2.]

4. Delete Section 4.4.4.3 in its entirety.

[4] 5. Delete Sections 4.5.2(2) and 4.5.2(3).

[5] 6. In Section 4.5.4.8.2 delete “not more than 4 ft (1.2 m)” and replace with “42 to 48 inches (1067 to 1219 mm),” and add “at its center” at the end of the sentence.

[6] 7. In Section 4.5.5.5, replace “NFPA 72” with “NFPA 72, as modified by FC Appendix B.”

[7] 8. Delete Section 4.6.1.1.

[8] 9. In Section 4.8.3.2(8), replace “NFPA 72” with “NFPA 72, as modified by FC Appendix B.”

[9] 10. Delete Chapter 7 in its entirety.

[10] 11. Delete Chapter 8 in its entirety.

1
2 [11] 12. Delete Chapter 9 in its entirety.
3

4 [12. In Section 2.2, replace “NFPA 70, National Electrical Code, 2008 edition” with
5 “Electrical Code;” replace “NFPA 72, National Fire Alarm Code, 2007 edition” with
6 “NFPA 72, as modified by FC Appendix B.”]
7

8 **NFPA 13-[2007] 2016**. The provisions of NFPA 13-[2007] 2016, Installation of Sprinkler
9 Systems, with respect to the design and installation of sprinkler systems, are modified to
10 incorporate the “Modified Standards for Automatic Sprinkler, Standpipe and Fire Alarm Systems”
11 as set forth in Appendix Q to the Building Code.
12

13 **NFPA 13R-[2007] 2016**. The provisions of NFPA 13R-[2007] 2016, Standard for the Installation
14 of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, with
15 respect to the design and installation of sprinkler systems, are modified to incorporate the
16 “Modified Standards for Automatic Sprinkler, Standpipe and Fire Alarm Systems” as set forth in
17 Appendix Q to the Building Code.
18

19 **NFPA 16-[2007] 2015**. The provisions of NFPA 16-[2007] 2015, Installation of Foam-Water
20 Sprinkler and Foam-Water Spray Systems, are modified as follows:
21

- 22 1. Delete the language of Section 2.2 and replace with “NFPA Standards. As required by
23 the Fire Code.”
24
- 25 2. Delete the language of Section 4.4.1 and replace with “A reserve supply of foam
26 concentrate equal to that required for operation of the system for the required duration
27 shall be available on site.”
28
- 29 3. In Section 5.8.1, replace “NFPA 13[, Standard for the Installation of Sprinkler Systems]”
30 with “NFPA 13, as modified by FC Appendix B.”
31
- 32 4. In Section 5.10, replace “NFPA 13[, Standard for the Installation of Sprinkler Systems]”
33 with “NFPA 13, as modified by FC Appendix B.”
34
- 35 5. In Section 5.13.2, replace “NFPA 72[, National Fire Alarm Code]” with “NFPA 72, as
36 modified by FC Appendix B.”
37
- 38 6. Delete items (1) through and including (10) of Section 7.3.1 and replace with “As
39 required by this code, the Building Code and the Electrical Code, as applicable.”
40

41 **NFPA 17-[2002] 2013**. The provisions of NFPA 17-[2002] 2013, Dry Chemical Extinguishing
42 Systems, are modified as follows:
43

- 44 1. [In Section 2.2, replace “NFPA 70, National Electrical Code, 2002 Edition” with
45 “Electrical Code,” and replace “NFPA 72” with “NFPA 72, as modified by FC
46 Appendix B.”] Delete the language of Section 2.2 and replace with “NFPA Standards.
47 As required by the Fire Code.”

- 1
2 2. In Section 3.2.4, replace “authority having jurisdiction” with “Fire Department.”
3
4 3. Delete Section 3.4.3.
5
6 4. Delete Section 4.2 in its entirety.
7
8 5. In Section 5.7.1.7.1, replace “no more than 48 in. (1200 mm), nor less than 42 in.
9 (1067 mm) above the floor” with “42 to 48 inches (1067 to 1219 mm) above the floor
10 at its center.”
11
12 6. In Section 5.7.4, replace “NFPA 72, National Fire Alarm and Signaling Code” with
13 “NFPA 72, as modified by FC Appendix B” and add a new sentence to the end of the
14 section to read “The fire extinguishing system shall report alarm and trouble signals.”
15
16 7. Delete the language of Section 5.8.3.6 and replace with “The dry chemical container and
17 expellant gas assemblies shall be located where they will be readily accessible for
18 manual activation during an emergency, and for inspection, servicing and other
19 maintenance.”
20
21 8. Delete Chapter 8 in its entirety.
22
23 9. Delete Section 9.3 in its entirety.
24
25 [9] 10. Delete Section 9.10 in its entirety.
26
27 [10] 11. [Add a new sentence to the end of Section 10.2, to read “10.2] In Section 10.3,
28 delete the language and replace with “Before any work is commenced the applicant shall
29 submit plans to [the Department of Buildings and] the Fire Department for approval.”
30
31 [11] 12. Add a new section, [10.4.3.6] 10.4.3.9, to read “The completed system shall be
32 tested by the installer, at [his] their own risk, as required by other provisions of the Fire
33 Code before any approval shall be issued.”
34
35 [12] 13. Add a new sentence to the end of Section 10.5, to read “A durable sign setting
36 forth clear and concise operating instructions for the system shall be conspicuously
37 posted at the entrance to the protected area.”
38

39 **NFPA 17A-[2002] 2013.** The provisions of NFPA 17A-[2002] 2013, Wet Chemical Extinguishing
40 Systems, are modified as follows:

- 41
42 1. [In Section 2.2, replace “NFPA 70, National Electrical Code, [2002] 2011 edition” with
43 “Electrical Code,” and replace “NFPA 72, National Fire Alarm Code, [2002] 2013
44 edition” with “NFPA 72, as modified by FC Appendix B.”] Delete the language of
45 Section 2.2 and replace with “NFPA Standards. As required by the Fire Code.”
46
47 2. In Section 3.2.3, replace “authority having jurisdiction” with “Fire Department.”

- 1
- 2 3. In Section 4.7, replace “NFPA 70, National Electrical Code” with “Electrical Code.”
- 3
- 4 4. In Section 5.2.1.9, replace “NFPA 72, National Fire Alarm Code” with “NFPA 72, as
- 5 modified by FC Appendix B.”
- 6
- 7 5. In [the second sentence of] Section 5.2.1.10.1, replace “no more than 48 in. (1200 mm),
- 8 nor less than 42 in. (1067 mm) above the floor” with “42 to 48 inches (1067 to 1219
- 9 mm) above the floor at its center.”
- 10
- 11 6. [Add a new sentence to the end of] In Section [6.1] 6.3.5, [to read] delete the language
- 12 and replace with “Before any work is commenced, the applicant shall submit plans to
- 13 [the Department of Buildings and] the Fire Department for approval.”
- 14
- 15 7. Add a new sentence to the end of Section 6.4.10.4, to read “A durable sign setting forth
- 16 clear and concise operating instructions for the system shall be conspicuously posted at
- 17 the entrance to the protected area.”
- 18

19 **NFPA 45-2015.** The provisions of NFPA 45-2015, Standard on Fire Protection for Laboratories
20 Using Chemicals, are modified as follows:

- 21
- 22 1. In Section 1.1.1, add a new sentence to the end of the section, to read “This standard
- 23 shall additionally apply to any non-production laboratory as defined in FC202.”
- 24
- 25 2. In Section 1.1.3(1)(b), delete “NFPA 54, National Fuel Gas Code” and replace with “the
- 26 Fuel Gas Code”.
- 27
- 28 3. In the second sentence of Section 1.1.4, insert “listed below” after the word
- 29 “concentrations”, and delete “, the following” and:
- 30
- 31 3.1. Insert a semicolon to the end of Sections 1.1.4(1), 1.1.4(2) and 1.1.4(3).
- 32
- 33 3.2. In Section 1.1.4(4), insert “; and” after “peroxides”.
- 34
- 35 3.3. Insert a period to the end of Section 1.1.4(5).
- 36
- 37 3.4. Delete the sentence after Section 1.1.4(5).
- 38
- 39 4. Add a new Section, 1.1.7, to read “1.1.7 The provisions of this standard are adopted only
- 40 with respect to operational and maintenance requirements. Pursuant to FC102.2,
- 41 operational and maintenance provisions are applicable to new and existing facilities.”
- 42
- 43 5. Delete Section 1.4 in its entirety.
- 44
- 45 6. Delete Section 1.5 in its entirety.
- 46

- 1 7. Delete the language of Section 2.2 and replace with “NFPA Standards. As required by
2 the Fire Code.”
3
- 4 8. In Section 2.3.2, delete “ASME Boiler and Pressure Vessel Code, Section VIII, 2013”
5 and replace with “ASME Boiler and Pressure Vessel Code, Section I, II, IV, V, VI and
6 VIII, 2010”.
7
- 8 9. In Section 3.3.13, delete “under direct supervision of an instructor and” after the word
9 “is”.
10
- 11 10. In Section 3.3.31, delete “under the direct supervision of an instructor” and add a
12 sentence to the end, to read “Laboratory units used for graduate or postgraduate
13 research are not considered to be instructional laboratory units.”
14
- 15 11. Delete Section 3.3.37 and replace with “3.3.37 Laboratory Unit. An enclosed space of
16 a minimum one-hour fire-rated construction, designed or used as a non-production
17 laboratory. Laboratory units may include one or more separate laboratory work areas,
18 and accessory storage rooms or spaces within or contiguous with the laboratory unit,
19 such as offices and lavatories.”
20
- 21 12. In Section 4.2.2.1, delete “Class C or” after the word “as”.
22
- 23 13. In Section 4.2.2.2, delete “or shall be limited to 50 percent of the flammable and
24 combustible liquids quantity for Class C” after “Class D” and delete rest of the sentence
25 after the word “units”.
26
- 27 14. In Section 5.6, delete “NFPA 70” and replace with “the Electrical Code”.
28
- 29 15. In Section 5.6.2, delete “Article 500 of NFPA 70” and replace with “the Electrical
30 Code”.
31
- 32 16. In Section 6.1.2, delete 6.1.2(2) and 6.1.2(3), and:
33
- 34 16.1. Renumber 6.1.2(4) as 6.1.2(2).
35
- 36 16.2. Renumber 6.1.2(5) as 6.1.2(3).
37
- 38 16.3. Renumber 6.1.2(6) as 6.1.2(4).
39
- 40 16.4. Renumber 6.1.2(7) as 6.1.2(5).
41
- 42 16.5. Renumber 6.1.2(8) as 6.1.2(6).
43
- 44 16.7. Renumber 6.1.2(9) as 6.1.2(7).
45
- 46 17. In Section 6.4.1, delete “where provided” and replace with “when required by the
47 Building Code”.

