CHAPTER 27
HAZARDOUS MATERIALS—GENERAL PROVISIONS

SECTION FC 2701
GENERAL

2701.1 Scope. This chapter shall govern the storage, handling, use and transportation of hazardous materials. Hazardous material storage, handling and use shall additionally comply with the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 595 through 614.

Exceptions:

1. The storage, handling and use in retail or wholesale sales occupancies of alcoholic beverages, medicines, foodstuffs, cosmetics, and consumer products containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, when packaged in individual containers not exceeding 1.3 gallons (5 L) in volume.

2. Storage, handling and use of hazardous materials for agricultural purposes as a pesticide, fertilizer or similar application, when approved for such use by the regulatory agency having jurisdiction and when such storage, handling and use is in accordance with the manufacturer's instructions.

3. Reserved.

4. Reserved.

5. Refrigerating systems when designed, installed, operated and maintained in accordance with the Mechanical Code and FC606.

6. Stationary storage battery systems when in accordance with FC608.

7. The storage, handling and use, including storage for sale, of fireworks, in accordance with FC Chapter 33.

8. The storage, handling and use of corrosives in Group M occupancies, including storage for sale, of personal and household products, when in the manufacturer's original consumer packaging.

9. The storage of distilled spirits and wines in wooden barrels and casks.

10. The use of wall-mounted dispensers containing alcohol-based hand rubs classified as Class I or Class II liquids when in accordance with FC3405.5.

2701.1.1 Relationship with other chapters. This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that when specific requirements inconsistent with the provisions of this chapter are set forth elsewhere in this code, those specific requirements shall apply to the extent that they are inconsistent. Where a material is in multiple hazard categories, compliance with each hazard category shall be required. Where a material is both a physical hazard and a health hazard, compliance with the requirements for each hazard category shall be required.

2701.2 Material classification. Hazardous materials shall be classified by physical hazard, health hazard and/or other hazards associated with the properties of the material, or if the hazardous material is a mixture, with the hazards associated with the mixture as a whole. The commissioner may determine the appropriate hazard classification of a hazardous material, or may accept the classification set forth in nationally recognized standards, material safety data sheets, or other approved standard or method.

2701.2.1 Reserved.

2701.2.2 Reserved.

2701.2.2.1 Physical hazards. The material categories listed in this section are classified primarily as physical hazards.

1. Explosives and blasting agents.

2. Combustible liquids.

3. Flammable solids, liquid and gases.

4. Organic peroxide solids or liquids.

5. Oxidizing solids or liquids.

6. Oxidizing gases.

7. Pyrophoric solids or liquids.

8. Unstable (reactive) solids, liquids or gases.

9. Water-reactive solids and liquids.

10. Cryogenic fluids.

2701.2.2.2 Health hazards. The material categories listed in this section are classified primarily as health hazards.

1. Highly toxic and toxic materials.

2. Corrosive materials.

2701.3 Reserved.

2701.4 Retail and wholesale storage and display. For retail and wholesale storage and display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in Group M occupancies and storage in Group S occupancies, see FC2703.11.

2701.5 Permits. Permits shall be required as set forth in FC105.6.

2701.5.1 Hazardous Materials Management Plan. The commissioner may require an application for a permit to include a Hazardous Materials Management Plan (HMMP). Such plan shall be drawn approximately to scale. The HMMP shall contain the following:

1. Access to each area where hazardous materials are stored, handled or used.

2. Location of emergency equipment.

3. Location where liaison required by FC2703.9.1.1 will meet emergency responders.

4. Facility evacuation meeting point locations.

5. The predominant use and/or occupancy of areas within the building where hazardous materials are not stored or used.

6. Location of all aboveground and underground hazardous material storage tanks and their appurtenances including, but not limited to, sumps, vaults, below-grade treatment systems and piping.

7. The hazard classes of hazardous materials stored or used in each area.

8. Locations of all control areas and Group H occupancies.

9. Locations of exits.

10. Such other information and documentation as the commissioner may prescribe.

2701.5.2 Hazardous materials reporting. The storage of hazardous materials shall be reported as required by the New York State General Municipal Law Section 209-u. The commissioner may require an application for a permit pursuant to this code to include a copy of the current filing pursuant to such New York State General Municipal Law for the facility or premises for which a permit is sought. The commissioner may also require an application for a permit to include a Hazardous Materials Inventory Statement (HMIS), such as a statement prepared for purposes of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Tier II Report, or other approved statement. The HMIS shall include the following information:

1. Product name.

2. Chemical composition.

3. Chemical Abstract Service (CAS) number.

4. Location where stored or used.

5. Container size.

6. Hazard classification.

7. Quantity in storage.

8. Quantity in use-closed systems.

9. Quantity in use-open systems.

2701.6 Facility closure. Facilities shall be placed permanently out of service in accordance with FC 2701.6.2 and 2701.6.3 and, as applicable, with the New York State Department of Environmental Conservation regulations as set forth in 6 NYCRR Sections 598.10 and 613.9.

2701.6.1 Reserved.

2701.6.2 Permanently out-of-service facilities. Facilities that are not operated for a period of more than 1 year or for which a permit has lapsed for more than 1 year shall be deemed to be permanently out of service and shall be closed in an approved manner.

2701.6.3 Facility closure plan. The commissioner may require permittees to apply for approval to permanently close a facility that manufactures, stores, handles or uses hazardous materials. Such application shall be submitted at least 30 calendar days prior to the planned closure of the facility. Such plan and/or such other requirements as the commissioner may prescribe shall demonstrate that hazardous materials that are manufactured, stored, handled or used in the facility will be lawfully disposed of in a manner that eliminates the need for further maintenance and any threat to public health and safety.

SECTION FC 2702
DEFINITIONS

2702.1 Definitions. The following terms shall, for the purposes of this chapter, FC Chapters 28 through 44, and as used elsewhere in this code, have the meanings shown herein.

BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury. Where a boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated

point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

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

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

CHEMICAL. An element, chemical compound or mixture of elements or compounds or both.

CHEMICAL NAME. The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry, the Chemical Abstracts Service rules of nomenclature, or a name that will clearly identify a chemical for the purpose of conducting an evaluation.

CLOSED CONTAINER. A container sealed by means of a lid or other device capable of preventing the escape of liquid, vapor or dusts in the ordinary course of storage, handling or use.

CONTAINER. For solid and liquid hazardous materials, a vessel of 60 gallons (227 L) or less in capacity used for storage or transportation. For compressed gases, a cylinder, pressure vessel or tank designed for pressures greater than one atmosphere at 68°F (20ºC). Pipes, piping systems, engines and engine fuel tanks associated with solid or liquid hazardous materials or compressed gases, shall not be deemed to be containers if in active use.

CONTROL AREA. Spaces within a building wherein quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, handled or used, including any dispensing.

DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

DESIGN PRESSURE. The maximum gauge pressure that a pressure vessel, device, component or system is designed to withstand safely under the temperature and conditions of use.

DETACHED BUILDING. A separate single-story building, without a basement or crawl space, used for the storage, handling or use of hazardous materials and located an approved distance from other buildings or structures.

DISPENSING. The pouring or transferring by other means of any material from a container, tank or similar vessel, which would release dusts, fumes, mists, vapors or gases to the atmosphere, unless such release is prevented by a device, equipment or system designed for that purpose.

EXCESS FLOW CONTROL. A fail-safe system or other approved device, equipment or system designed to shut off flow caused by a rupture in a pressurized piping system.

EXHAUSTED ENCLOSURE. A device, typically consisting of a hood equipped with a fan that serves to capture and exhaust fumes, mist, vapors and gases generated at a workstation or other local environment. An exhausted enclosure does not include a room provided with general ventilation.

EXPLOSION. An effect produced by the sudden violent expansion of gases, whether or not accompanied by a shock wave or disruption, of enclosing materials, including the effects of the following sources of explosion:

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

2. Physical changes such as pressure tank ruptures.

3. Atomic changes (nuclear fission or fusion).

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

GAS CABINET. A fully enclosed, noncombustible enclosure used to provide an isolated environment for compressed gas containers in storage or use, including any doors and access ports for exchanging containers and accessing pressure-regulating controls.

GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.

HANDLING. The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as defined and classified in this chapter, whether the materials are in usable or waste condition.

HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term “health hazard” includes chemicals that are toxic, highly toxic and corrosive.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). The concentration of air-borne contaminants that poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment, as established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m^3). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the commissioner shall make such determination.

INCOMPATIBLE MATERIALS. Materials that, if mixed or combined, could explode, generate heat, gases or other byproducts, or react in a way hazardous to life or property.

LABORATORY CHEMICAL. A material with a health, flammability and/or instability hazard ranking of 2, 3 or 4 as defined in NFPA 704.

LABORATORY UNIT. An enclosed space of a minimum one-hour fire-rated construction, designed or used as a non-production laboratory. Laboratory units may include one or more separate laboratory work areas, and accessory storage rooms or spaces within or contiguous with the laboratory unit, such as offices and lavatories.

LIQUID. A material having a melting point that is equal to or less than 68°F (20°C) and a boiling point that is greater than 68°F (20°C) at 14.7 psia (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

LOWER EXPLOSIVE LIMIT (LEL). See "Lower flammable limit."

LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as LEL or lower explosive limit.

MATERIAL SAFETY DATA SHEET (MSDS). A document prepared in accordance with the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a federally approved state OSHA plan which sets forth information concerning a hazardous material.

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA. The maximum amount of a hazardous material allowed to be stored or used within an indoor or an outdoor control area.

NON-PRODUCTION LABORATORY. A building or portion thereof wherein chemicals or gases are stored, handled or used on a non-production basis for testing, research, experimental, instructional or educational purposes.

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70°F (21°C) and a pressure of 1 atmosphere (14.7 psia (101 kPa)).

OUTDOOR CONTROL AREA. An outdoor area that contains hazardous materials in amounts not exceeding the maximum allowable quantities of FC Table 2703.1.1(3) or 2703.1.1(4).