1
2 18. In Section 6.5.3.1:
3

4 18.1. In the section title, delete “Provisions Within the Emergency Action Plan” and
5 replace with “Emergency Plan”.
6

7 18.2. Delete the first sentence and replace with “The owner of a chemical laboratory
8 shall cause plans for laboratory emergencies to be prepared.”
9

10 18.3. In the second sentence, delete “action” between the words “emergency” and
11 “plan”.
12

13 18.4. In Section 6.5.3.1(1), insert a semicolon after “alarm”.
14

15 18.5. In Section 6.5.3.1(2), delete “fire department, governmental agencies, or other
16 emergency responders or contacts, as required” and replace with “Fire Department
17 and other emergency response agencies;”.
18

19 18.6. In Section 6.5.3.1(3), before “as applicable” insert “including primary and
20 secondary evacuation routes,” and insert a semicolon to the end of the section.
21

22 18.7. In Sections 6.5.3.1(4) and 6.5.3.1(7), insert a semicolon to the end of the section.
23

24 18.8. In Section 6.5.3.1(5), insert “regular emergency” between the words
25 “conducting” and “drills”, and insert a semicolon to the end of the section.
26

27 18.9 In Section 6.5.3.1(6), delete “shutdown” and replace with “shut down”, and insert
28 a semicolon to the end of the section.
29

30 18.10. Delete Section 6.5.3.1(8).
31

32 18.11. Renumber Section 6.5.3.1(9) as 6.5.3.1(8), and insert a semicolon to the end of
33 the section.
34

35 18.12. Renumber Section 6.5.3.1(10) as 6.5.3.1(9), and insert “; and” to the end of the
36 section.
37

38 18.13. Renumber Section 6.5.3.1(11) as 6.5.3.1(10), and delete “to be taken”, and insert
39 a period to the end of the section.
40

41 19. In Section 6.5.3.3, move “on the emergency plan” from the end of the sentence to
42 between the words “trained” and “prior”, and add a sentence to the end, to read
43 “Records for such training shall be maintained in accordance with FC107.7.”
44

45 20. In Section 6.6:
46

- 1 20.1. In Section 6.6.2, delete “where” and replace with “by any person that uses”, and
2 delete “are used”.
3
- 4 20.2. In Section 6.6.3, insert a comma after the word “worn”, delete “where” and insert
5 “, by any person that uses” after the word “possible”, and delete “are used” after
6 the word “reagents”.
7
- 8 20.3. In Section 6.6.4, delete “Natural-fiber” and replace with “Any person that uses
9 pyrophoric reagents outside the inert atmosphere of a glovebox shall wear natural-
10 fiber”, delete “shall be worn”, insert “their” after the word “under”, delete “the”
11 after the word “on” and replace with “their”, and delete “where pyrophoric reagents
12 are used outside the inert atmosphere of a glovebox” after the word “feet”.
13
- 14 21. In Section 7.2.2.1, insert “involving the handling and use of hazardous materials” after
15 the word “operations” in the first sentence, and in the second sentence, delete “in a safe
16 condition” and replace with “safely”, delete “during the time that” and replace with
17 “until”, and delete the word “exists” and replace with “is corrected”.
18
- 19 22. In Section 7.10.2, delete 7.10.2(2) and 7.10.2(3), and:
20
- 21 22.1. Renumber 7.10.2(4) as 7.10.2(2).
22
- 23 22.2. Renumber 7.10.2(5) as 7.10.2(3).
24
- 25 22.3. Renumber 7.10.2(6) as 7.10.2(4).
26
- 27 22.4. Renumber 7.10.2(7) as 7.10.2(5).
28
- 29 22.5. Renumber 7.10.2(8) as 7.10.2(6).
30
- 31 22.6. Renumber 7.10.2(9) as 7.10.2(7).
32
- 33 22.7. Renumber 7.10.2(10) as 7.10.2(8).
34
- 35 23. Delete Section 7.14.2 and replace with “All activities inside the hood shall be
36 suspended immediately following the discovery of deficiencies that cause the hood to
37 perform outside of limits established by regulatory authority requirements and/or
38 nationally recognized industry standards”.
39
- 40 24. In Section 8.2.3.7, delete “(SDS)” after the word “sheet”.
41
- 42 25. In Section 8.2.4.1, delete “except as modified in Chapter 9 for buildings with more than
43 three stories” after the word code, and delete 8.2.4.1(1) through 8.2.4.1(3).
44
- 45 26. In Section 8.2.4.4, delete the words “might”, “(i.e., time sensitive)”, and “, and properly
46 managed”.
47

1 27. In Section 8.2.4.4.1, delete “shall consist of the following elements” and replace with
2 the word “includes”, and:

3
4 27.1. In Section 8.2.4.4.1(1), insert “-” between the words “time” and “sensitive”, and
5 after the word “sensitive” insert “(materials that become hazardous during
6 prolonged storage);”.

7
8 27.2 In Section 8.2.4.4.1(2), insert a semi-colon after the word “frequency”.

9
10 27.3 In Section 8.2.4.4.1(3), insert “; and” after the word “material”.

11
12 27.4 In Section 8.2.4.4.1(4), insert a period after the word “results”.

13
14 28. In Section 8.2.4.7, delete “shall be” and replace with “is”, and add a new sentence to
15 the end, to read “This prohibition does not apply to the storage of chemicals used in a
16 long term experiment or research, chemicals for which special ventilation requirements
17 are recommended based on the unusually hazardous nature of the chemicals, and any
18 other chemical storage approved by the Fire Department.”

19
20 29. In Section 8.3:

21
22 29.1. In Section 8.3.3, replace “with the hazards of the waste chemicals” with “in
23 accordance with the regulations of the New York State Department of
24 Environmental Conservation”.

25
26 29.2. In Section 8.3.4, replace “shall not exceed 20 L (5 gal)” with “that are not required
27 to comply with the requirements of Section 8.3.3 shall be subject to the maximum
28 container sizes and types in accordance with Class II combustible liquids set forth
29 in Table 9.1.2”.

30
31 29.3. In Section 8.3.5, replace “Waste” with “Flammable and combustible liquid
32 waste”, and replace “type” with “types”.

33
34 29.4. In Section 8.3.6, replace “subject to” with “included in”.

35
36 30. In Section 9.5.1, replace “NFPA 30” with “FC5704.3.2”.

37
38 31. In Table 9.1.1(b):

39
40 31.1. In footnote b, delete “See 4.2.2 for additional requirements for educational” in
41 front of the word “and” and replace with “Educational”, and insert “shall be
42 regulated as Class D units” after the word “laboratories”.

43
44 31.2. Delete footnote d and replace with “See Exceptions 1 and 2 of FC5006.6.1 for
45 additional quantity restrictions on Class B Units.”

46

1 31.3. Delete footnote e and replace with “See Exception 3 of FC5006.6.1 for Class D
2 units with 2-hour fire-rated construction.”

3
4 32. In Section 11.2.7:

5
6 32.1. In the second sentence of Section 11.2.7.1(2), replace “Tubing” with
7 “Hose/tubing”, replace “clamped” with “gas-tight”, and add a sentence at the end,
8 to read “Prior to each use, all connections shall be verified for tightness.”.

9
10 32.2. Add a new Section 11.2.7.1(5), to read “(5) Combustible materials shall be kept
11 at least 0.610 m (2 ft) away from the open flame.”.

12
13 33. In Section 11.2.7.2(1), insert “(0.1 pt)” after “50 ml”.

14
15 34. In Section 11.3.1.1, delete “, including NFPA 70” and replace with “and the Electrical
16 Code”.

17
18 35. In Section 11.3.2.2, delete “Article 501 of NFPA 70” and replace with “the Electrical
19 Code”.

20
21 36. In Section 11.3.2.3, delete “Article 501 of NFPA 70” and replace with “the Electrical
22 Code”.

23
24 37. In Section 12.1, delete “new and existing” after the word “for”, and:

25
26 37.1. Add a new section, 12.1.1, to read “12.1.1 Supervision. Educational laboratory units
27 and instructional laboratory units shall be under the direct supervision of an instructor
28 while the laboratory is in operation.”

29
30 37.2. Add a new section, 12.1.2, to read “12.1.2 Hazard Risk Assessment. Prior to
31 instructors performing demonstrations or students conducting experiments using
32 hazardous chemicals, a documented hazard risk assessment shall be performed. A
33 hazard risk assessment is a written document prepared by a qualified person, and shall
34 include all of the following:

35
36 (1) An evaluation of the hazards of the demonstration or experiment;

37 (2) Appropriate personal protective equipment required;

38 (3) Safe work procedures;

39 (4) Emergency procedures; and

40 (5) Waste disposal procedures.”

41
42 38. In Section 12.2, replace “Where” with “Whenever”, and replace “required to perform
43 a documented hazard risk assessment, provide a safety briefing to students, provide
44 adequate personal protective equipment (PPE), and place a safety barrier (as required)”
45 with “fully familiar with the hazard risk assessment, provide a safety briefing to
46 students, ensure that adequate personal protective equipment has been provided and is

1 being properly used, and ensure that safety barriers, when required by 12.3.2.1.3, are
2 in place”.

3
4 38.1. In Section 12.2.1, replace “PPE” with “personal protective equipment”.

5
6 39. In Section 12.3:

7
8 39.1. In the first sentence of Section 12.3.1, replace “labs” with “laboratories”, in the
9 second sentence of such section, replace “lab classroom” with “laboratory” and
10 replace “one day’s use, preapportioned to the amount needed for each class session”
11 with “daily use in the laboratory”, and in the last sentence of such section, replace
12 “amount of chemical that is not in use during an individual class session” with
13 “chemicals stored in an educational laboratory” and add at the end “, except for the
14 amounts actually in use during an individual class session”.

15
16 39.2. In Section 12.3.1.1, replace “fire or building codes” with “the Fire Code and the
17 Building Code”.

18
19 39.3. In Section 12.3.1.5, replace “only when” with “while”.

20
21 39.4. In Section 12.3.2.1.1, delete “primary” in front the word “means”.

22
23 39.5. In Section 12.3.2.1.2, delete “being evolved” at the end of the first sentence, and
24 delete the last sentence.

25
26 39.6. In Section 12.3.2.3, replace “In educational and instructional laboratories where
27 experiments are conducted by students, the” with “The”, replace “be responsible
28 for conducting” with “conduct”, and insert “conducted by students” between the
29 words “experiment” and “to”.

30
31 40. Delete Section 12.4 in its entirety.

32
33 41. In the first sentence of Section 13.4.2, insert “in unopened containers” after the word
34 “storage”, insert “also” between the words “shall” and “be”, and delete “upon receipt
35 and when first opened to facilitate hazard control” and replace with “when received
36 into the laboratory chemical inventory”. In the second sentence of Section 13.4.2,
37 replace “Materials” with “Such materials”, insert “managed and” before the word
38 “disposed”, insert a comma after the word “date”, and delete “(SDSs)(see 8.2.4.4 and
39 A.8.2.4.4)”.

40
41 **NFPA 72-[2010] 2016.** The provisions of NFPA 72-[2010] 2016, National Fire Alarm and
42 Signaling Code, with respect to the design and installation of fire alarm systems, are modified to
43 incorporate the “Modified Standards for Automatic Sprinkler, Standpipe and Fire Alarm Systems”
44 as set forth in Appendix Q to the Building Code.

1 **NFPA 110-[2005] 2013.** The provisions of NFPA 110-[2005] 2013, Emergency and Standby
2 Power Systems, are modified as follows:

- 3
- 4 1. Delete Section 7.13.3.
- 5
- 6 2. Add a new sentence to the end of Section [7.13.4(5)] 7.13.4.1.3(5), to read “Time to
7 initial load transfer shall not exceed 10 seconds unless a longer time is allowed by the
8 Building Code and the Electrical Code.”
- 9
- 10 3. Delete Section [7.13.4.1(11)] 7.13.4.1.3(10) and replace with “[7.13.4.1(11)]
11 7.13.4.1.3(10) The load test with building load or other loads that simulate intended load
12 shall continue for 2 hours observing and recording load changes and the resultant effect
13 on voltage and frequency.”
- 14
- 15 4. Delete Section [7.13.10.2] 7.13.4.4.2 and replace with “[7.13.10.2] 7.13.4.4.2 The
16 complete crank/rest cycle shall consist of 3-15 second crank cycles with 15 second rest
17 periods between cranks.”
- 18
- 19 5. Add a new section, [7.13.13] 7.13.5, to read “[7.13.13] 7.13.5 Transfer switches shall be
20 tested in accordance with 8.4.6.”
- 21
- 22 6. Delete Section 8.1.2.
- 23
- 24 7. Delete Section 8.2 in its entirety.
- 25
- 26 8. Delete from the end of Section 8.3.1 the following language: “for the type and for the
27 time duration specified for the class.”
- 28
- 29 9. Delete Section 8.3.4 and replace with “8.3.4 A written record of the EPSS inspection,
30 tests, exercising, operation, and repairs shall be maintained in accordance with FC107.7.
31 Records shall be inclusive of the transfer switches and storage batteries.”
- 32
- 33 10. Add a new section, 8.4.4.1, to read “8.4.4.1 Inspection shall consist of observation of
34 all EPSS components for leaks, abnormal device position and status of all alarm/trouble
35 indicators.”
- 36
- 37 11. Delete Section 8.4.5.
- 38
- 39 12. In Section 8.4.6, replace “monthly” with “semiannually.”
- 40
- 41 13. In Section 8.4.6.1, replace “monthly” with “semiannually.”
- 42

43 **NFPA 130-[2010] 2020.** The provisions of NFPA 130-[2010] 2020, Standard on Fixed Guideway
44 Transit and Passenger Rail Systems, are modified as follows:

45

- 1 1. Add a new sentence to the end of Section [3.3.14] 3.3.17, to read “If required by the Fire
2 Department the analysis shall include the timed fire simulation, input data and output
3 data of the computational fluid dynamics analysis.”
4
- 5 2. Add a new section, [3.3.44.1.1] 3.3.57.1.1, to read “[3.3.44.1.1] 3.3.57.1.1 Deep Tunnel
6 Stations. Stations where the lowest track is 60 feet (18 288 mm) or more below grade.”
7
- 8 3. Delete Section 4.2.1 and replace with “4.2.1 The goal of this standard shall be to provide
9 an environment that, in the event of a fire or non-fire emergency, protects to the
10 maximum extent practicable occupants of fixed guideway transit and passenger rail
11 systems, including personnel present during the construction of such systems, and
12 firefighters and other personnel responding to the fire or non-fire emergency. This goal
13 includes the following objectives:
14
- 15 (1) protecting occupants not intimate with the initial fire development.
16
- 17 (2) maximizing the survivability of occupants intimate with the initial fire
18 development.
19
- 20 (3) facilitating short term and long term firefighting operations.”
21
- 22 4. Add a new section, 4.3.1.1, to read “4.3.1.1 Emergency responder protection. Systems
23 shall be designed, constructed and maintained to protect emergency responders during
24 the fire or fire-related emergencies.”
25
- 26 5. Add a new section, 4.3.2.1, to read “4.3.2.1 [Structural integrity.] Structural integrity
27 shall be maintained to protect emergency responders during the fire or fire-related
28 emergencies.”
29
- 30 6. In Section 4.5, insert “by the Fire Department” at the end of the sentence.
31
- 32 7. Add a new section, [4.7] 4.8, to read “[4.7] 4.8 Terrorist protection. Rail systems shall
33 be designed and operated to protect against potential terrorist attacks. The design and
34 operational criteria to protect against terrorist attacks shall be approved.”
35
- 36 [7. In Section 4.5, insert “by the Fire Department” at the end of the sentence.]
37
- 38 8. In the first sentence of Section [5.2.2.3] 5.2.1.2, insert “and in all enclosed stations and
39 open stations greater than 10,000 square feet (929 m²)” after the word “restricted.”
40
- 41 [9. Add a new item to the end of Section 5.4.11.4, to read “(5) Emergency ventilation
42 fans.”]
43
- 44 [10. In Section 5.5.2.1(3), insert “automatically upon transmission of a fire alarm signal”
45 between the words “stopped” and “locally,” and add a new sentence after Section
46 5.5.2.1.3(b), to read “Deceleration shall be in accordance with Section 5.5.2.1(4)(b).”]
47

- 1 [11. Delete the first sentence of Section 5.5.2.1(4) and replace with “Where provision is
2 made to stop escalators counted as a means of egress, one of the following shall apply:”]
3
- 4 [12. Add a new sentence to the end of Section 5.5.2.2, to read “For deep tunnel stations,
5 5.5.6.3.2.3 shall apply.”]
6
- 7 [13. At the end of Section 5.5.3.1, insert “or automatically upon transmission of a fire alarm
8 signal.”]
9
- 10 [14. Add two new subdivisions to Section 5.5.4, to read:
11
12 “(4) Devices operable by a citywide standard key shall be installed so the door can be held
13 in the open position.
14
15 (5) Access for emergency responders from the platform side at regular intervals by use of
16 a citywide standard key or other approved means.”]
17
- 18 [15] 9. Add [two new sentences to the end of Section 5.5.6.1] a new subdivision to 5.3.2.5,
19 to read “(8) Calculations to determine egress time shall take into consideration the
20 impact of products of combustion, but need not take into account delays in egress caused
21 by potential accumulations of rubbish or individuals that are not capable of self
22 evacuation.”
23
- 24 [16] 10. In Section [5.5.6.3.2.1] 5.3.5.2, replace “1120 mm (44 in.)” with “72 inches (1829
25 mm).”
26
- 27 [17] 11. Add a new sentence to the end of Section [5.5.6.3.2.3] 5.3.5.3, to read “For deep
28 tunnel stations, an area of rescue assistance shall be provided to accommodate persons
29 with an infirmity, disability or other special need in the course of exiting a deep tunnel
30 station by means of a stair or escalator, as set forth in A [5.5.6.3.2.3] 5.3.5.3,
31 A [5.5.6.3.2.3 (2)] 5.3.5.3 (2) and the referenced literature.”
32
- 33 12. In Section 5.3.5.4, delete the language, and replace with “Reserved”.
34
- 35 [18] 13. Delete the introductory language in Section [5.5.6.3.2.5] 5.3.5.5, and replace with:
36 “Escalators shall not be allowed to account for more than one-half of the required means
37 of egress capacity at any one level. Escalators shall meet the following criteria:”
38
- 39 14. In Section [5.5.6.3.2.5(1)] 5.3.5.5 (1), insert “being brought to a stop upon transmission
40 of a fire alarm signal, or” between the words “of” and “being.”
41
- 42 15. In Section 5.3.5.7(3), insert “automatically upon transmission of a fire alarm signal”
43 between the words “stopped” and “locally,” and add a new sentence after Section
44 5.3.5.7(3)(b), to read “Deceleration shall be in accordance with Section 5.3.5.7(4)(b).”
45
- 46 16. Delete the first sentence of Section 5.3.5.7(4) and replace with “Where provision is
47 made to stop escalators counted as a means of egress, one of the following shall apply:”

1
2 17. Add a new sentence to the end of Section 5.3.5.8, to read “For deep tunnel stations,
3 5.3.5.3 shall apply.”

4
5 [19] 18. Delete Section [5.5.6.3.3.1] 5.3.6.1 and replace with “[5.5.6.3.3.1] 5.3.6.1
6 Elevators shall be installed for the possible use in the evacuation of persons with
7 infirmities, disabilities or other special need. Elevators shall not be allowed to be used
8 in the calculation of means of egress capacity.”

9
10 [20] 19. Delete Section [5.5.6.3.3.2] 5.3.6.2.

11
12 [21] 20. In Section [5.5.6.3.3.3] 5.3.6.3, delete “counted as contributing to the [means of]
13 egress capacity[,” and replace “that” with “and]”.

14
15 [22] 21. In Section [5.5.6.3.3.4] 5.3.6.4, delete “counted as contributing to the [means of]
16 egress capacity,” delete “means of egress or” from Section [5.5.6.3.3.4(3)] 5.3.6.4(3),
17 and add two new subdivisions to the end of Section [5.5.6.3.3.4] 5.3.6.4, to read:

18
19 “([7] 8) Elevators shall be designed to accommodate an ambulance stretcher in
20 accordance with Section 3002.4 of the Building Code.

21
22 ([8] 9) A Fire Department-approved city[-]wide standard key shall be provided for elevator
23 control.”

24
25 [23] 22. Add a new sentence to the end of Section [5.5.6.3.4.4] 5.3.7.2, to read “Gate type
26 exits shall have a Fire Department-approved key, for access by Fire Department
27 personnel.”

28
29 23. Add two new subdivisions to Section 5.3.10.2, to read:

30
31 “(4) Devices operable by a citywide standard key shall be installed so the door can be held
32 in the open position.

33
34 (5) Access for emergency responders from the platform side at regular intervals by use of
35 a citywide standard key or other approved means.”

36
37 24. Delete Section 5.4.1.1 and replace with “5.4.1.1 The fire command center shall be in a
38 separate room with hardened security features in accordance with United States
39 Department of Homeland Security standards. The location of the fire command center
40 shall be approved by the Fire Department.”

41
42 25. Delete Section 5.4.1.2 and replace with “5.4.1.2 The fire command center shall be
43 provided with controls for the ventilation system of the station and the tunnels serving
44 such station.”

45
46 26. Add a new section 5.4.1.3, to read “The fire command center shall be provided with
47 voice communication capability throughout the station.”

1
2 27. Add a new sentence to the end of Section 5.4.2.5, to read “, and to approved central
3 station.”

4
5 28. In Section [5.7.3.1] 5.4.4.1, delete “, except trainways” at the end of the sentence. Add
6 a new sentence to the end of Section [5.7.3.1] 5.4.4.1, to read “Automatic sprinkler
7 protection shall be provided in all areas of deep tunnel stations.”

8
9 [25] 29. Delete Section [5.7.3.2] 5.4.4.3 and replace with “[5.7.3.2] 5.4.4.3 Sprinkler
10 systems shall be installed and acceptance tested in accordance with the Building Code
11 and the Fire Code. []Sprinkler systems shall be approved by the Fire Department”

12
13 [26] 30. Add a new section, [5.7.3.6] 5.4.4.7, to read “[5.7.3.6] 5.4.4.7 A fire department
14 connection shall be provided for all sprinkler systems, regardless of the number of
15 sprinkler heads in such system. The design of fire department connections shall be in
16 accordance with the Building Code and the Fire Code.”

17
18 [27] 31. In Section [5.7.4.1] 5.4.5.1, [delete “or Class III” and] insert “the Building Code,
19 the Fire Code and” between the words “with” and “NFPA 14.”

20
21 [28] 32. In Section [5.7.4.1.1(2)] 5.4.5.2(2), replace “245 m (800 ft)” with “600 feet
22 (182 880 mm).”

23
24 [29] 33. Add a new sentence to the end of Section [5.7.4.2] 5.4.5.3, to read “The location
25 of fire department connections shall be approved by the Fire Department.”