PERMISSIBLE EXPOSURE LIMIT (PEL). The maximum allowed 8-hour time-weighted-average concentration of an air-borne contaminant as established by the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1000, the Recommended Exposure Limit (REL) concentrations published by the U.S. National Institute for Occupational Safety and Health (NIOSH), the Threshold Limit Value-Time Weighted Average (TLV-TWA) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), the Workplace Environmental Exposure Level (WEEL) Guides published by the American Industrial Hygiene Association (AIHA), or other approved standard.

PESTICIDE. A substance or mixture of substances, including fungicides, but excluding any product defined as a drug in the Federal Food, Drug and Cosmetic Act, intended for the purpose of preventing, repelling or killing pests or pest infestations, or for use as a plant regulator, defoliant or desiccant.

PRESSURE VESSEL. A closed vessel designed to operate at pressures above 15 psig (103 kPa).

SAFETY CAN. An approved container with a capacity of not more than 5-gallons (19 L) and equipped with a spring-closing lid and spout cover designed to relieve internal pressure when exposed to fire.

SECONDARY CONTAINMENT. A device, equipment or system designed to contain liquid or solid, that is external to and separate from the primary containment device, equipment or system.

SOLID. A material that has a melting point and decomposes or sublimates at a temperature greater than 68°F (20°C).

STANDARD CUBIC FEET (SCF). Cubic feet of gas at normal temperature and pressure (NTP).

SYSTEM. An assembly of devices, equipment, containers, appurtenances, pumps, compressors and connecting piping that is designed to perform a complex and/or complete function.

TANK, ATMOSPHERIC. A storage tank designed to operate at pressures from atmospheric through 1.0 pound per square inch gauge (760 mm Hg through 812 mm Hg) measured at the top of the tank.

TANK, PORTABLE. A container of more than 60-gallon (227 L) capacity, and designed to be loaded into or on or temporarily attached to a transport vehicle, marine vessel, or watercraft and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cargo tank or tank car.

TANK, STATIONARY. A container having not less than 1,000-pound (454 kg) water capacity, designed primarily for stationary installations, and not intended to be moved in the course of normal use.

VAPOR PRESSURE. The pressure exerted by a volatile fluid, as determined in accordance with ASTM D 323.

SECTION FC 2703
GENERAL REQUIREMENTS

2703.1 General. Hazardous materials shall be manufactured, stored, handled, used and transported in accordance with this chapter.

2703.1.1 Maximum allowable quantity per control area. The maximum allowable quantity per control area shall be as specified in FC Tables 2703.1.1(1) through 2703.1.1(4), and for retail and wholesale storage and display in Group M occupancies, and Group S storage, as specified in FC2703.11.

Exceptions: The maximum allowable quantity per control area requirements set forth in FC Tables 2703.1.1(1) through 2703.1.1(4) shall not apply to:

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.

2703.1.2 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.

2703.1.3 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) through 2703.1.1(4) shall be in accordance with FC 2701 and 2703.

2703.1.4 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) through 2703.1.1(4) shall be in accordance with this chapter.

2703.1.5 Additional specific requirements. The storage, handling and use of hazardous materials shall additionally comply with the specific requirements of FC Chapters 28 through 44, as applicable.

FC TABLE 2703.1.1(1)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, 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 (cubic feet)	Liquid Gallons (pounds)	Gas SCF	Solid Pounds (cubic feet)	Liquid gallons (pounds)	Gas SCF	Solid 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]
Combustible fiber	Loose Baled[s]	H-3	(100) (1,000)	Not Applicable	Not Applicable	(100) (1,000)	Not Applicable	Not Applicable	(20) (200)	Not Applicable
Cryogenics Flammable	Not Applicable	H-2	Not Applicable	45[d]	Not Applicable	Not Applicable	45[d]	Not Applicable	Not Applicable	10[d]
Cryogenics Oxidizing	Not Applicable	H-3	Not Applicable	45[d]	Not Applicable	Not Applicable	45[d]	Not Applicable	Not Applicable	10[d]
Explosives	Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.4G Division 1.5 Division 1.6	H-1 H-1 H-1 or H-2 H-3 H-3 H-1 H-1	1[e, g] 1[e, g] 5[e, g] 50[e, g] 125[d, e, l] 1[e, g] 1[d, e, g]	(1)[e, g] (1)[e, g] (5)[e, g] (50)[e, g] Not Applicable (1)[e, g] Not Applicable	Not Applicable	0.25[g] 0.25[g] 1[g] 50[g] Not Applicable 0.25[g] Not Applicable	(0.25)[g] (0.25)[g] (1)[g] (50)[g] Not Applicable (0.25)[g] Not Applicable	Not Applicable	0.25[g] 0.25[g] 1[g] Not Applicable Not Applicable 0.25[g] Not Applicable	(0.25)[g] (0.25)[g] (1)[g] Not Applicable Not Applicable (0.25)[g] 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]	IA[o] IB and IC	H-2 or H-3	Not Applicable	30[d, e] 120[d, e]	Not Applicable	Not Applicable	30[d] 120[d]	Not Applicable	Not Applicable	10[d] 30[d]
Combination Flammable liquid (IA[o], 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] 125[d, e] 1[d, e] 125[d, e]	Not Applicable	Not Applicable	 1,000[d] 125[d] 1[d] 125[d]	Not Applicable	Not Applicable	 1,000[d] 25[d] 1[d] 25[d]	Not Applicable
Inert Gas Cryogenic Inert	Gaseous Liquefied Not Applicable	Not Applicable Not Applicable 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[p]	Unclassified Detonable I II III IV V	H-1 H-2 H-3 H-3 Not Applicable Not Applicable	1[e, g] 5[d, e] 50[d, e] 125[d, e] Not Limited Not Limited	(1)[e, g] (5)[d, e] (50)[d, e] (125)[d, e] Not Limited Not Limited	Not Applicable	0.25[g] 1[d] 50[d] 125[d] Not Limited Not Limited	(0.25)[g] (1)[d] (50)[d] (125)[d] Not Limited Not Limited	Not Applicable	0.25[g] 1[d] 10[d] 25[d] Not Limited Not Limited	(0.25)[g] (1)[d] (10)[d] (25)[d] Not Limited Not Limited

Oxidizer	4 3[k] 2 1	H-1 H-2 H-3 H-3	1[g] 10[d, e] 250[d, e] 4,000[e,f]	(1)[e, g] (10)[d, e] (250)[d, e] (4,000)[e,f]	Not Applicable	0.25[g] 2[d] 250[d] 4,000[f]	(0.25)[g] (2)[d] (250)[d] (4,000)[f]	Not Applicable	0.25[g] 2[d] 50[d] 1,000[f]	(0.25)[g] (2)[d] (50)[d] (1,000)[f]
Oxidizing gas	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 3	H-1 H-1	1[e, g] 1[e, g]	(1)[e, g] (1)[e, g]	10[e, g] 10[e, g]	0.25[g] 0.25[g]	(0.25)[g] (0.25)[g]	2[e, g] 2[e, g]	0.25[g] 0.25[g]	(0.25)[g] (0.25)[g]
Unstable (reactive) nondetonable	4 3 2 1	H-1 H-1 or H-2 H-3 Not Applicable	1[e, g] 5[d, e] 50[d, e] Not Limited	(1)[e, g] (5)[d, e] (50)[d, e] Not Limited	10[e, g] 50[d, e] 250[d, e] 750[d, e]	0.25[g] 1[d] 50[d] Not Limited	(0.25)[g] (1)[d] (50)[d] Not Limited	2[e, g] 10[d, e] 250[d, e] Not Limited	0.25[g] 1[d] 10[d] Not Limited	(0.25)[g] (1)[d] (10)[d] Not Limited
Water-reactive detonable[p]	3 2	H-1 H-1	1[e, g] 1[e, g]	(1)[e, g] (1)[e, g]	Not Applicable	0.25[g] 0.25[g]	(0.25)[g] (0.25)[g]	Not Applicable	0.25[g] 0.25[g]	(0.25)[g] (0.25)[g]
Water-reactive nondetonable	3 2 1	H-2 H-3 Not Applicable	5[d, e] 50[d, e] Not Limited	(5)[d, e] (50)[d, e] Not Limited	Not Applicable	5[d] 50[d] Not Limited	(5)[d] (50)[d] Not Limited	Not Applicable	1[d] 10[d] Not Limited	(1)[d] (10)[d] Not Limited

For SI: 1 cubic foot = 0.023 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. For use of control areas, see FC2703.8.3.

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, 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, exhausted enclosures or listed safety cans. Listed safety cans shall be in accordance with FC2703.9.10. 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.

n. 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.

o. For purposes of this table, gasoline and other flammable liquid motor fuels are classified as a Class IA flammable liquid.

p. Unclassified detonable organic peroxides (see FC Chapter 39), detonable pyrophoric materials (see FC Chapter 41), detonable unstable (reactive) materials (see FC Chapter 43) and detonable water-reactive materials (see FC Chapter 44) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter 33).

q. The maximum allowable quantities shall be limited by FC2706 for non-production laboratories classified as Occupancy Group B.

r. For storage of flammable and combustible liquids in Group M occupancy, see FC Chapter 34.

s. Densely-packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.

FC TABLE 2703.1.1(2)

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A HEALTH HAZARD[a,b,c,i,j]

MATERIAL	STORAGE[d]			USE-CLOSED SYSTEMS[d]			USE-OPEN SYSTEMS[d]	
	Solid Pounds[e, f]	Liquid Gallons (pounds)[e, f]	Gas SCF (pounds)[e]	Solid pounds[e]	Liquid gallons (pounds)[e]	Gas SCF (pounds)[e]	Solid pounds[e]	Liquid gallons (pounds)[e]
Corrosive	5,000	500	Gaseous 810[f] Liquefied (150)[f, h]	5,000	500	Gaseous 810[f] Liquefied (150)[f, h]	1,000	100
Highly toxic	10	(10)[h]	Gaseous 20[g] Liquefied (4)[g, h]	10	(10)[h]	Gaseous 20[g] Liquefied (4)[g, h]	3	(3)[h]
Toxic	500	(500)[h]	Gaseous 810[f] Liquefied (150)[f, h]	500	(500)[h]	Gaseous 810[f] Liquefied (150)[f, h]	125	(125)[h]

For SI: 1 cubic foot = 0.028 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. For use of control areas, see FC2703.8.3.