26
27 [30] 34. In Section [5.7.4.4] 5.4.5.7, insert “, the Building Code and the Fire Code” at the
28 end of the sentence.

29
30 [31] 35. Add a new section, [5.7.4.5] 5.4.5.8, to read “[5.7.4.5] 5.4.5.8 The system shall be
31 designed for a flow of 750 gpm (2839 L/min) (three hose streams) and with a residual
32 pressure of not less than 100 psi (690 kPa) available at all hose outlets. Dry standpipe
33 systems shall be capable of being completely filled with water in not more than
34 10 minutes at a flow rate of 750 gpm (2839 L/min).”

35
36 [32] 36. Add a new section, [5.7.4.6] 5.4.5.9, to read “[5.7.4.6] 5.4.5.9 Standpipe hose
37 outlets shall be installed throughout the station so that all areas within the station are
38 within 150 feet (45 720 mm) of a hose outlet.”

39
40 [33] 37. Add a new section, [5.7.4.7] 5.4.5.10, to read “[5.7.4.7] 5.4.5.10 Standpipe systems
41 shall be supplied by not less than two fire department connections complying with the
42 Building Code and FC912. Each fire department connection shall have signage
43 indicating the type of system and a description of the area it protects. The fire department
44 connection shall be suitable for the Fire Department operations.”

- 1 [34] 38. Add a new section, [5.7.4.8] 5.4.5.11, to read “[5.7.4.8] 5.4.5.11 Standpipe system
2 riser diagrams shall be conspicuously posted at the fire command center, firefighting
3 ingress locations and other Fire Department-approved locations.”
4
- 5 [35] 39. Add a new sentence to the end of Section [5.7.5] 5.4.6 to read “In addition, portable
6 fire extinguishers shall be provided in each staffed fare and information booth.”
7
- 8 [36. Delete Section 5.7.6.1 and replace with “5.7.6.1 The fire command center shall be in
9 a separate room with hardened security features in accordance with United States
10 Department of Homeland Security standards. The location of the fire command center
11 shall be approved by the Fire Department.”]
12
- 13 [37. Delete Section 5.7.6.2 and replace with “5.7.6.2 The fire command center shall be
14 provided with controls for the ventilation system of the station and the tunnels serving
15 such station.”]
16
- 17 [38. Add a new section 5.7.6.3, to read “The fire command center shall be provided with
18 voice communication capability throughout the station.”]
19
- 20 40. Add a new item to Section 5.4.8.5, to read “(6) Emergency ventilation fans”.
21
- 22 41. Add a new section 6.2.1.1 “A standpipe system shall be installed before the enclosed
23 trainway has exceeded a length of 150 feet (45 720 mm) beyond any access shaft or
24 portal and shall be extended as work progresses to within 150 feet (45 720 mm) of the
25 most remote portion of the enclosed trainway.”
26
- 27 42. Add a new section, 6.2.1.2, to read “6.2.1.2 Outlet valves shall be readily visible with
28 conspicuously posted Fire-Department approved signage.”
29
- 30 43. Add a new section, 6.2.3.2, to read “6.2.3.2 Flammable liquids, combustible liquids
31 and flammable gases shall not be stored or dispensed in trainways. Flammable liquids,
32 combustible liquids and flammable gases shall be stored or dispensed in stations in
33 accordance with the Fire Code and the Fire Department Rules.”
34
- 35 44. Add a new section, 6.2.3.3, to read “6.2.3.3 Flammable liquids and combustible liquids
36 shall not be stored or dispensed within 20 feet (6096 mm) of any tunnel vent grate or
37 any station entrance or exit.”
38
- 39 [39] 45. In Section [6.2.2.2.1] 6.3.1.4, replace “762 m (2500 ft)” with “1,000 feet
40 (304 800 mm).”
41
- 42 [40] 46. In Section [6.2.2.2.2] 6.3.2.3, replace “not be required to exceed 1120 mm (44
43 in.)” with “be a minimum of 44 inches (1120 mm).”
44
- 45 [41] 47. Add [two new sentences] a new sentence to the end of Section [6.2.2.5.3] 6.3.3.17,
46 to read “[Exit hatches shall be capable of being opened from the discharge side to permit

1 access by authorized personnel.] They shall be marked on the inside with the exit
2 number and the tracks they provide access to.”

3
4 [42] 48. Add a new section, [6.2.7.4] 6.4.2.5, to read “[6.2.7.4] 6.4.2.5 The path of travel
5 distance between blue light stations shall not exceed 600 feet (182 880 mm).”

6
7 [43] 49. Add a new section, [6.2.7.5] 6.4.2.6, to read “[6.2.7.5] 6.4.2.6 No path of travel
8 between blue light stations shall require crossing of rail tracks or a traction power rail.”

9
10 [44] 50. Add a new section, [6.2.7.6] 6.4.2.7, to read “[6.2.7.6] 6.4.2.7 Blue light stations
11 shall not be adjacent to the traction power rail or on the same side of the track bed as the
12 traction power rail.”

13
14 [45] 51. Add a new section, [6.2.7.7] 6.4.2.8, to read “[6.2.7.7] 6.4.2.8 Blue light stations
15 shall be provided with a blue light and reflective signage having alternating white and
16 blue stripes on each side of the blue light station. The signage shall be readily visible
17 from the trainway.”

18
19 [46] 52. Add a new section, [6.2.7.8] 6.4.2.9, to read “[6.2.7.8] 6.4.2.9 A public address
20 system with coded access shall be provided at each blue light station.”

21
22 [47. In Section 6.3.2, replace “Except as described in 6.3.2.1 and 6.3.2.2, emergency” with
23 “Emergency.”]

24
25 [48. Delete Sections 6.3.2.1 and 6.3.2.2 in their entirety.]

26
27 [49. Add a new item to the end of Section 6.3.3.2.11.1, to read “(5) Emergency ventilation
28 system.”]

29
30 [50] 53. Add a new sentence to the end of Section [6.5.1.1] 6.4.4.1, to read “Heat detectors
31 shall be provided in underground trainways when required by the Fire Department.”

32
33 [51. Add a new section, 6.5.1.3, to read “6.5.1.3 An approved fire extinguishing system
34 shall be provided in signal bungalows.”]

35
36 [52] 54. In Section [6.5.2.1.1] 6.4.5.2, [delete “or Class III,” and] insert “the Building Code,
37 the Fire Code and” between the words “with” and “NFPA 14.”, and add two sentences
38 to the end, to read “Standpipe hose outlets shall be installed throughout the trainway so
39 that all areas are within 150 feet (45 720 mm) of a hose outlet. Additionally, a hose
40 outlet shall be located at a Fire Department-approved location accessible from each
41 emergency exit (hatch). Hose outlet areas shall be lighted.”

42
43 [53] 55. In Section [6.5.2.1.2(2)] 6.4.5.3(2), replace “244 m (800 ft)” with “600 feet
44 (182 880 mm).”

1 [54] 56. Add a new section, [6.5.2.6] 6.4.5.11, to read “[6.5.2.6] 6.4.5.11 Standpipe systems
2 shall be installed, initially tested and maintained in accordance with the Fire Code and
3 the Building Code.”
4

5 [55] 57. Add a new section, [6.5.2.7] 6.4.5.12, to read “[6.5.2.7] 6.4.5.12 The system shall
6 be designed for a flow of not less than 750 gpm (2839 L/min) (three hose streams) and
7 a pressure of not less than 100 psi (690 kPa) shall be available at the hydraulically most
8 remote hose outlets. []A durable sign conspicuously posted at the fire department
9 connection shall read[]: “Do not pressurize system above _____psi.”
10

11 [56] 58. Add a new section, [6.5.2.8] 6.4.5.13, to read “[6.5.2.8] 6.4.5.13 Standpipes shall
12 be supplied by a minimum of two fire department connections at an approved location
13 at street level and remote from each other. Each fire department connection shall have
14 signage indicating the type of system and a description of the area being protected.”
15

16 [57] 59. Add a new section, [6.5.2.9] 6.4.5.14, to read “[6.5.2.9] 6.4.5.14 Dry standpipe
17 systems shall be capable of being completely filled with water in not more than 10
18 minutes from either fire department pumping apparatus or a fixed pump operating at
19 750 gpm (2839 L/min). Design flow rate shall not be less than 750 gpm (2839 L/min)
20 and the design pressure at the most remote hose outlet shall not be less than 100 psi (690
21 kPa).”
22

23 [58] 60. Add a new section, [6.5.2.10] 6.4.5.15, to read “[6.5.2.10] 6.4.5.15 Standpipe
24 system riser diagrams shall be conspicuously posted at all trainway fire department
25 ingress points and at the fire command center.”
26

27 [59] 61. Add a new section, [6.5.2.11] 6.4.5.16, to read “[6.5.2.11] 6.4.5.16 The standpipe
28 system shall be approved by the Fire Department.”
29

30 [60. In Section 6.5.3.1.1, replace “61 m (200 ft)” with “150 feet (45 720 mm).”]
31

32 [61. Add a new section, 6.5.3.1.3, to read “6.5.3.1.3 Outlet valves shall be readily visible
33 with conspicuously posted Fire-Department approved signage.”]
34

35 62. In Section 6.4.7.1, replace “Except as described in 6.3.2.1 and 6.3.2.2, emergency” with
36 “Emergency”.
37

38 63. Delete Sections 6.4.7.2 and 6.4.7.3 in their entirety.
39

40 64. Add a new item to the end of Section 6.4.8.2, to read “(5) Emergency ventilation
41 system”.
42

43 65. Add a new section, [6.5.5] 6.4.9, to read “[6.5.5] 6.4.9 Fire extinguishing system.”
44

45 [63] 66. Add a new section, [6.5.5.1] 6.4.9.1, to read “[6.5.5.1] 6.4.9.1 A Fire Department-
46 approved manual or automatic fire extinguishing system shall be provided in tunnels.”
47

1 67. Add a new section, 6.4.9.2, to read “6.4.9.2 A Fire Department-approved manual or
2 automatic fire extinguishing system shall be provided in signal bungalows.”

3
4 [64] 68. Add a new section, [6.5.5.2] 6.4.9.3, to read “[6.5.5.2] 6.4.9.3 A Fire Department-
5 approved fire extinguishing system shall be provided in underground diesel locomotive
6 yards.”

7
8 [65. Add a new section, 6.6.5.4, to read “6.6.5.4 Flammable liquids, combustible liquids
9 and flammable gases shall not be stored or dispensed in trainways. Flammable liquids,
10 combustible liquids and flammable gases shall be stored or dispensed in stations in
11 accordance with the Fire Code and the Fire Department Rules.”]

12
13 [66. Add a new section, 6.6.5.5, to read “6.6.5.5 Flammable liquids and combustible liquids
14 shall not be stored or dispensed within 20 feet (6096 mm) of any tunnel vent grate or
15 any station entrance or exit.”]

16
17 [67] 69. In Section 7.2.1(5), delete “for a minimum of 1 hour but not less than the required
18 time of tenability.”

19
20 [68] 70. In Section 7.2.1.1, replace “during the design incident for the duration determined
21 as per 7.2.1(5)” with “as per the computational fluid dynamics analysis for the design
22 incident” and add a new sentence to the end, to read “The system shall be designed to
23 function in extreme conditions consistent with the computational fluid dynamics
24 analysis.”

25
26 [69] 71. Add a new item to the end of Section 7.2.3, to read “([8] 7) Capability to monitor
27 the system operation and performance during a fire or non-fire emergency.”

28
29 [70] 72. Add a new sentence to the end of section, 7.2.4[.2], to read “[7.2.4.2 Terrorist
30 event, including an explosion. This] System reliability analysis shall be submitted to the
31 Fire Department.”

32
33 73. Add a new item to the end of Section 7.2.4.1, to read “(5) Terrorist event, including an
34 explosion.”

35
36 [71. In Section 7.3.2, replace “in an ambient atmosphere of 250°C (482°F) for a minimum
37 of 1 hour but not less than the required time of tenability” with “for the temperature
38 expected based on the computational fluid dynamics analysis .”]

39
40 [72. In Section 7.4.2, replace “in an ambient atmosphere of 250°C (482°F) for a minimum
41 of 1 hour but not less than the required time of tenability” with “for the temperature
42 expected based on the computational fluid dynamics analysis.”]

43
44 [73] 74. Add a new [sentence after the first sentence of] Section 7.4.4, to read “The plenum
45 shall be rated for the highest temperature expected based on the computational fluid
46 dynamics analysis.”

- 1 [74] 75. In Section [7.6.1.1] 7.7.1.1, insert “and have the capability to monitor system
2 operation and performance during fire and non-fire emergencies” at the end of the
3 sentence.
4
- 5 [75. Add a new sentence to the end of Section 7.7.7.2, to read “In areas where this exception
6 applies, signs shall be conspicuously posted at entrances or other Fire Department-
7 approved locations to warn of the electrical hazard.”]
8
- 9 76. Add a new section, 9.1.4, to read “9.1.4 It is the responsibility of the rail authority to
10 control overcrowding in the station. A protocol shall be developed where during periods
11 of significant delay or disruption of service, the rail authority will dispatch
12 representatives to monitor for overcrowding within the station. When overcrowding is
13 present, the Fire Department may assist in restricting access to the station and assist in
14 taking action to alleviate the overcrowding situation.”
15
- 16 77. Add a new section, 9.2.6, to read “9.2.6 Accurate system and track maps, along with
17 station diagram showing both public and non-public spaces, shall be made available to
18 firefighting and other emergency response personnel responding to a fire or non-fire
19 emergency.”
20
- 21 78. Add a new section, 9.2.7, to read “9.2.7 A system of signage or other means of
22 measuring distance within the station and associated tunnels shall be implemented, to
23 enable emergency response personnel to establish the location of an incident in the
24 trainway and/or its distance from the station.”
25
- 26 79. Add a new section, 9.7.4, to read “The listing shall include the name and contact
27 information of the station manager or other trained and knowledgeable personnel
28 designated to respond to the command post in the event of any fire or non-fire
29 emergency, to act as a liaison to the incident commander.”
30
- 31 80. Add a new section, 9.8.7, to read “9.8.7 The rail authority shall establish a procedure
32 by which the station manager or other trained and knowledgeable personnel will
33 immediately respond to the command post in the event of a fire or non-fire emergency
34 to act as a liaison to the incident commander.”
35
- 36 81. Add a new section, 9.8.8, to read “The fire command center shall be readily accessible
37 from the command post, unless otherwise approved by the Fire Department. A fire
38 command post, if constructed, shall be approved by the Fire Department prior to
39 installation.”
40
- 41 82. Add a new sentence to the end of Section [9.10.2] 9.11.2, to read “Station staff whose
42 duties require that they operate or be familiar with station equipment, shall be trained in
43 the proper operation of any new equipment that is installed in the station. Training shall
44 be provided whenever there is a change in station design or operation that would affect
45 emergency response procedures.”
46
- 47 83. Add a new section, [9.13] 9.14, to read “[9.13] 9.14 Emergency Equipment.”

- 1
2 84. Add a new section, [9.13.1] 9.14.1, to read “[9.13.1] 9.14.1 Devices to aid in the
3 discharge of passengers from a train to the railroad or from a train to a rescue train shall
4 be positioned at stations and along the trainway at 800 feet (243 840 mm) intervals,
5 preferably at blue light stations.”
6
- 7 85. Add a new section, [9.13.2] 9.14.2, to read “[9.13.2] “9.14.2 Rail carts shall be provided
8 at stations for use by emergency response personnel.”
9
- 10 86. Add a new section, [9.13.3] 9.14.3, to read “[9.13.3] 9.14.3 Couplers or other devices
11 necessary to allow one train to attach to and tow a disabled train shall be positioned in
12 sufficient quantities and at locations that provide ready access in the event of a fire or
13 non-fire emergency.”
14
- 15 87. Add a new sentence to the end of Section 10.11, to read “A Fire Department-approved
16 communication system shall be provided during the construction phase of underground
17 projects.”
18
- 19 88. Add two new sentences before the first sentence of Section [10.3.2] 10.3.1, to read “A
20 separate radio network capable of two way portable radio communication shall be
21 provided for on-scene fire personnel to communicate with other on-scene fire personnel
22 throughout the station and associated tunnels, and on trains located therein. Such
23 network shall be of approved design and shall cover the entire station and associated
24 tunnels, and provide street coverage, for a reasonable distance, around stations and
25 emergency exits.”
26
- 27 89. Add a new [sentence to the end of Section 10.4.1] section, 10.4.5, to read “10.4.5 Such
28 emergency telephone system shall be connected to an emergency power supply.”
29
- 30 90. [Delete Section 10.4.3, and replace with] Add a new section, 10.4.6, “10.4.6 Emergency
31 telephones shall be installed along the trainway at locations not more than 600 feet apart,
32 except as otherwise approved by the Fire Department.”
33
- 34 91. Add a new section, [10.4.6] 10.4.7, to read “[10.4.6] 10.4.7 A listing of telephone
35 locations and phone numbers shall be kept at the fire command center and made
36 available to emergency response personnel.”
37
- 38 [92. In Section 10.6.1, insert “and blue light stations” after the word “stations.”]
39
- 40 [93] 92. Add a new sentence at the end of Section 11.3.1, to read “Submit to the Fire
41 Department any plan or analysis addressing the functionality, reliability, and availability
42 of control systems and communication systems under fire conditions.”
43
- 44 [94] 93. In Section 11.3.2, replace “single points of failure” with “multiple failure points.”
45

1 94. Add a new sentence to the end of Section 12.4.2, to read “In areas where this exception
2 applies, signs shall be conspicuously posted at entrances or other Fire Department-
3 approved locations to warn of the electrical hazard.”

4
5
6 **NFPA 502-[2011] 2020.** The provisions of NFPA 502-[2011] 2020, Road Tunnels, Bridges, and
7 Other Limited Access Highways, are modified as follows:
8

9 1. In Section 3.3.24, insert “and shall be filed with and approved by the Fire Department.
10 If required by the Department, a computational fluid dynamics analysis shall be
11 conducted in accordance with the Fire Code.”

12
13 2. Add two new sentences at the end of Section 4.3, to read “The goal of this standard shall
14 be to provide an environment that, in the event of a fire or non-fire emergency, protects
15 to the maximum extent practicable occupants of road tunnels, bridges and other limited
16 access highways, including personnel present during the construction of such facilities,
17 and firefighters and other personnel responding to the fire or non-fire emergency. This
18 goal includes the following objectives:

19
20 (1) protecting occupants not intimate with the initial fire development.

21
22 (2) maximizing the survivability of occupants intimate with the initial fire
23 development.

24
25 (3) facilitating short term and long term firefighting operations.”

26
27 [2] 3. Add a new item to the end of Section [4.3.1(8)] 4.3.1(9), to read “([f] g) Sprinkler
28 systems.”

29
30 [3. In Section 4.4.1, delete “carry out a complete and” and replace “prepare a Fire
31 Department-approved.”]

32
33 4. Add a new sentence to the end of Section [4.4.2] 4.4.1, to read “A written protocol shall
34 be established with all agencies involved in an emergency response, including the Fire
35 Department.”

36
37 5. Delete in item (1) of Section 4.5 “lights or,” and replace with “blue lights and”.

38
39 [6. In Section 5.2.1, replace “squads” with “personnel.”]

40
41 [7] 6. In Section [5.3] 5.6, replace “(Reserved)” with “A fire hydrant shall be located not
42 more than 300 feet (91 440 mm) from each fire department connection.”

43
44 [8] 7. In Section 6.3.3, insert “and terrorism” between the words “collapse” and
45 “scenarios”.

- 1 [9] 8. Add a new section, 6.3.4, to read “6.3.4 Access shall be available for Fire Department
2 apparatus and fire boats such that all parts of the underside of the bridge are accessible
3 for firefighting operations.”
4
- 5 [10] 9. Add a new section, 6.3.5, to read “6.3.5 Fireproofing of structural members, when
6 provided, shall be periodically inspected by the bridge engineer. Fireproofing shall be
7 maintained in good condition.”
8
- 9 [11] 10. In Section 6.4.1.2 replace “AHJ” with “the Fire Department and other authorities
10 having jurisdiction.”
11
- 12 [12] 11. In Section 6.4.2.1, insert “[or elevated highway] and shall be linked to the Fire
13 Department’s Operations Center” at the end of the sentence.
14
- 15 [13] 12. [Add a new section, 6.6.3,] In Section, 6.6.3 delete “(Reserved)”. Add a new
16 sentence to the end of the section to read “[6.6.3] A fire hydrant shall be located not
17 more than 300 feet (91 440 mm) from any fire department connection.”
18
- 19 [14] 13. In Section 6.7.1, replace “3.2 km (2 miles)” with “1.5 miles (2.4 km).”
20
- 21 14. In Section 7.2, insert “and as shown in Table 7.2” after words "are categorized as
22 follows"
23
- 24 [15. Delete Table 7.2 and replace with the following:
25
26

Table 7.2 Road Tunnel Fire Protection Summary

Fire Protection Systems	NFPA 502 Sections	Tunnel Categories				
		X	A	B	C	D
Fire Detection						
Detection, identification, and location of fire in tunnel	7.4.1	CMR	CMR	MR	MR	MR
Manual fire alarm boxes	7.4.1.3	CMR	CMR	MR	MR	MR
CCTV systems	7.4.1.1	CMR	CMR	MR	MR	MR
Automatic fire detection systems	7.4.1.4	CMR	CMR	MR	MR	MR
Fire alarm control panel	7.4.2	CMR	CMR	MR	MR	MR
Communication systems						
Radio	7.5	CMR	CMR	MR	MR	MR
Telephone	4.5	CMR	CMR	MR	MR	MR
Traffic control						
Stop traffic approaching tunnel portal	7.6.1	MR	MR	MR	MR	MR
Stop traffic from entering tunnels direct approaches	7.6.2	—	—	MR	MR	MR
Fire protection						
Fire apparatus ^a	7.7	NMR	NMR	NMR	NMR	NMR
Fire standpipe	7.8	CMR	MR	MR	MR	MR
Water supply	10.2	CMR	MR	MR	MR	MR
Fire department connections	10.3	CMR	MR	MR	MR	MR
Hose connections	10.4	CMR	MR	MR	MR	MR
Fire pumps ^b	10.5	CMR	CMR	CMR	CMR	CMR
Portable fire extinguishers	7.9	CMR	CMR	MR	MR	MR
Water based fire-fighting system ^c	Chapter 9	CMR	CMR	CMR	MR	MR
Emergency ventilation system ^d	Chapter 11	CMR	CMR	CMR	MR	MR
Tunnel drainage system ^d	7.12	MR	MR	MR	MR	MR
Hydrocarbon detector	7.12.7	CMR	CMR	MR	MR	MR

Means of egress						
Emergency egress	7.15.1.1	CMR	MR	MR	MR	MR
Exit identification	7.15.1.2	CMR	MR	MR	MR	MR
Tenable environment	7.15.2	MR	MR	MR	MR	MR
Emergency exits (includes cross passageways) ^e	7.15.6 / 7.15.7	CMR	MR	MR	MR	MR
Electrical systems						
General	12.1	CMR	CMR	MR	MR	MR
Emergency power	12.4	MR	MR	MR	MR	MR
Emergency lighting	12.6	MR	MR	MR	MR	MR
Exit signs	12.6.8	MR	MR	MR	MR	MR
Security plan	12.7	MR	MR	MR	MR	MR
Emergency response plan						
Emergency response plan	13.3	MR	MR	MR	MR	MR

MR: Mandatory requirement. CMR: Conditional mandatory requirement. NMR: Nonmandatory requirement.