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.

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.

d. The aggregate quantity in storage, handling and use shall not exceed the quantity listed for storage.

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.

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.

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.

j. The maximum allowable quantities shall be limited by FC2706 for non-production laboratories classified as Occupancy Group B.

FC TABLE 2703.1.1(3)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA[a, b, f]

MATERIAL	CLASS	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
		Solid Pounds	Liquid gallons (pounds)	Gas SCF	Solid Pounds	Liquid gallons (pounds)	Gas SCF	Solid 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 Cryogenic 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 II III IV V	5 50 125 500 Not Limited	(5)[d] (50)[d] (125)[d] (500)[d] Not Limited	Not Applicable	1 50 125 500 Not Limited	(1)[d] (50)[d] (125)[d] (500)[d] Not Limited	Not Applicable	1 10 25 100 Not Limited	(1)[d] (10)[d] (25)[d] (100)[d] Not Limited
Oxidizer[c]	4	1	(1)[d]	Not	1/4	(1/4)[d]	Not	0.25	(0.25)[d]

	3 2 1	10 250 4,000	(10)[d] (250)[d] (4,000)	Applicable	2 250 4,000	(2)[d] (250)[d] (4,000)	Applicable	2 50 1,000	(2)[d] (50)[d] (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	(0.25)
Pyrophoric material[e] nondetonable	Not Applicable	4	(4)[d]	50	1	(1)[d]	10	0	0
Unstable (reactive)[e] detonable	4 3	1 1	(1)[d] (1)[d]	10 10	0.25 0.25	(0.25)[d] (0.25)[d]	2 2	0.25 0.25	(0.25)[d] (0.25)[d]
Unstable (reactive)[c] nondetonable	4 3 2 1	1 5 50 Not Limited	(1)[d] (5)[d] (50)[d] Not Limited	10 50 250 750	0.25 1 50 Not Limited	(0.25)[d] (1)[d] (50)[d] Not Limited	2 10 250 Not Limited	0.25 1 10 Not Limited	(0.25)[d] (1)[d] (10)[d] Not Limited
Water-reactive[e] detonable	3 2	1 1	(1)[d] (1)[d]	Not applicable	0.25 0.25	(0.25)[d] (0.25)[d]	2 2	0.25 0.25	(0.25)[d] (0.25)[d]
Water-reactive[c] nondetonable	3 2 1	5 50 Not Limited	(5)[d] (50)[d] Not Limited	Not applicable	5 50 Not Limited	(5)[d] (50)[d] Not Limited	10 250 Not Limited	1 10 Not Limited	(1)[d] (10)[d] Not Limited

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m^3.

a. For gallons of liquids, divide the amount in pounds by 10 in accordance with FC2703.1.2.

b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

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 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.

d. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.

e. Unclassified detonable organic peroxides (see FC Chapter 39), detonable pyrophoric materials (see FC Chapter 41), detonable unstable (reactive) materials (see FC Chapter 43) and detonable water-reactive materials (see FC Chapter 44) shall be treated as explosives for purposes of storage (see FC Chapter 33).

f. In addition to these requirements, the outdoor storage and use of hazardous materials shall comply with applicable requirements of the Zoning Resolution.

FC TABLE 2703.1.1(4)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD IN AN OUTDOOR CONTROL AREA[a,b,c,f,g]

	STORAGE			USE-CLOSED SYSTEMS			USE-OPEN SYSTEMS	
MATERIAL	Solid pounds	Liquid Gallons (pounds)	Gas SCF (pounds)	Solid Pounds	Liquid 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)[f]	10	(10)[f]	Gaseous 20[d] Liquefied (4)[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]

For SI: 1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 pound per square inch absolute = 6.895 kPa, $^oC = (^oF-32)/1.8$.

a. For gallons of liquids, divide the amount in pounds by 10 in accordance with FC2703.1.2.

b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.
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 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.
d. Allowed only when used in approved exhausted gas cabinets, exhausted enclosures or under fume hoods.
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 liquids.
f. Quantities shown in the table in parentheses have the units shown in parentheses at the head of the column.
g. In addition to these requirements, the outdoor storage and use of hazardous materials shall comply with the applicable requirements of the Zoning Resolution.

2703.2 Devices, equipment, systems and processes. Devices, equipment, systems and processes utilized for storage, handling and use of hazardous materials shall be in accordance with FC 2703.2.1 through 2703.2.8 and the regulations of the New York State Department of Environmental Conservation as set forth in 6 NYCRR Parts 596, 598, 599, 612, 613 and 614.

2703.2.1 Design and construction of containers and tanks. Containers and tanks shall be designed and constructed in accordance with approved standards. Containers, tanks and other means used for containment of hazardous materials shall be of an approved type.

2703.2.2 Piping, tubing, valves and fittings. Piping, tubing, valves and fittings conveying hazardous materials, except piping for inlet connections to prevent backflow or piping for pressure relief devices, shall be designed and installed in accordance with approved standards and FC 2703.2.2.1 and 2703.2.2.2.

2703.2.2.1 Design and construction. Piping, tubing, valves, fittings and ancillary equipment used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and ancillary equipment shall be designed and fabricated from materials compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress, and exposure to which they are subjected.

2. Piping and tubing shall be identified in accordance with ASME A13.1 to indicate the material conveyed.

3. Readily accessible manual valves, or automatic remotely-activated fail-safe emergency shutoff valves, shall be installed on supply piping and tubing at the point of use and at the tank, container or other source of supply.

4. Emergency shutoff valves shall be clearly visible and readily accessible. A durable sign shall be conspicuously posted immediately adjacent to such valves that identifies their location.

5. Backflow prevention or check valves shall be provided when the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.

6. Where gases or liquids having a hazard ranking of health hazard Class 3 or 4, flammability Class 4, or instability Class 3 or 4 in accordance with NFPA 704 are conveyed in pressurized piping above 15 pounds per square inch gauge (psig) (103 kPa), an approved means of leak detection and emergency shutoff or excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from any other source of supply, the excess flow control shall be located as close to the source of supply as practical.

Exceptions:

1. Piping for inlet connections designed to prevent backflow.

2. Piping for pressure relief devices.

2703.2.2.2 Additional regulations for supply piping for health-hazard materials. Supply piping and tubing for gases and liquids having a health-hazard ranking of 3 or 4 in accordance with NFPA704 shall be in accordance with ASME B31.3 and the following:

1. Piping and tubing utilized for the transmission of highly toxic, toxic or highly volatile corrosive liquids and gases shall have welded, threaded or flanged connections throughout, except where connections are located within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for connections if the material is a liquid.

2. Piping and tubing shall not be located within corridors, within any portion of a means of egress required to be enclosed in fire-resistance-rated construction or in concealed spaces in areas not classified as Group H occupancies.

Exception: Piping and tubing within the space defined by the walls of corridors and the floor or roof above or in concealed spaces above other occupancies when installed in accordance with Section 415.9.6.3 of the Building Code for Group H-5 occupancies.

2703.2.3 Devices, equipment and systems. Devices, equipment and systems, including required detection and alarm systems, installed or used in conjunction with the storage, handling and use of hazardous materials shall be listed or approved.

2703.2.4 Installation of tanks. Installation of tanks shall be in accordance with FC 2703.2.4.1 through 2703.2.4.3 and with the regulations of the New York State Department of Environmental Conservation as set forth in 6 NYCRR Sections 599.6, 614.7 and 614.13.

2703.2.4.1 Underground tanks. Underground tanks used for the storage of liquid hazardous materials shall be provided with secondary containment.

2703.2.4.2 Aboveground tanks. Aboveground stationary tanks used for the storage of liquid hazardous materials shall be located and protected in compliance with the requirements for outdoor storage of the particular material involved.

2703.2.4.2.1 Marking. Aboveground stationary tanks shall be marked as required by FC2703.5.

2703.2.4.3 Flood hazard. Hazardous material storage tanks located in areas of special flood hazard or on the premises of Group I-2 occupancies that are hospitals located in shaded X-Zones (as defined in Section G201.2 of the Building Code) shall comply with Section G307.5 of Appendix G of the Building Code.

2703.2.5 Empty containers and tanks. Empty containers and tanks previously used for the storage of hazardous materials shall be free from residual material and vapor in compliance with the requirements of DOTn, the Resource Conservation and Recovery Act (RCRA) or other governmental agencies having jurisdiction, or shall be stored, handled and used in compliance with the requirements of this code.

2703.2.6 Maintenance. In addition to the requirements of FC2703.2.3, all devices, equipment and systems used in conjunction with hazardous materials, including tanks, and detection and alarm systems, shall be maintained in good working order. Defective devices, equipment and systems shall be removed from service and repaired or replaced, or disposed of lawfully.

2703.2.6.1 Tanks out of service for 30 days. Stationary tanks not used for a period of 30 calendar days or more shall be properly safeguarded or removed in an approved manner. Such tanks shall have the fill line, gauge opening and pump connection secured against tampering. Vent lines shall be properly maintained. Stationary tanks containing flammable and combustible liquid out of service for a period of 30 calendar days or more shall additionally comply with the requirements of FC3404.2.13.

2703.2.6.1.1 Return to service. Tanks that are returned to service shall be tested in an approved manner prior to use.

2703.2.7 Liquid-level limit control. Atmospheric tanks that contain hazardous material liquids shall be equipped with a liquid-level limit control or other approved means to prevent overfilling of the tank.

Exception: Tanks with a capacity not exceeding 500 gallons (1893 L) that are filled from a source other than a cargo tank or tank car.

2703.2.8 Seismic protection. Machinery and equipment utilizing hazardous materials shall be braced and anchored in accordance with the seismic design requirements of the Building Code for the seismic design category in which the machinery or equipment is classified.