Note: The purpose of Table 7.2 is to provide assistance in locating road tunnel fire protection requirements contained within this standard. If there is any conflict between the requirements defined in the standard text and this table, the standard text shall govern.

^a. Not mandatory to be at tunnel, however, they must be nearby to minimize response time.

^b. If required, comply with Section 10.5.

^c. If installed, comply with Chapter 9.

^d. Allows engineering analysis to determine requirements.

^e. Emergency exit spacing shall be substantiated by an egress analysis.]

15. Insert Table 7.2 as follows:

Table 7.2 Road Tunnel Fire Protection Summary

Fire Protection Systems	NFPA 502 Sections	Road Tunnel Categories				
		X See 7.2(1)	A See 7.2(2)	B See 7.2(3)	C See 7.2(4)	D See 7.2(5)
Engineering Analysis						
Engineering Analysis	4.3.1	MR	MR	MR	MR	MR
Fire Protection of Structural Elements^a						
Fire Protection of Structural Elements	7.3	MR	MR	MR	MR	MR
Fire Detection						
Detection, identification, and location of fire in tunnel	7.4	CMR	CMR	MR	MR	MR
CCTV systems ^b	7.4.3	CMR	CMR	MR	MR	MR
Automatic fire detection ^b systems	7.4.6.7	CMR	CMR	MR	MR	MR
Fire alarm control panel	7.4.7	CMR	CMR	MR	MR	MR
Emergency Communication Systems^c						
Emergency Communication Systems	7.5/4.5	CMR	CMR	MR	MR	MR
Traffic control						
Stop traffic approaching tunnel portal	7.6.1	MR	MR	MR	MR	MR
Stop traffic from entering tunnels direct approaches	7.6.2	—	—	MR	MR	MR
Fire protection						
Fire apparatus ^d	7.7	CMR	CMR	CMR	CMR	CMR
Fire standpipe	7.8/10.1	CMR	MR	MR	MR	MR
Water supply	7.8/10.2	CMR	MR	MR	MR	MR
Fire department connections	10.3	CMR	MR	MR	MR	MR
Hose connections	10.4	CMR	MR	MR	MR	MR
Fire pumps ^e	10.5	CMR	CMR	CMR	CMR	CMR
Portable fire extinguishers	7.9	CMR	CMR	MR	MR	MR
Fixed water based fire-fighting systems ^f	7.10/9.0	CMR	CMR	CMR	MR	MR
Emergency ventilation system ^g	7.11/11.0	CMR	CMR	CMR	MR	MR
Tunnel drainage system ^h	7.12	MR	MR	MR	MR	MR
Hydrocarbon detection ^h	7.12.7	CMR	CMR	MR	MR	MR
Flammable and combustible environmental hazards ⁱ	7.15	CMR	CMR	CMR	CMR	CMR

Means of egress						
Emergency egress	<u>7.16.1.1</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Exit identification	<u>7.16.1.2</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Tenable environment	<u>7.16.2</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Walking surface	<u>7.16.4</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Emergency exit doors	<u>7.16.5</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Emergency exits (includes cross passageways) ^j	<u>7.16.6</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Electrical systems^k						
General	<u>12.1</u>	<u>CMR</u>	<u>CMR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Emergency power	<u>12.4</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Emergency lighting	<u>12.6</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Exit signs	<u>12.6.8</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Security plan	<u>12.7</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>
Emergency response plan						
Emergency response plan	<u>13.3</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>	<u>MR</u>

MR: Mandatory requirement(3.3.42), CMR: Conditional mandatory requirement(3.3.42.1).

Note: The purpose of Table 7.2 is to provide assistance in locating minimum road tunnel fire protection requirements contained within this standard. If there is any conflict between the requirements defined in the standard text and this table, the standard text must always govern.

^a. Determination of requirements in accordance with Section 7.3.

^b. Determination of requirements in accordance with Section 7.4.

^c. Determination of requirements in accordance with Section 4.5 and 7.5.

^d. Not mandatory to be at tunnel; however, they must be near to minimize response time.

^e. If required, must follow Section 10.5.

^f. If installed, must follow Section 7.10 and Chapter 9

^g. Section 11.1 allows engineering analysis to determine requirements.

^h. If required, must follow Section 7.12.

ⁱ. Determination of requirements in accordance with 7.16.2.

^j. Emergency exit spacing must be supported by an egress analysis in accordance with 7.16.6.

^k. If required, must follow Chapter 12.

16. In Section [7.4.1.1] 7.4.3, insert at the end of the sentence “and shall be linked to the Fire Department’s Operations Center.”

17. In Section 7.5.1, [replace “to the fire department communication center” with “to communicate from person to the command center, and from person to person.”] insert “the Fire Department” after “AHJ or”.

[18. Add a new section, 7.5.1.1, to read “7.5.1.1 Emergency communication devices shall be installed at cross passageways and emergency exits, with spacing between devices not to exceed 150 feet (45 720 mm).”]

[19] 18. Add a new section, 7.9.4, to read “7.9.4 The location of portable fire extinguishers shall be conspicuously marked.”

[20] 19. Add [a new] two sentences to the end of Section [7.15.1.1] 7.16.1.1, to read “If required by the Fire Department, an engineering analysis shall be carried out to meet the requirements of Section 4.3. Such engineering analysis shall be filed and approved by the Fire Department. If required by the Department, a computational fluid dynamics analysis shall be conducted in accordance with the Fire Code.”

[21] 20. In Section [7.15.1.2] 7.16.1.2, insert at the end of the sentence “, and within 15 feet (4572 mm) of an emergency exit.”

- 1 [22] 21. In Section [7.15.5.2] 7.16.5.3, insert “shall be approved by the Fire Department
2 and” between the words “doors” and “shall.”
3
- 4 [23] 22. Add a new section, [7.15.5.7] 7.16.5.9, to read “[7.15.5.7] 7.16.5.9 If emergency
5 exit doors are provided with locks, such locks shall be operable from both sides of the
6 door with a citywide standard key.”
7
- 8 [24] 23. In the first sentence of Section [7.15.6.2] 7.16.6.2, replace “300 m (1000 ft)” with
9 “500 feet (152 400 mm).”
10
- 11 [25] 24. In Section 8.10.1, replace “NFPA 14 or other equivalent international standards
12 and performance specified in Chapter 10” with “the Building Code, the Fire Code and
13 NFPA 14, as modified by the Building Code and Fire Code, including the system
14 performance requirements specified in Chapter 11 of NFPA 14.”
15
- 16 [26] 25. Add a new section, 8.11, to read “8.11 Inspection, testing and other maintenance
17 of standpipe systems shall be in accordance with the Building Code and the Fire Code.”
18
- 19 [27] 26. In Section 9.1.1, replace “permitted” with “required.”
20
- 21 [28] 27. In Section 9.1.2, insert “the Building Code and the Fire Code, and, as applicable,”
22 between “with” and “NFPA 11”, and delete “or other equivalent international
23 standards.”
24
- 25 [29] 28. In Section 10.1.1, replace “NFPA 14, except as modified by this standard” with
26 “the Building Code, the Fire Code and NFPA 14 as modified by the Building Code and
27 Fire Code.”
28
- 29 [30] 29. In Section 10.1.2, replace “NFPA 25” with “the Fire Code and the Building Code.”
30
- 31 [31] 30. Delete the language of Section 10.1.3 and replace with “The standpipe system
32 shall be designed as a dry system, connected to a manual fire pump. The standpipe
33 system shall be maintained filled with water during the summer months.”
34
- 35 [32] 31. Add a new section, 10.1.3.1, to read “10.1.3.1 The bridge standpipe system shall
36 be capable of flowing 3,000 gpm (11 355 L/min) through hose outlets located on the
37 bridge with hose valves in the open position. Each hose outlet shall be designed to flow
38 not less than 250 gpm (846 L/min) at a pressure of not less than 100 psi (690 kPa), and
39 capable of supplying 1,000 gpm (3785 L/min) to a tower ladder through hose
40 connections required by Section 10.1.3.4. []For standpipe systems on other structures,
41 the design parameters shall be approved by the Fire Department.”
42
- 43 [33] 32. Add a new section, 10.1.3.2, to read “10.1.3.2 Standpipe system hose connections
44 shall be provided on the bridge approach from the point at which the road surface
45 becomes elevated.”
46

- 1 [34] 33. Add a new section, 10.1.3.3, to read “10.1.3.3 Standpipe system hose connections
2 and valves shall be readily accessible, and shall be kept unobstructed.”
3
- 4 [35] 34. Add a new section, 10.1.3.4, to read “10.1.3.4. Fire Department hose connections
5 shall be installed at approved locations and have a 4½-inch (114-mm) diameter and
6 Fire Department approved threads.”
7
- 8 [36] 35. Add a new section, 10.1.3.5, to read “10.1.3.5 Standpipe systems shall be securely
9 braced to prevent movement under normal use conditions.”
10
- 11 [37] 36. In Section 10.1.5, replace “10 minutes or less” with “8 minutes or less at the design
12 flow.”
13
- 14 [38] 37. In Section 10.2.3(3), replace “NFPA 22” with “the Building Code and the Fire
15 Code.”
16
- 17 [39] 38. In Section 10.3.1, delete “or shall consist of a minimum 100 mm (4 in) quick
18 connect coupling that is accessible.”
19
- 20 [40] 39. Add a new section, 10.3.5, to read “10.3.5 Fire department connections for use by
21 Fire Department fire boats shall be provided when required by the Fire Department.”
22
- 23 [41] 40. Add a new section, 10.3.6, to read “10.3.6 A durable, weather-resistant diagram
24 of the bridge’s standpipe system riser, including the location of valves, shall be kept in
25 a Fire Department-approved emergency responder box openable by a citywide standard
26 key. []Such emergency responder box shall be located at or near the fire department
27 connections.”
28
- 29 [42] 41. In Section 10.4.2, replace “85 m (275 ft)” with 200 feet (45 720 mm).”
30
- 31 [43] 42. In Section 10.4.4, replace “external threads in accordance with NFPA 1963 and
32 the authority having jurisdiction” with “and shall be suitable for Fire Department
33 operations.”
34
- 35 [44] 43. In Section 10.5, replace “NFPA 20” with “the Building Code and the Fire Code.”
36
- 37 [45] 44. In Section 11.1, insert “to assist in evacuation and firefighting operations” at the
38 end of the sentence, and add a new sentence to the end, to read “The emergency
39 ventilation system shall be approved by the Fire Department.”
40
- 41 [46] 45. In Section [11.6.1] 11.5.1, replace “for a minimum of 1 hour in” with “for the
42 temperature expected in the computational fluid dynamics analysis for the design fire,
43 but not less than”.
44
- 45 [47] 46. In Section [11.6.2] 11.5.2, replace “considered expendable” with “designed so that
46 temperature in the tunnel, based on the design fire, does not exceed the temperature
47 that would cause the exhaust fans to fail.”