2703.2.9 Testing. The following devices, equipment and systems shall be tested at the time of installation and not less than annually thereafter, provided that testing shall be conducted at least as often as is recommended by the manufacturer of such device, equipment or system:

1. Gas detection systems, alarms and automatic emergency shutoff valves required by FC3704.2.2.10 for highly toxic and toxic gases.

2. Limit control systems for liquid level, temperature and pressure required by FC 2703.2.7, 2704.8 and 2705.1.4.

3. Emergency alarm systems required by FC 2704.9 and 2705.4.4.

4. Monitoring and supervisory systems required by FC 2704.10 and 2705.1.6.

5. Manually activated shutdown controls required by FC4103.1.1.1 for compressed gas systems conveying pyrophoric gases.

2703.3 Release and disposal of hazardous materials. It shall be unlawful to release or dispose of any amount of hazardous material, including pesticides and fertilizers used for domestic, agricultural or horticultural purposes, into a sewer, storm drain, ditch, drainage canal, creek, stream, river, lake or tidal waterway or on the ground, sidewalk, street, highway or into the atmosphere, except when allowed by federal, state or local regulations or permits, including the regulations of the New York State Department of Environmental Conservation, as set forth in 6 NYCRR Parts 595 and 611.

2703.3.1 Reporting of discharges. When hazardous materials are released in quantities reportable under federal, state or local regulations, the commissioner shall be notified and the following procedures required in accordance with FC 2703.3.1.1 through 2703.3.1.4.

2703.3.1.1 Records. Accurate records shall be kept of the discharge of hazardous materials.

2703.3.1.2 Preparation. Provisions shall be made for controlling and mitigating accidental discharges.

2703.3.1.3 Control. When a discharge is caused by a container failure, the container shall be repaired or removed from service.

2703.3.1.4 Responsibility for cleanup. The owner of a facility or other person responsible for an accidental discharge shall undertake all actions necessary to remediate such discharge. When deemed necessary by the commissioner, cleanup may be initiated by the department or other city agency. Costs associated with such cleanup shall be borne by the owner or other person responsible for the discharge. The department shall give such owner or other person written notice of such costs and an opportunity to be heard. Payment of such costs shall be recoverable in any manner authorized by law, rule or regulation. Failure to pay such costs shall cause a lien to be placed upon the premises pursuant to the provisions of FC117.4, as applicable, or against vehicles or other personal property in accordance with the provisions applicable thereto. Nothing in this section shall be construed to preclude the implementation of response measures, or the recovery of the costs of such measures, by any other city agency, either prior or subsequent to any response measure implemented pursuant to this section.

2703.4 Material safety data sheets. A material safety data sheet (MSDS) for each hazardous material stored, handled or used on a premises shall be maintained on such premises at a location where the MSDS is readily available for reference by persons handling or using such hazardous materials or supervising such storage, handling or use, and by any department representative.

2703.5 Hazard identification signs. Unless otherwise exempted by the commissioner, hazard identification signs as set forth in NFPA 704 for the specific material contained shall be conspicuously affixed on stationary containers and aboveground tanks and at entrances to

locations where hazardous materials are stored, handled or used, including dispensing, in quantities requiring a permit, including locations where such materials are dispensed, and at such other locations as may be designated by the commissioner.

2703.5.1 Markings. Individual containers, cartons or packages shall be conspicuously marked or labeled in an approved manner. Signs reading "COMPRESSED GAS" shall be conspicuously posted at the entrance to rooms or on cabinets containing compressed gases.

2703.6 Signs. Signs and markings required by FC 2703.5 and 2703.5.1 shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be acceptable to the commissioner.

2703.7 Sources of ignition. Sources of ignition shall comply with the requirements of FC 2703.7.1 through 2703.7.3.

2703.7.1 Smoking. It shall be unlawful to smoke in the following locations, and "No Smoking" signs in compliance with the requirements of FC310 shall be conspicuously posted:

1. In rooms or areas where hazardous materials are stored or used in open systems in amounts requiring a permit.

2. Within 25 feet (7620 mm) of outdoor hazardous material storage, handling and use areas, including dispensing areas.

3. In rooms or areas where flammable or combustible hazardous materials are stored, handled or used.

2703.7.2 Open flames. Open flames and devices that generate or operate at a high temperature shall be kept a safe distance from hazardous material in storage or use.

2703.7.3 Industrial trucks. Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with the Electrical Code shall be listed and labeled in accordance with NFPA 505.

2703.8 Construction requirements. Buildings, structures, control areas, enclosures and cabinets for hazardous materials shall be designed and constructed in accordance with FC 2703.8.1 through 2703.8.6.2.

2703.8.1 Buildings. Buildings, structures, or portions thereof, in which hazardous materials are stored, handled or used shall be constructed in accordance with the construction codes, including the Building Code.

2703.8.2 Required detached buildings. Group H occupancies containing quantities of hazardous materials in excess of those set forth in FC Table 2703.8.2 shall be in detached buildings.

FC TABLE 2703.8.2
REQUIRED DETACHED STORAGE

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 Division 1.2 Division 1.3 Division 1.4 Division 1.4[c] Division 1.5 Division 1.6	Maximum Allowable Quantity Maximum Allowable Quantity Maximum Allowable Quantity Maximum Allowable Quantity 1 Maximum Allowable Quantity Maximum Allowable Quantity	Not Applicable
Oxidizers	Class 4	Maximum Allowable Quantity	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 Class 2	1,200 2,000	Not Applicable
Organic peroxides	Unclassified Detonable Class I Class II Class III	Maximum Allowable Quantity Maximum Allowable Quantity 25 50	Not Applicable
Unstable (reactives) nondetonable	Class 4 Class 3 Class 2	Maximum Allowable Quantity 1 25	Maximum Allowable Quantity 2,000 10,000
Water-reactives nondetonable	Class 3 Class 2	1 25	Not Applicable
Pyrophoric material detonable	Not Applicable	Maximum Allowable Quantity	Maximum Allowable Quantity
Pyrophoric gases nondetonable	Not Applicable	Not Applicable	2,000

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.02832 m^3, 1 ton = 2,000 pounds = 908 kg.

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 explosives, the required separation distances shall be as specified in FC Chapter 33. Unclassified detonable organic peroxides (see FC Chapter 39), detonable pyrophoric materials (see FC Chapter 41), detonable unstable (reactive) materials (see FC Chapter 43) and detonable water-reactive materials (see FC Chapter 44) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter 33).

b. "Maximum Allowable Quantity" means the maximum allowable quantity per control area set forth in FC Table 2703.1.1(1).

c. Limited to Division 1.4 materials and articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles, providing the net explosive weight of individual articles does not exceed 1 pound.

2703.8.3 Control areas. Control areas shall be in accordance with FC 2703.8.3.1 through 2703.8.3.5.

2703.8.3.1 Construction requirements. Control areas shall be separated 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 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.

2703.8.3.3 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.

2703.8.3.4 Fire-resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with FC Table 2703.8.3.3. 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
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) and 2703.1.1(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 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) and 2703.1.1(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.

2703.8.4 Gas rooms. Where a gas room is provided to comply with the requirements of FC Chapter 37, the gas room shall be in accordance with FC 2703.8.4.1 and 2703.8.4.2.

2703.8.4.1 Construction. Gas rooms shall be protected throughout by a sprinkler system. Gas rooms shall be separated from the remainder of the building in accordance with the construction codes, including the Building Code, based on the occupancy group into which the building has been classified.

2703.8.4.2 Ventilation system. The ventilation system for gas rooms shall be designed to operate at a negative pressure relative to the surrounding area. Highly toxic and toxic gases shall additionally comply with the requirements of FC3704.2.2.6. The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.5 Exhausted enclosures. Where an exhausted enclosure is used to increase maximum allowable quantity per control area or when the location of hazardous materials in exhausted enclosures is provided to comply with the requirements of FC Chapter 37, the exhausted enclosure shall be in accordance with FC 2703.8.5.1 through 2703.8.5.3.

2703.8.5.1 Construction. Exhausted enclosures shall be of noncombustible construction.

2703.8.5.2 Ventilation. The ventilation system for exhausted enclosures shall be designed to operate at a negative pressure relative to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall additionally comply with the requirements of FC3704.1.3. The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.5.3 Fire extinguishing system. Exhausted enclosures where flammable materials are used shall be protected by a fire extinguishing system in accordance with FC Chapter 9 and the construction codes, including the Building Code.

2703.8.6 Gas cabinets. Where a gas cabinet is used to increase the maximum allowable quantity per control area or when the location of compressed gases in gas cabinets is provided to comply with the requirements of FC Chapter 37, the gas cabinet shall be in accordance with FC 2703.8.6.1 through 2703.8.6.3.

2703.8.6.1 Construction. Gas cabinets shall be constructed of not less than 0.097-inch (2.5-mm) (No. 12 gauge) steel; provided with self-closing limited access ports or noncombustible windows to give access to equipment controls; and have all interior surfaces treated, coated or constructed of materials that are compatible with the hazardous materials stored.

2703.8.6.2 Ventilation. The ventilation system for gas cabinets shall be designed to operate at a negative pressure relative to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall additionally comply with the requirements of FC3704.1.2. The ventilation system shall be installed in accordance with the construction codes, including the Mechanical Code.

2703.8.6.3 Maximum number of containers per gas cabinet. The number of containers stored in a single gas cabinet shall not exceed three.

2703.8.7 Hazardous materials storage cabinets. Where storage cabinets are used to increase maximum allowable quantity per control area or to comply with the requirements of this chapter, such cabinets shall be in accordance with FC 2703.8.7.1 and 2703.8.7.2.

2703.8.7.1 Construction. All interior surfaces of such cabinets shall be treated, coated or constructed of materials that are nonreactive with the hazardous material stored. Cabinets shall either be listed in accordance with UL 1275 as suitable for the intended storage or constructed in accordance with the following:

1. Cabinets shall be of steel having a thickness of not less than 0.0478 inch (1.2 mm) (No. 18 gage). The cabinet, including the door, shall be double walled with a 1½-inch (8-mm) airspace between the walls. Joints shall be riveted or welded and shall be tight fitting. Doors shall be well fitted, self-closing and equipped with a self-latching device.

2. The bottoms of cabinets utilized for the storage of liquids shall be liquid-tight to a minimum height of 2 inches (51 mm).

2703.8.7.1.1 Electrical equipment. Electrical equipment and devices within cabinets used for the storage of hazardous gases or liquids shall be in accordance with the Electrical Code.

2703.8.7.2 Warning markings. Cabinets shall be clearly identified in an approved manner with red letters on a contrasting background to read: HAZARDOUS — KEEP FIRE AWAY.

2703.9 General safety precautions. General precautions for the safe storage, handling and use of hazardous materials shall be in accordance with FC 2703.9.1 through 2703.9.9.

2703.9.1 Personnel training and written procedures. Persons responsible for the operation of areas in which hazardous materials are stored, handled or used, including dispensing, shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of fire, leak or spill. A certificate of fitness shall be required when specified by this code or the rules or as a condition of a permit.

2703.9.1.1 Fire department liaison. One or more responsible persons shall be designated to serve as a liaison to the department in connection with any emergency response to the premises, for purposes of providing access to the location where hazardous materials are stored on the premises, providing access to material safety data sheets, and otherwise assisting in the development and implementation of emergency procedures. The names and telephone numbers of such responsible persons shall be included on the annual inventory required by New York State General Municipal Law Section 209-u and on a hazardous materials management plan when such plan is required. Telephone numbers shall include a 24-hour contact number for such responsible persons.

2703.9.2 Security. Storage, handling and use areas, including dispensing areas, shall be secured against unauthorized entry and safeguarded in a manner approved by the commissioner.

2703.9.3 Protection from vehicles. Posts or other approved means shall be provided to protect storage tanks and connected piping, valves and fittings; use areas; and dispensing areas subject to vehicular damage in accordance with FC312.

2703.9.4 Electrical wiring and equipment. Electrical wiring and equipment shall be installed and maintained in accordance with the Electrical Code.

2703.9.5 Static accumulation. When conditions exist that could cause a flammable mixture to be ignited by static electricity, equipment shall be grounded and all other necessary and appropriate actions taken to prevent the accumulation of a static charge.

2703.9.6 Protection from light. Materials that are sensitive to light shall be stored in containers designed to protect them from such exposure.

2703.9.7 Shock protection. Materials that are sensitive to shock shall be padded, suspended or otherwise protected against jarring, seismic activity or other movement.

2703.9.8 Separation of incompatible materials. Incompatible materials shall be separated while in storage or use except for stored materials in containers having a capacity of not more than 5 pounds (2 kg) or ½ gallon (2 L). Separation shall be accomplished by:

1. Segregating incompatible materials in storage by a distance of not less than 20 feet (6096 mm).

2. Isolating incompatible materials in storage by a noncombustible partition extending not less than 18 inches (457 mm) above and to the sides of the stored material.

3. Storing liquid and solid materials in hazardous material storage cabinets. Materials that are incompatible shall not be stored in the same cabinet.

4. Storing compressed gases in gas cabinets or exhausted enclosures in accordance with FC 2703.8.5 and 2703.8.6. Materials that are incompatible shall not be stored within the same cabinet or exhausted enclosure.

2703.9.9 Shelf storage. Shelving shall be of substantial construction, and shall be braced and anchored in accordance with the seismic design requirements of the construction codes, including the Building Code, for the seismic zone in which the material is located. Shelving shall be treated, coated or constructed of materials that are compatible with the hazardous materials stored. Shelves shall be provided with a lip or guard when used for the storage of individual containers.

Exceptions:

1. Storage in hazardous material storage cabinets or laboratory furniture specifically designed for such use.

2. Storage of hazardous materials in amounts not requiring a permit in accordance with FC105.6.

Shelf storage of hazardous materials shall be maintained in an orderly manner.

2703.9.10 Safety cans. Safety cans shall be listed in accordance with UL 30 when used to increase the maximum allowable quantities per control area of flammable or combustible liquids in accordance with FC Table 2703.1.1(1). Safety cans listed in accordance with

UL 1313 are allowed for flammable and combustible liquids when not used to increase the maximum allowable quantities per control area and for other hazardous material liquids in accordance with the listing.

2703.10 Handling. In addition to the requirements of FC2703.2, the handling of hazardous materials in corridors or exit enclosures shall be in accordance with FC 2703.10.1 through 2703.10.3.6.

2703.10.1 Valve protection. Hazardous material gas containers and tanks moved during handling shall have their protective caps in place. Containers and tanks of highly toxic or toxic compressed gases shall have their valve outlets capped or plugged with an approved closure device in accordance with FC Chapter 30.

2703.10.2 Carts and hand trucks required. Containers of hazardous materials having a hazard ranking of 3 or 4 pursuant to NFPA 704, and liquids in containers exceeding 5 gallons (19 L), shall be moved during handling on a cart or hand truck meeting the requirements of FC2703.10.3, when moved through any corridor or exit enclosure.

Exceptions:

1. Two hazardous material liquid containers, which are hand carried in approved safety carriers.

2. Not more than four drums not exceeding 55 gallons (208 L) each, which are moved by suitable drum trucks.

3. Containers of compressed gases, which are moved by approved carts or hand trucks, and containers not exceeding 25 pounds (11 kg), which are hand carried.

4. Solid hazardous materials not exceeding 100 pounds (45 kg), which are moved by approved hand trucks, and a single container not exceeding 50 pounds (23 kg), which is hand carried.

2703.10.3 Carts and hand trucks. Carts and hand trucks required by FC2703.10.2 to be used to move hazardous materials shall be designed and constructed in accordance with FC 2703.10.3.1 through 2703.10.3.6.

2703.10.3.1 Design. Carts and hand trucks used to move hazardous materials shall be designed to provide a stable base for such movement during handling and shall have a means of restraining containers to prevent accidental dislodgement. Compressed gas containers placed on carts and hand trucks shall be individually restrained.

2703.10.3.2 Speed-control devices. Carts and hand trucks shall be provided with a device that will enable the operator to safely control movement by providing stops or speed-reduction devices.

2703.10.3.3 Construction. The cart or hand truck shall be sturdily constructed of materials compatible with the material being moved.

2703.10.3.4 Spill control. Carts and hand trucks used to move liquids shall be capable of containing a spill from the largest single container being moved.

2703.10.3.5 Attendance. Carts and hand trucks used to move materials shall not obstruct or be left unattended in any corridor, exit enclosure, or other means of egress.

2703.10.3.6 Incompatible materials. Incompatible materials shall not be kept on the same cart or hand truck.

2703.11 Group M storage and display and Group S storage. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single control area of a Group M occupancy, or an outdoor control area, or stored in a single control area of a Group S occupancy, may exceed the maximum allowable quantity per control area indicated in FC2703.1 when stored and displayed in accordance with FC 2703.11.1 through 2703.11.3.10.

2703.11.1 Maximum allowable quantity per 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 control area of a Group M occupancy or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in FC Table 2703.11.1.

FC TABLE 2703.11.1
MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES
NONFLAMMABLE SOLIDS, NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS[d, e, f]

CONDITION		MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
Material[a]	Class	Solids Pounds	Liquids gallons
HEALTH-HAZARD MATERIALS—NONFLAMMABLE AND NONCOMBUSTIBLE SOLIDS AND LIQUIDS			
Corrosives[b, c]	Not Applicable	9,750	975
Highly 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 m^3.
a. Hazard categories are as specified in FC2701.2.2.
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. When Note b applies, amounts increased shall be as set forth in both notes.
d. See FC Table 2703.8.3.3 for design and number of control areas.
e. Allowable quantities for other hazardous material categories shall be in accordance with FC2703.1.

f. Maximum quantities shall be increased 100 percent in outdoor control areas.
g. Maximum amounts 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 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 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.

2703.11.3 Storage and display. Storage and display shall be in accordance with FC 2703.11.3.1 through 2703.11.3.10.

2703.11.3.1 Density. Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m^2) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot (0.50 L/m^2) of floor area actually occupied by liquid merchandise.

2703.11.3.2 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 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.

2703.11.3.4 Racks and shelves. Racks and shelves used for storage or display shall be in accordance with FC2703.9.9.

2703.11.3.5 Container type. Containers shall be approved for the intended use and identified as to their content.

2703.11.3.6 Container size. Individual containers shall not exceed 100 pounds (45 kg) for solids or 10 gallons (38 L) for liquids in storage and display areas.

2703.11.3.7 Incompatible materials. Incompatible materials shall be separated in accordance with FC2703.9.8.

2703.11.3.8 Floors. Floors shall be in accordance with FC2704.12.

2703.11.3.9 Aisles. Aisles 4 feet (1219 mm) in width shall be maintained on three sides of the storage or display area.

2703.11.3.10 Signs. Hazard identification signs shall be provided in accordance with FC2703.5.

2703.12 Outdoor control areas. Outdoor control areas for hazardous materials in amounts not exceeding the maximum allowable quantity per outdoor control area shall be in compliance with the following requirements:

1. Outdoor control area shall be kept free from vegetation, rubbish and other combustible waste, and combustible materials not necessary to the storage. The area surrounding an outdoor control area shall be kept clear of such materials for a minimum of 15 feet (4572 mm).

2. Outdoor control areas shall be located at least 5 feet (1524 mm) from a building opening and at least 15 feet (4572 mm) from Group A occupancies. Outdoor control areas shall be located at least 20 feet (6096 mm) from a lot line, public street or private road.

   Exception: A 2-hour fire-resistance-rated wall without openings extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distances required from a building opening, lot line, public street or private road.

3. Where a property exceeds 10,000 square feet (929 m^2), there may be two outdoor control areas separated by a minimum distance of 50 feet (15 240 mm), when approved.