1
2 [48] 47. In Section [11.7.1] 11.6.1, insert “at the temperature expected in the computational
3 fluid dynamics analysis for the design fire, but not less than” before “in an airstream
4 temperature of 250°C (482°F), and delete “for at least 1 hour”.

5
6 [49] 48. Delete the language of Section [11.9.1] 11.8.1 and replace with “The exhaust fans
7 may be designed to operate automatically and/or manually. Controls shall be provided
8 locally and at a remote location. Each set of controls shall be capable of overriding the
9 other and any automatic controls.

10
11 [50] 49. Add a new section, [11.10.4] 11.9.4, to read “[11.10.4] 11.9.4 Flammable and
12 combustible liquids shall not be stored in limited access highways, road tunnels,
13 bridges, and other limited access highways, including roadways that are located
14 beneath air-right structures.”

15
16 [51] 50. In Section 12.2.1, replace “NFPA 70” with “the Electrical Code.”

17
18 [52] 51. In Section 12.5.1, delete “in excess of 1000 m (3280 ft) in length.”

19
20 [53] 52. In Section 12.6.1, replace “NFPA 70” with “the Electrical Code, NFPA 110, as
21 modified by FC Appendix B, and NFPA 111.”

22
23 [54] 53. Add a new sentence to the end of Section 12.6.8.1, to read “The exit signs shall be
24 reflective.”

25
26 [55] 54. Add a new section, 13.5.4.1, to read “13.5.4.1 Road tunnels shall have thermal
27 imaging cameras designed to operate in heavy smoke conditions.”

28
29 [56] 55. Add a new section, 13.5.9, to read “13.5.9 The OCC shall be protected from acts
30 of terrorism and natural disasters in accordance with the United States Department of
31 Homeland Security guidelines.”

32
33 [57] 56. Add a new sentence to the end of Section 13.8.2, to read “Such personnel shall be
34 the holder of a certificate of fitness where required by the Fire Code or the rules.”

35
36 [58] 57. In Section 14.1.2, insert “and acts of terrorism” after “14.1.1.”

37
38 [59] 58. In Section 15.1.2, replace “five years” with “one year.”

39
40 [60. In Section A.3.3.19, delete “is submitted to the authority having jurisdiction” and
41 insert “shall be filed with and approved by the Fire Department. If required by the
42 Department, a computational fluid dynamics analysis shall be conducted in accordance
43 with the Fire Code.”]

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45
46 **NFPA 750-[2006] 2015**. The provisions of NFPA 750-[2006] 2015, Standard on Water Mist Fire
47 Protection Systems, shall be modified as follows:

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1. In Section [5.10.2.1] 6.10.2.1, delete “NFPA 72, National Fire Alarm and Signaling Code” and replace with "NFPA 72, as modified by FC Appendix B" and add “and tied-in to the building fire alarm system for monitoring of alarm, trouble and supervisory signals” to the end of the section.
2. In Section [5.10.3.6.5] 6.10.3.6.5, replace “not more than 1.2 m (4 ft) above the floor” with “42 to 48 inches (1067 to 1219 mm) above the floor at its center and located at egress.”
3. Delete Chapter [14] 16 in its entirety.

NFPA 855-2020. The provisions of NFPA 855-2020, Standard for the Installation of Stationary Energy Storage Systems, are modified as follows:

1. Delete Chapter 1 in its entirety.
2. Delete Chapter 2 in its entirety.
3. Delete Sections 3.1 through and including 3.3.2.1.
4. Delete Sections 3.3.4 through and including 3.3.7
5. Delete Sections 3.3.9.1 through and including 3.3.9.4.
6. Delete Sections 3.3.10 and 3.3.11.
7. Delete Sections 3.13.14 through and including 3.3.19.
8. In Section 4.1, insert “(energy storage systems)” between “ESS” and “and”, delete “Chapter 4 and as supplemented or modified by the technology-specific provisions in Chapters 9 through 13” and replace with “this section, FC608, the rules and the construction codes”.
9. In Section 4.1.2, replace “Construction” with “Design and Installation”.
10. Delete Section 4.1.2.1.
11. In Section 4.1.2.1.1, delete “ an” before word “ESS”, replace “AHJ” with “Fire Department”, and insert “required by FC608 and the rules” between the words “when” and “and include”.
12. Delete Section 4.1.2.1.2.
13. In Section 4.1.2.1.3, delete “where required elsewhere in this standard”.

- 1 14. Add a new Section 4.1.2.1.5 to read “4.1.2.1.5 The information and other data
2 required in Sections 4.1.2.1.3 and 4.1.2.1.4 shall be submitted to the Fire Department
3 when requesting a Certificate of Approval (COA) for ESS.”
4
- 5 15. In Section 4.1.2.2, replace “construction” with “approved design and installation”.
6
- 7 16. Add a new item at the end of Section 4.1.2.3, to read “(6) The name of the certificate
8 of fitness holder responsible for supervision of the installation and maintenance.”
9
- 10 17. In Section 4.1.2.3.2, replace “AHJs” with “Fire Department”.
11
- 12 18. In Section 4.1.2.4, replace “AHJ” with “Fire Department”.
13
- 14 19. Add a new sentence to the end of Section 4.1.3.2.1, to read “An emergency
15 management plan, including required notifications, as appropriate, to a Fire
16 Department communications office, Certificate of Fitness holder and subject matter
17 expert; personnel responding to the scene of an incident; and post-incident
18 monitoring, repair and restoration to operation, or removal and disposal; in
19 accordance with this section.”
20
- 21 20. In Section 4.1.3.2.1.2, delete “For normally occupied facilities,” at the beginning of
22 the sentence, and insert “at an approved location” at the end of the sentence.
23
- 24 21. In item (7) of Section 4.1.3.2.1.4 delete “AHJ” and replace with “Fire Department”.
25
- 26 22. Delete Section 4.1.3.2.1.5.
27
- 28 23. In Section 4.1.3.2.2.2, replace “an approved manner” with “accordance with
29 FC107.7”.
30
- 31 24. In Section 4.1.4.1, replace “AHJ” with “Fire Department”.
32
- 33 25. In item (1) of Section 4.1.4.1, delete “Table 1.3” and replace with “FC608 and the
34 rules”.
35
- 36 26. In item (3) of Section 4.1.4.1, delete “as specified in 4.8.1 and 4.8.2” and replace with
37 “at an outdoor installation”.
38
- 39 27. In Section 4.1.4.2, replace “AHJ” with “Fire Department”.
40
- 41 28. In Section 4.1.4.3, replace “AHJ shall be permitted to” with “Fire Department shall”.
42
- 43 29. In item (1) of Section 4.1.4.3, delete “specified in 4.3.6” and replace with “required
44 by FC608 and the Building Code”.
45
- 46 30. In Section 4.1.4.4, replace “AHJ” with “emergency responders”.
47

- 1 31. In Section 4.1.4.5, delete “this standard”, and insert “section, FC608, the rules”.
2
3 32. In Section 4.1.5.1, delete “elsewhere in this standard”, and replace with “in this
4 section, FC608 and the rules”, insert “approved by the Fire Department and
5 Department of Buildings” at the end of the sentence.
6
7 33. In Section 4.1.5.4, replace “AHJ” with “Fire Department and Department of
8 Buildings”.
9
10 34. Delete Sections 4.1.6.3 through and including 4.1.6.5.
11
12 35. In Section 4.2.1, replace “other sections of this standard” with “this section, FC608
13 and the rules”.
14
15 36. Delete Sections 4.2.1.1 through and including 4.2.1.3.
16
17 37. In Section 4.2.2.2, delete “a retrofit and comply with 4.2.3” and replace with “new
18 and shall comply with this section”.
19
20 38. Delete Section 4.2.3 in its entirety.
21
22 39. Delete Section 4.2.5.2.
23
24 40. Delete Section 4.2.7.3.
25
26 41. In Section 4.2.9.3, replace “AHJ” with “Fire Department”.
27
28 42. Delete Sections 4.2.9.4 and 4.2.9.5.
29
30 43. Delete Section 4.2.10 in its entirety.
31
32 44. Delete Sections 4.3 through and including 4.3.4.
33
34 45. In Section 4.3.5.1, insert “in accordance with this section and the rules” at the end of
35 the sentence.
36
37 46. In item (3) of Section 4.3.5.2, delete “as identified in Chapters 9 through 15” and
38 replace with “with the ESS installation”.
39
40 47. Delete Sections 4.3.5.3.1 and 4.3.5.3.2.
41
42 48. In Section 4.3.5.5, delete “when the system is retrofitted or existing signs need to be
43 replaced” and replace with “in accordance with this section and the rules”.
44
45 49. In Section 4.3.5.6, delete “in occupied work centers covered by Section 4.7”.
46

- 1 50. In Section 4.3.6, replace “local building code ” with "Building Code”.
2
3 51. In Section 4.3.7.2, insert “in accordance with FC312” between the words “means”
4 and “shall”.
5
6 52. Delete Section 4.3.7.3.
7
8 53. In Section 4.3.7.4, insert “parking” between words “residential” and “garages”.
9
10 54. Delete Section 4.3.9.
11
12 55. In Section 4.3.9.1.1, replace “AHJ” with “Fire Department”.
13
14 56. Delete Sections 4.3.9.1.4, 4.3.9.2 and 4.3.9.3.
15
16 57. Delete Section 4.3.10 in its entirety.
17
18 58. In Section 4.3.12 replace “command center, the command center” with “alarm
19 system, the main control panel location” and “NFPA 70" with the "Electrical Code”.
20
21 59. Delete Section 4.4 in its entirety.
22
23 60. Delete Section 4.5.1.1.
24
25 61. Delete Section 4.5.2.1.
26
27 62. Delete Section 4.5.3 and replace with “4.5.3 Design and Installation Documents.
28 Design and Installation documents complying with 4.1.2 shall be provided to the Fire
29 Department with a copy of any required Department of Buildings construction permit
30 applications for mobile ESS charging and storage locations.”
31
32 63. In Section 4.5.4, delete “AHJ with any locally required operational” and replace with
33 “Fire Department with a copy of any required Department of Buildings work”.
34
35 64. In item (1) of Section 4.5.4, delete word “construction” and replace with “design and
36 installation”.
37
38 65. In item (9) of Section 4.5.4, insert “certificate of fitness” between words “for” and
39 “personnel”.
40
41 66. In Section 4.5.5, replace “AHJ” with “Fire Department”.
42
43 67. In item (1) of Section 4.5.6, delete “4.4.2” and replace with “this section, FC608 and
44 the rules”.
45
46 68. In item (2) of Section 4.5.6, delete “4.4.3” and replace with “this section, FC608 and
47 the rules”.