4. Where a property exceeds 35,000 square feet (3252 m^2), there may be multiple outdoor control areas, separated a minimum distance of 50 feet (15 240 mm), when approved.

SECTION FC 2704
STORAGE

2704.1 General. Hazardous materials in amounts exceeding the maximum allowable quantity per control area as set forth in FC2703.1 shall be stored in accordance with FC 2701, 2703 and 2704. Hazardous materials in amounts not exceeding the maximum allowable quantity per control area as set forth in FC2703.1 shall be stored in accordance with FC 2701 and 2703. Nonflammable solid and nonflammable and noncombustible liquid hazardous materials in Group M retail occupancies and Group S wholesale storage shall be stored and displayed in accordance with FC2703.11.

2704.2 Spill control and secondary containment for liquid and solid hazardous materials. Buildings, structures, rooms or areas used for the storage of liquid or solid hazardous materials shall be provided with spill control and secondary containment in accordance with FC 2704.2.1 through 2704.2.3.

Exception: Outdoor storage of containers on approved containment pallets in accordance with FC2704.2.3.

2704.2.1 Spill control for hazardous material liquids. Buildings, structures, rooms or areas used for the storage of hazardous material liquids in individual vessels having a capacity of more than 55 gallons (208 L), or in which the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L), shall be provided with spill control to prevent the flow of liquids to

adjoining areas. Floors in indoor locations, and similar surfaces in outdoor locations, shall be designed to contain a spill from the largest single vessel by one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in outdoor locations.

2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar protection in outdoor locations.

3. Sumps and collection systems.

4. Other approved engineered systems.

2704.2.1.1 Containment system construction. Except for surfacing, the floors, sills, dikes, sumps and collection systems shall be constructed of noncombustible material, and the liquid-tight seal shall be compatible with the material stored. When liquid-tight sills or dikes are provided, they are not required at perimeter openings having an open-grate trench across the opening that connects to an approved collection system.

2704.2.2 Secondary containment for hazardous material liquids and solids. Where required by FC Table 2704.2.2, buildings, structures, rooms or areas used for the storage of hazardous materials liquids or solids shall be provided with secondary containment in accordance with this section when the capacity of an individual vessel or the aggregate capacity of multiple vessels exceeds the following quantities:

1. Liquids: Capacity of an individual vessel exceeds 55 gallons (208 L) or the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L).

2. Solids: Capacity of an individual vessel exceeds 550 pounds (250 kg) or the aggregate capacity of multiple vessels exceeds 10,000 pounds (4540 kg).

FC TABLE 2704.2.2
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	Not Applicable	See FC Chapter 34
	Class IIIA		See FC Chapter 34		See FC Chapter 34
	Class IIIB		See FC Chapter 34		See FC Chapter 34
Cryogenic fluids			See FC Chapter 32		See FC Chapter 32
Explosives[a]		See FC Chapter 33		See FC Chapter 33	
Flammable liquids	Class IA	Not Applicable	See FC Chapter 34	Not Applicable	See FC Chapter 34
	Class IB		See FC Chapter 34		See FC Chapter 34
	Class IC		See FC Chapter 34		See FC Chapter 34
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
	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				
	Class 1	Not Required	Not Required	Not Required	Not Required
Water-reactives, nondetonable	Class 3	Required	Required	Required	Required
	Class 2				
	Class 1	Not Required	Not Required	Not Required	Not Required
Health-hazard materials					
Corrosives		Not Required	Required	Not Required	Required
Highly toxics		Required	Required	Required	Required
Toxics					

a. Unclassified detonable organic peroxides (see FC Chapter 39), detonable pyrophoric materials (see FC Chapter 41), detonable unstable (reactive) materials (see FC Chapter 43) and detonable water-reactive materials (see FC Chapter 44) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter 33).

2704.2.2.1 Containment and drainage methods. The building, structure, room or area shall contain or drain the hazardous materials and fire protection water through the use of one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar protection in outdoor locations.

2. Liquid-tight floors and raised or recessed sills or dikes in indoor locations or similar protection in outdoor locations.

3. Sumps and collection systems.

4. Drainage systems leading to an approved location.

5. Other approved engineered systems.

2704.2.2.2 Incompatible materials. Incompatible materials used in open systems shall be separated from each other in the secondary containment system.

2704.2.2.3 Indoor design. Secondary containment for indoor storage areas shall be designed to contain a spill from the largest vessel plus the design flow volume of fire protection water calculated to discharge from the fire extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller. The containment capacity shall be designed to contain the flow for a minimum period of 20 minutes.

2704.2.2.4 Outdoor design. Secondary containment for outdoor storage areas shall be designed to contain a spill from the largest individual vessel. If the area is open to rainfall, secondary containment shall be designed to include the volume of a 24-hour rainfall as determined by a 25-year storm but in no case less than 110 percent of the largest individual vessel and provisions shall be made to drain accumulations of ground water and rainwater.

2704.2.2.5 Monitoring. Monitoring shall be provided to detect hazardous materials in the secondary containment system. The method of monitoring may be visual inspection of the primary or secondary containment, or other approved means. Where secondary containment is subject to the intrusion of water, a monitoring method for detecting water shall be provided. Where monitoring devices are provided, they shall be connected to approved audible or visible alarms.

2704.2.2.6 Drainage system design. Drainage systems shall be in accordance with the Plumbing Code and the following requirements:

1. The slope of floors to drains in indoor locations, or similar protection in outdoor locations, shall not be less than 1 percent.

2. Drains from indoor storage areas shall be sized to carry the volume of the fire protection water as determined by the design density discharged from the fire extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller.

3. Drains from outdoor storage areas shall be sized to carry the volume of the fire flow and the volume of a 24-hour rainfall as determined by a 25-year storm.

4. Materials of construction for drainage systems shall be compatible with the materials stored.

5. Incompatible materials used in open systems shall be separated from each other in the drainage system.

6. Drains shall terminate in an approved location away from buildings, structures, valves, means of egress, fire access roadways, adjoining property and storm drains.

2704.2.3 Containment pallets. When used as an alternative to spill control and secondary containment for outdoor storage in accordance with the exception set forth in FC2704.2, containment pallets shall be in compliance with the following requirements:

1. A liquid-tight sump accessible for visual inspection shall be provided.

2. The sump shall be designed to contain not less than 66 gallons (250 L).

3. Exposed surfaces shall be compatible with material stored.

4. The containment pallet shall be protected to prevent collection of rainwater within the sump.

2704.3 Ventilation. Indoor storage areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation where natural ventilation can be shown to be acceptable for the materials as stored.

Exception: Storage areas for flammable solids complying with the requirements of FC Chapter 36.

2704.3.1 System requirements. Exhaust ventilation systems shall comply with the following requirements:

1. Installation shall be in accordance with the Mechanical Code.

2. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot (0.00508 $m^3/s/m^2$) of floor area over the storage area.

3. Systems shall operate continuously unless alternative designs are approved.

4. A manual shutoff control shall be provided outside of the room in a position adjacent to the access door to the room or in an approved location. The switch shall be a break-glass or other approved type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.

5. Exhaust ventilation shall be designed based on the density of the potential fumes or vapors released. For fumes or vapors that are heavier than air, exhaust shall be taken from a point within 12 inches (305 mm) of the floor. For fumes or vapors that are lighter than air, exhaust shall be taken from a point within 12 inches (305 mm) of the highest point of the room.

6. The design and location of exhaust and inlet air openings shall serve to provide air movement across all portions of the floor and room to prevent the accumulation of vapors.

2704.4 Separation of incompatible hazardous materials. Incompatible materials shall be separated in accordance with FC2703.9.8.

2704.5 Sprinkler systems. Indoor storage areas and storage buildings shall be protected throughout by a sprinkler system. The design of the sprinkler system shall not be less than that required for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (279 m^2). Where the materials or storage arrangement are required by other regulations to be provided with a higher level of sprinkler system protection, the higher level of sprinkler system protection shall be provided.

2704.6 Explosion control. Buildings, structures and indoor rooms and other areas shall be provided with explosion control in accordance with FC911.

2704.7 Emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the Electrical Code, and the construction codes, including the Building Code, and FC604.

Exceptions:

1. Mechanical ventilation for storage of Class IB and Class IC flammable liquids and combustible liquids in closed containers not exceeding 6½ gallons (25 L) capacity.

2. Storage areas for Class 1 and 2 oxidizers.

3. Storage areas for Class III, IV and V organic peroxides.

4. Storage areas for highly toxic or toxic materials, in accordance with FC 3704.2.2.8 and 3704.3.2.6.

5. Storage areas for which an approved fail-safe engineered system has been installed for mechanical ventilation, treatment systems or temperature control systems.

2704.8 Limit controls. Limit controls shall be provided in accordance with FC 2704.8.1 and 2704.8.2.

2704.8.1 Temperature control. Materials that must be kept at temperatures other than normal ambient temperatures shall be provided with an approved means to maintain the temperature within a safe range. Redundant temperature control equipment that will operate on failure of the primary temperature control system, or other approved means to maintain the required temperature range, shall be provided.

2704.8.2 Pressure control. Stationary tanks and equipment containing hazardous material liquids that can generate pressures exceeding design limits because of exposure fires or internal reaction, shall have some form of construction or other approved means that will relieve excessive internal pressure. The means of pressure relief shall vent to an approved location outdoors or to an exhaust scrubber or treatment system in accordance with FC Chapter 37.

2704.9 Emergency alarm. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

2704.10 Supervision. Emergency alarm, detection and fire extinguishing systems required by FC2704 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

2704.11 Clearance from combustibles. The area surrounding an outdoor storage area or tank shall be kept clear of vegetation, rubbish and other combustible waste, and storage of combustible materials, for a minimum distance of 25 feet (7620 mm).

2704.12 Noncombustible floor. Except for surfacing, floors of storage areas shall be of noncombustible construction.

2704.13 Weather protection. Outdoor hazardous material storage areas sheltered by overhead noncombustible construction shall not be considered indoor storage when the area is constructed in accordance with the requirements for weather protection as required by the construction codes, including the Building Code.

Exception: Storage of explosives shall be considered as indoor storage.

SECTION FC 2705
HANDLING AND USE

2705.1 General. Hazardous materials in amounts exceeding the maximum allowable quantity per control area set forth in FC2703.1 shall be handled and used, including dispensed, in accordance with FC 2701, 2703 and 2705. Hazardous materials in amounts not exceeding the maximum allowable quantity per control area set forth in FC2703.1 shall be handled and used, including dispensed, in accordance with FC 2701 and 2703.

2705.1.1 Separation of incompatible materials. Separation of incompatible materials shall be in accordance with FC2703.9.8.

2705.1.2 Noncombustible floor. Except for floor finishing operations, floors of areas where liquid or solid hazardous materials are used in open systems shall be of noncombustible, liquid-tight construction.

2705.1.3 Spill control and secondary containment for hazardous material liquids. Where required by other provisions of FC2705, spill control and secondary containment shall be provided for hazardous material liquids in accordance with FC2704.2.

2705.1.4 Limit controls. Limit controls shall be provided in accordance with FC 2705.1.4.1 through 2705.1.4.4.

2705.1.4.1 High-liquid-level control. Open tanks in which liquid hazardous materials are used shall be equipped with a liquid-level limit control or other means to prevent overfilling of the tank.

2705.1.4.2 Low-liquid-level control. Approved safeguards shall be provided to prevent a low-liquid level in a tank from creating a hazardous condition, including overheating of a tank or its contents.

2705.1.4.3 Temperature control. Temperature control shall be provided in accordance with FC2704.8.1.

2705.1.4.4 Pressure control. Pressure control shall be provided in accordance with FC2704.8.2.

2705.1.5 Emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency power system in accordance with the Electrical Code, the construction codes, including the Building Code, and FC604.

Exceptions:

1. Areas in which an approved fail-safe engineered system has been installed for mechanical ventilation, treatment systems and temperature control systems.

2. Systems for highly toxic or toxic gases provided with emergency power in accordance with FC 3704.2.2.8 and 3704.3.2.6.

2705.1.6 Supervision. Alarm, detection and fire extinguishing systems required by other provisions of FC2705 shall be supervised by an approved central station or shall initiate an audible and visible signal at a continuously attended on-site location.

2705.1.7 Lighting. Adequate lighting by natural or artificial means shall be provided.

2705.1.8 Fire extinguishing systems. Indoor rooms or areas in which hazardous materials are handled or used shall be protected by a fire extinguishing system in accordance with FC Chapter 9 and the construction codes, including the Building Code. The design of any sprinkler system shall not be less than that required for Ordinary Hazard, Group 2, with a minimum design area of 3,000 square feet (279 m^2). Where the materials or storage arrangement are required by other regulations to be provided with a higher level of sprinkler system protection, the higher level of sprinkler system protection shall be provided.

2705.1.9 Ventilation. Indoor use areas, including dispensing areas, shall be provided with exhaust ventilation in accordance with Section 502.8 of the Mechanical Code.

Exception: Ventilation is not required for flammable solids, unless they are in the form of finely divided particles or generate finely divided particles during use.

2705.1.10 Liquid transfer. Liquids having a hazard ranking of 3 or 4 pursuant to NFPA 704 shall be transferred by one of the following methods:

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. From containers or tanks by gravity through an approved self-closing or automatic-closing valve when the container or tank and dispensing operations are provided with spill control and secondary containment in accordance with FC2704.2. Highly toxic liquids shall not be dispensed by gravity from tanks.

5. Approved engineered liquid transfer systems.

Exceptions:

1. Liquids having a hazard ranking of 4 when dispensed from approved containers not exceeding 1.3 gallons (5 L).

2. Liquids having a hazard ranking of 3 when dispensed from approved containers not exceeding 5.3 gallons (20 L).

2705.2 Indoor use. Indoor use, including dispensing, of hazardous materials shall be in buildings complying with the requirements of the construction codes, including the Building Code, and in accordance with FC2705.1 and FC 2705.2.1 through 2705.2.2.5.

2705.2.1 Open systems. Use of hazardous materials in open containers or systems shall be in accordance with FC 2705.2.1.1 through 2705.2.1.4.

2705.2.1.1 Ventilation. Where gases, liquids or solids having a hazard ranking of 3 or 4, as defined in NFPA 704 are used, mechanical exhaust ventilation shall be provided to capture gases, fumes, mists or vapors at the point of generation.

Exception: Gases, liquids or solids that do not generate harmful fumes, mists or vapors.

2705.2.1.2 Explosion control. Explosion control shall be provided in accordance with FC2704.6 when an explosive environment can occur because of the characteristics or nature of the hazardous materials or the manner in which they are used.

2705.2.1.3 Spill control for hazardous material liquids. Buildings, rooms or areas where hazardous material liquids are dispensed into vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with spill control in accordance with 2704.2.1.

2705.2.1.4 Secondary containment for hazardous material liquids. Where required by FC Table 2705.2.1.4, buildings, structures, rooms or areas where hazardous material liquids are used in open systems shall be provided with secondary containment in accordance with FC2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 1.3 gallons (5 L).

2. Multiple vessels or systems: greater than 5.3 gallons (20 L).

FC TABLE 2705.2.1.4
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	Not Applicable	See FC Chapter 34
	Class IIIA		See FC Chapter 34		See FC Chapter 34
	Class IIIB		See FC Chapter 34		See FC Chapter 34
Cryogenic fluids		Not Applicable	See FC Chapter 32	Not Applicable	See FC Chapter 32
Explosives[a]		See FC Chapter 33		See FC Chapter 33	
Flammable liquids	Class IA	Not Applicable	See FC Chapter 34	Not Applicable	See FC Chapter 34
	Class IB		See FC Chapter 34		See FC Chapter 34
	Class IC		See FC Chapter 34		See FC Chapter 34
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), detonable pyrophoric materials (see FC Chapter 41), detonable unstable (reactive) materials (see FC Chapter 43) and detonable water-reactive materials (see FC Chapter 44) shall be treated as explosives for purposes of storage, handling and use (see FC Chapter 33).

2705.2.2 Closed systems. Use of hazardous materials in closed containers or systems shall be in accordance with FC 2705.2.2.1 through 2705.2.2.5.

2705.2.2.1 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 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.

2705.2.2.3 Explosion control. Explosion control shall be provided in accordance with FC2704.6 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 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.

2705.2.2.5 Secondary containment for hazardous material liquids. Where required by FC Table 2705.2.1.4, buildings, rooms or areas where hazardous material liquids are used in vessels or systems shall be provided with secondary containment in accordance with FC2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 55 gallons (208 L).

2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).

2705.3 Outdoor use. Outdoor use, including dispensing, of hazardous materials shall be in accordance with FC 2705.3.1 through 2705.3.9.

2705.3.1 Quantities exceeding the maximum allowable quantity per control area. Outdoor use of hazardous materials, in either closed or open containers or systems, in amounts exceeding the maximum allowable quantity per control area indicated in FC Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with FC 2701, 2703, 2705.1 and 2705.3.

2705.3.2 Quantities not exceeding the maximum allowable quantity per control area. Outdoor use of hazardous materials, in either closed or open containers or systems, in amounts not exceeding the maximum allowable quantity per control area indicated in FC Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with FC 2701 and 2703.

2705.3.3 Location. Outdoor use areas for hazardous materials shall be located as required for outdoor storage in accordance with FC2704.

2705.3.4 Spill control for hazardous material liquids in open systems. Outdoor areas where hazardous material liquids are dispensed in vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with spill control in accordance with FC2704.2.1.

2705.3.5 Secondary containment for hazardous material liquids in open systems. Where required by FC Table 2705.2.1.4, outdoor areas where hazardous material liquids are used in open systems shall be provided with secondary containment in accordance with FC2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 1.3 gallons (5 L).

2. Multiple vessels or systems: greater than 5.3 gallons (20 L).

2705.3.6 Spill control for hazardous material liquids in closed systems. Outdoor areas where hazardous material liquids are used in closed systems exceeding 55 gallons (208 L) shall be provided with spill control in accordance with FC2704.2.1.

2705.3.7 Secondary containment for hazardous material liquids in closed systems. Where required by FC Table 2705.2.1.4, outdoor areas where hazardous material liquids are used in closed systems shall be provided with secondary containment in accordance with FC2704.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following quantities:

1. Individual vessel or system: greater than 55 gallons (208 L).

2. Multiple vessels or systems: greater than 1,000 gallons (3785 L).

2705.3.8 Clearance from combustibles. The area surrounding an outdoor use area, including an area used for dispensing, shall be kept clear of vegetation, rubbish and other combustible waste, and combustible materials, for a minimum distance of 30 feet (9144 mm).

2705.3.9 Weather protection. Outdoor hazardous material use areas sheltered by overhead noncombustible construction shall not be considered indoor use when the area is constructed in accordance with the requirements for weather protection as required in the construction codes, including the Building Code.

Exception: Use of explosives shall be considered as indoor use.

2705.4 Handling. Handling of hazardous materials shall be in accordance with FC 2705.4.1 through 2705.4.4.

2705.4.1 Quantities exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor and outdoor locations in amounts exceeding the maximum allowable quantity per control area indicated in FC Tables 2703.1.1(1) through 2703.1.1(4) shall be in accordance with FC 2701, 2703, 2705.1 and 2705.4.

2705.4.2 Quantities not exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor locations in amounts not exceeding the maximum allowable quantity per control area indicated in FC Tables 2703.1.1(1) and 2703.1.1(2) shall be in accordance with FC 2701 and 2703. Handling of hazardous materials in outdoor locations in amounts not exceeding the maximum allowable quantity per control area indicated in FC Tables 2703.1.1(3) and 2703.1.1(4) shall be in accordance with FC 2701 and 2703.

2705.4.3 Location. Outdoor handling areas for hazardous materials shall be located as required for outdoor storage in accordance with FC2704.