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- 69. Delete item (3) of Section 4.5.6.
- 70. In Section 4.5.6.1, replace “NFPA 70” with “the Electrical Code”.
- 71. In Section 4.5.6.2, delete “acceptable to the AHJ” and replace with “approved by the Fire Department”.
- 72. In Section 4.5.7, delete “and Table 4.5.7” and replace with “, FC608 and the rules”.
- 73. Delete Table 4.5.7.
- 74. In Section 4.5.7.1, delete “4.3.3” and replace with “the Building Code”.
- 75. Delete Section 4.5.7.3.2 and replace with “4.5.7.3.2 Mobile ESS deployments that provide power for durations less than 30 days shall be approved by the Fire Department.”
- 76. Delete Section 4.5.7.4.
- 77. In Section 4.5.7.5.1.1, delete “in accordance with 4.4.3.3.1 through 4.4.3.3.4” and insert “when approved by the Fire Department” at the end of the sentence.
- 78. In Section 4.5.7.6, insert “and the Electrical Code” at the end of the sentence.
- 79. In Section 4.5.7.6.1, delete “NFPA 70 or equivalent code” and replace with “the Electrical Code”.
- 80. In Section 4.5.7.7, replace “AHJ” with “Fire Department”.
- 81. In Section 4.5.7.8.1, replace “5 ft (1024 mm)” with “10 ft (3084 mm)”.
- 82. Delete Section 4.6 in its entirety.
- 83. Delete Section 4.7 in its entirety.
- 84. Delete Section 4.8 in its entirety.
- 85. Delete Section 4.9 in its entirety.
- 86. Delete Section 4.10 in its entirety.
- 87. Delete Sections 4.11.1 through and including 4.11.2.1.1.
- 88. In Section 4.11.3.1, delete “shall be permitted” and replace with “may be approved”.

- 1 89. Delete Sections 4.11.3.2 through and including 4.11.9.
2
3 90. In the second sentence of Section 4.12, delete “standard” and replace with “section,
4 FC608, the rules and/or as a condition of the Certificate of Approval (COA)”, insert
5 “and the rules” at the end of the sentence.
6
7 91. Delete Section 4.12.2.
8
9 92. In Section 4.13.1, delete “Where required elsewhere in this standard, sites” and
10 replace with “Sites”.
11
12 93. Delete Section 4.13.2.
13
14 94. In Section 4.13.4, insert “FC508 and” between words “with” and “NFPA”.
15
16 95. Delete Sections 4.13.5 and 4.13.6
17
18 96. Delete Section 4.14.6.
19
20 97. In Section 4.16.2.1, replace “AHJ” with “Fire Department and emergency
21 responders”.
22
23 98. In Section 4.16.2.2, replace “AHJ” with “Fire Department”.
24
25 99. Delete Chapter 5 in its entirety.
26
27 100. In Section 6.1.1, delete “6.1.2 and 6.1.3” and replace with “6.1.2, 6.1.3, FC608 and
28 the rules”.
29
30 101. Delete Sections 6.1.1.1 and 6.1.1.2.
31
32 102. In Section 6.1.2.2, delete “and the AHJ” and replace with, “the Fire Department and
33 Department of Buildings”.
34
35 103. In Section 6.1.3.2, insert “approved” between words “the” and “plans”.
36
37 104. In Section 6.1.3.4, replace “AHJ” with “Fire Department and Department of
38 Buildings”.
39
40 105. In Section 6.1.6.1, insert “, FC608 and the rules” between words “section” and
41 “after”, and “inspection and” between words “final” and “approval”.
42
43 106. In Section 6.1.6.2, replace “AHJ” with “Fire Department and Department of
44 Buildings”.
45

- 1 107. Delete Section 6.2.
- 2
- 3 108. In Section 6.3.3, delete “fire code officials” and replace with “Fire Department
- 4 representative”.
- 5
- 6 109. In Section 6.4.2, delete “Chapter 4” and replace with “this section, FC608, the
- 7 rules”.
- 8
- 9 110. Delete Sections 7.1.1, 7.1.1.1 and 7.1.1.2.
- 10
- 11 111. In Section 7.1.3.1, replace “AHJ” with “Fire Department”.
- 12
- 13 112. In Section 7.1.4, replace “AHJ” with “Fire Department representatives”.
- 14
- 15 113. In Section 7.2.2, insert “trained and” after word “by”.
- 16
- 17 114. In Section 7.2.3, insert “and FC107.7” at the end of the sentence.
- 18
- 19 115. In Section 7.2.5.3, replace “AHJ” with “Fire Department representatives”.
- 20
- 21 116. In Section 7.3.1, insert “or plan approval” at the end of the sentence.
- 22
- 23 117. In Section 7.3.2, insert “and FC107.7” at the end of the sentence.
- 24
- 25 118. In Section 8.1, insert “FC608 and the rules” between “8.1.3,” and word “that”.
- 26
- 27 119. Delete Sections 8.1.1 and 8.1.2.
- 28
- 29 120. In Section 8.2.1, replace “AHJ” with “Fire Department and Department of
- 30 Buildings”.
- 31
- 32 121. Add a new sentence to the end of Section 8.3.2, to read “Decommissioning report
- 33 shall be maintained in accordance with FC107.7.”
- 34
- 35 122. Delete Chapter 9 in its entirety.
- 36
- 37 123. Delete Chapter 10 in its entirety.
- 38
- 39 124. Delete Chapter 11 in its entirety.
- 40
- 41 125. Delete Chapter 12 in its entirety.
- 42
- 43 126. Delete Chapter 13 in its entirety.
- 44

- 1 127. Delete Chapter 14 in its entirety.
- 2
- 3 128. In Section 15.1, delete the word “chapter” and insert “section, FC608 and the rules”.
- 4
- 5 129. In Section 15.2.1, delete “1 kWh or greater in maximum stored energy”, and insert “,
- 6 FC608 and the rules” at the end of the sentence.
- 7
- 8 130. In Section 15.5, replace “AHJ” with “Fire Department and Department of
- 9 Buildings”.
- 10
- 11 131. Delete Sections 15.7.1, 15.7.2 and 15.7.3.
- 12
- 13 132. In Section 15.8, replace “NFPA 70” with “the Electrical Code”.
- 14
- 15 133. In Sections 15.9.1, replace “local building code” with “the Building Code”.
- 16
- 17 134. In Section 15.9.2, replace “local building code” with “Building Code”.
- 18
- 19 135. In Section 15.10, insert “in accordance with FC312” at the end of the sentence.
- 20
- 21 136. In Section 15.11, delete “Section 4.9” and replace with “the Mechanical Code”.
- 22
- 23 137. Delete Sections 15.13 in its entirety.

24

25

26 **NFPA 2001-[2008] 2015.** The provisions of NFPA 2001-[2008] 2015, Clean Agent Fire

27 Extinguishing Systems, shall be modified as follows:

- 28
- 29 1. In Section 1.5.2.1, delete “NFPA 70” and replace with “Electrical Code.”
- 30
- 31 2. [In Section 2.2, delete “NFPA 70-National Electrical Code, 2008 edition” and replace
- 32 with “Electrical Code” and delete “NFPA 72, 2007 edition” and replace with “NFPA
- 33 72, as modified by FC Appendix B.”] Delete the language of Section 2.2 and replace
- 34 with “NFPA Standards. As required by the Fire Code.”
- 35
- 36 3. In Section 4.3.3.7, replace “not more than 4 ft (1.2 m) above the floor” with “42 to
- 37 48 inches (1067 to 1219 mm) above the floor at its center.”
- 38
- 39 4. Delete Chapter 8 in its entirety.
- 40

41

42 **NFPA 2010-[2010] 2015.** The provisions of NFPA 2010-[2010] 2015, Fixed Aerosol Fire-

43 Extinguishing Systems, shall be modified as follows:

44

- 1 1. [In Section 2.2, delete “NFPA 70-National Electrical Code, 2008 edition” and replace
2 with “Electrical Code” and delete “NFPA 72, 2010 edition” and replace with “NFPA
3 72, as modified by FC Appendix B.”] Delete the language of Section 2.2 and replace
4 with “NFPA Standards. As required by the Fire Code.”
5
- 6 2. Delete Section 3.1.
7
- 8 3. In Section 5.3.1.1, delete “NFPA 70” and replace with “Electrical Code.”
9
- 10 4. In Section 6.4.3.7.2, replace “not more than 1.2 m (4 ft) above the floor” with “42 to 48
11 inches (1067 to 1219 mm) above the floor at its center.”
12
- 13 5. In Section 8.1.10.1, delete “NFPA 72[, National Fire Alarm and Signaling Code]” and
14 replace with “NFPA 72, as modified by FC Appendix B.”
15
- 16 6. In Section 8.1.10.2.4, delete “NFPA 72[, National Fire Alarm and Signaling Code]” and
17 replace with “NFPA 72, as modified by FC Appendix B.”
18
- 19 7. Delete Chapter 10 in its entirety.
20

21 §4. All actions and proceedings, civil or criminal, commenced prior to the effective date of this
22 local law in accordance with any provision repealed by this local law and pending immediately
23 prior to the taking effect of such repeal may be prosecuted and defended to final effect in the same
24 manner as they might if those provisions had not been repealed.

25 §5. Rules promulgated by the fire commissioner in accordance with the law in effect prior to
26 the effective date of this local law shall remain in effect for the matters covered to the extent that
27 such rules are not inconsistent with the New York city fire code, as added by this local law, unless
28 and until such rules are amended or repealed by the fire commissioner.

29 §6. Notwithstanding any other law or rule, tables, figures or equations in PDF or other
30 electronic format to be added to the New York city fire code or amended pursuant to this local law
31 need not be underlined to denote new matter being added. The absence of underlining to denote
32 new matter being added shall not affect the validity of new tables, figures or equations in PDF or

1 other electronic format to be added to the New York city fire code or amended pursuant to this
2 local law.

3 §7. Section 24-149 of the administrative code of the city of New York is amended by amending
4 subdivision e, and adding a new subdivision f, to read as follows:

5 e. fires used for special effects for the purpose of television, motion picture, theatrical and for
6 other entertainment productions, but only with the approval of the fire commissioner and the
7 commissioner[.];

8 f. residential fire pits as authorized by FC 307.7.

9 §8. This local law shall take effect 90 days after the date of enactment, except that section
10 FC511.7 of chapter 5 of the fire code shall take effect one year from the date of adoption of a
11 zoning amendment exempting from the calculation of the building floor area ratio storage spaces
12 for pre-positioned department equipment. The fire commissioner may take prior to such effective
13 date any administrative actions necessary for the timely implementation of this local law, including
14 but not limited to the promulgation of rules.

THE CITY OF NEW YORK, OFFICE OF THE CITY CLERK, s.s.:

I hereby certify that the foregoing is a true copy of a local law of The City of New York, passed by the Council on December 15, 2021 and returned unsigned by the Mayor on January 14, 2022.

MICHAEL M. McSWEENEY, City Clerk, Clerk of the Council.

CERTIFICATION OF CORPORATION COUNSEL

I hereby certify that the form of the enclosed local law (Local Law No. 47 of 2022, Council Int. No. 2430-A of 2021) to be filed with the Secretary of State contains the correct text of the local law passed by the New York City Council, presented to the Mayor and neither approved nor disapproved within thirty days thereafter.

STEPHEN LOUIS, Acting Corporation Counsel.