2705.4.4 Emergency alarm. Where hazardous materials in quantities exceeding the maximum allowable quantity per control area having a hazard ranking of 3 or 4 pursuant to NFPA 704 are moved through corridors or exit enclosures, there shall be an emergency

telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720-mm) intervals throughout the handling route, and at each exit doorway throughout the handling route. The signal shall be relayed to an approved central station or remote supervising station or a constantly attended on-site location and shall also initiate a local audible alarm.

SECTION FC 2706
NON-PRODUCTION CHEMICAL LABORATORIES

2706.1 Scope. This section shall govern the storage, handling and use of laboratory chemicals in a non-production laboratory and accessory storage of laboratory chemicals in a storage room. The design and construction of non-production laboratories and accessory storage rooms for laboratory chemicals shall comply with the requirements of the construction codes, including the Building Code and the Mechanical Code.

2706.2 General. Laboratory chemicals within a laboratory unit shall be stored, handled and used in accordance with this section and, except as otherwise provided in this section, NFPA 45 laboratory unit fire hazard class D requirements.

2706.3 Permits. Permits shall be required as set forth in FC105.6.

2706.4 Supervision. Non-production laboratory operations requiring a permit shall be under the personal supervision of a certificate of fitness holder. At least one certificate of fitness holder shall be present on each floor of the laboratory unit on which laboratory operations are being conducted while the laboratory is in operation. Additional certificate of fitness holders shall be provided as the commissioner may require as a condition of the permit. Accessory laboratory chemical storage rooms shall be under the general supervision of a certificate of fitness holder.

2706.5 Prohibitions. It shall be unlawful in any non-production laboratory or any accessory storage of laboratory chemicals in a storage room to:

1. Store, handle or use any explosive.

2. Store, handle or use any unclassified detonable organic peroxide, detonable pyrophoric material, detonable unstable (reactive) material or detonable water-reactive material.

3. Store, handle or use any Class 4 unstable (reactive) material.

4. Store, handle or use any Class 4 oxidizing material.

5. Store, handle or use below grade any flammable gas.

6. Use an open flame for heating or distilling any flammable solid, flammable liquid or flammable gas.

7. Store flammable liquids in basements, cellars or other areas below grade.

8. Store combustible liquids in basements, cellars or other areas below grade in a manner contrary to FC3404.3.5.1.

2706.6 Quantity limitations.

2706.6.1 Flammable and combustible liquids. The density and total quantity of flammable and combustible liquids allowed within a laboratory unit, excluding storage rooms, shall be in accordance with Table 10.1.1 of NFPA 45 for laboratory unit fire hazard Class D.

Exceptions: For laboratory units other than educational or instructional laboratories pursuant to NFPA 45:

1. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard Class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 25 gallons (95 L).

2. The density of flammable and combustible liquids allowed within a laboratory unit may be increased to those set forth in Table 10.1.1 of NFPA 45 for laboratory unit fire hazard Class B provided the total quantity of flammable and combustible liquid, including any in storage cabinets or safety cans, does not exceed 30 gallons (114 L) and the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire-rated construction.

3. The quantity of flammable and combustible liquids allowed within a laboratory unit, excluding quantities in storage cabinets or safety cans, may be increased to 100 gallons (379 L), and the total quantities of flammable and combustible liquids, including quantities in storage cabinets or safety cans, may be increased to 200 gallons (757 L) provided the walls, floors and ceilings of the laboratory unit are separated from all adjoining areas by 2-hour fire-rated construction.

2706.6.2 Flammable solids. The storage, handling and use of flammable solids within a laboratory unit shall be in accordance with FC Chapters 27 and 36. The total quantity of flammable solids stored, handled and used, excluding any quantities in a storage room, shall not exceed 10 pounds (4.54 kg).

Exception: The total quantity of flammable solids allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 15 pounds (6.81 kg).

2706.6.3 Oxidizers and organic peroxides. The storage, handling and use of solid and liquid oxidizers and organic peroxides within a laboratory unit shall be in accordance with FC Chapters 27, 39 and 40 and the total quantity of all such material, excluding any quantities in a storage room, shall not exceed 40 pounds (18.16 kg), provided that not more than 2 pounds (0.908 kg) of such oxidizers are Class 3 oxidizers and not more than 1 pound (0.454 kg) of such peroxides are Class I organic peroxides.

Exception: The total aggregate quantity of solid and liquid oxidizers and organic peroxides allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 50 pounds (22.7 kg), provided that not more than 2 pounds (0.908 kg) of such oxidizers are Class 3 oxidizers and not more than 1 pound (0.454 kg) of such peroxides are Class I organic peroxides.

2706.6.4 Unstable (reactive) material. The storage, handling and use of unstable (reactive) material within a laboratory unit shall be in accordance with FC Chapters 27 and 43 and the total quantity, excluding any quantities in a storage room, shall not exceed 6 pounds (2.724 kg), provided not more than 1 pound (0.454 kg) of such reactive material is Class 3 unstable (reactive).

Exception: The total quantity of unstable (reactive) material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 12 pounds (5.44 kg), provided not more than 1 pound (0.454 kg) of such reactive material is Class 3 unstable (reactive).

2706.6.5 Water-reactive material. The storage, handling and use of water-reactive material within a laboratory unit shall be in accordance with FC Chapters 27 and 44 and the total quantity, excluding any quantities in a storage room, shall not exceed 2½ pounds (1.135 kg).

Exception: The total quantity of water-reactive material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 5 pounds (2.27 kg).

2706.6.6 Pyrophoric material. The storage, handling and use of solid or liquid pyrophoric material within a laboratory unit shall be in accordance with FC Chapters 27 and 41 and the total quantity, excluding any quantities in a storage room, shall not exceed ½ pound (0.227 kg).

Exception: The total quantity of solid or liquid pyrophoric material allowed within a laboratory unit that is provided with walls, floors and ceilings that separate the laboratory unit from all adjoining areas by 2-hour fire-rated construction shall not exceed 1 pound (0.454 kg).

2706.6.7 Highly toxic material. The storage, handling and use of solid or liquid highly toxic material within a laboratory unit shall be in accordance with FC Chapters 27 and 37 and the total quantity, excluding any quantities in a storage room, shall not exceed 5 pounds (2.27 kg).

2706.6.8 Toxic material. The storage, handling and use of solid or liquid toxic material within a laboratory unit shall be in accordance with FC Chapters 27 and 37 and the total quantity, excluding any quantities in a storage room, shall not exceed 250 pounds (113.5 kg).

2706.6.9 Corrosive material. The storage, handling or use of solid or liquid corrosive material within a laboratory shall be in accordance with FC Chapters 27 and 31 and the total quantity, excluding any quantity in a storage room, shall not exceed 250 gallons (946 L).

2706.6.10 Highly toxic and toxic gases. It shall be unlawful to store, handle or use in any educational and instructional laboratory unit any combination of highly toxic and toxic gases in quantities that exceed 20 SCF (0.566 m^3).

2706.7 Storage room classification. Storage rooms for laboratory chemicals accessory to a laboratory unit shall be classified as set forth in the Building Code.

2706.8 Storage rooms. In addition to the quantities that may be stored, handled and used in a laboratory unit pursuant to FC2706.6, chemicals for use in a laboratory unit may be stored in a dedicated storage room complying with Chapter 4 of the Building Code and the following requirements:

1. Storage room capacity shall not exceed a maximum of 300 gallons (1136 L) of chemicals, not to exceed 5 gallons per square foot (204 L/m^2) of floor area.

2. Flammable gas storage rooms shall not contain more than 2,500 SCF (70.8 m^3) of flammable gas.

3. Chemicals that are incompatible with each other shall not be stored in the same storage room, unless in compliance with the requirements of this chapter.

4**.** Chemicals shall not be used within the storage room.

2706.9 Safety showers. Where more than 5 gallons (19 L) of corrosive liquid or flammable liquid are stored, handled or used, suitable facilities with fixed overhead or flexible hand-held showers shall be provided. Such shower shall be within 25 feet (7620 mm) of the laboratory unit and storage room door and shall be maintained in good working order, and readily accessible at all times.

2706.10 Neutralizing or absorbing agents. Where more than 5 gallons (19 L) of corrosive liquids are stored, handled or used, a sufficient quantity of suitable neutralizing or absorbing agents shall be provided.

2706.11 Curtains and drapes. Curtains and drapes installed in a laboratory unit shall comply with the flame resistance requirements of FC Chapter 8.

SECTION FC 2707
TRANSPORTATION OF HAZARDOUS MATERIALS

2707.1 Scope. This section shall govern the transportation of hazardous materials, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 173.

2707.2 General. Transportation of hazardous materials shall be in accordance with the regulations of the United States Department of Transportation and this section.

2707.3 Prohibitions. It shall be unlawful to:

1. Transport hazardous materials in or through the city where such transport is prohibited or restricted by federal or state law, rule or regulation, including restrictions on transportation of hazardous materials over bridges and through tunnels.

2. Transport in or through the city hazardous materials of such type, in such quantities, or in such manner as is prohibited by this code or the rules, except where such transport is in accordance with approved routes and times or other approved procedures or safety measures.

3. Transport hazardous materials in quantities requiring a permit pursuant to this code or the rules without such permit.

4. Deliver hazardous materials in quantities requiring a permit pursuant to this code or the rules to any location unless the owner or other person taking delivery thereof is in possession of a permit for the storage, handling and/or use of such hazardous material at such location.

5. Transport LPG containers that are or have ever been filled with LPG in the trunk of a passenger motor vehicle, or other area of such vehicle not readily visible to emergency responders.

2707.4 Permits. Permits to transport hazardous materials shall be required as set forth in FC105.6. Such permits shall be issued to a particular motor vehicle, marine vessel, or watercraft for such transportation. Any hazardous material for which a permit is required pursuant to FC105.6 for transportation, may be transported without a permit provided that such cargo originates outside New York State and: (1) remains in continuous transit without picking up or delivering such cargo in the city; or (2) remains in continuous transit through the city until delivering such cargo to piers, airports and shipping terminals for transshipment out of the city. Such transport shall be in accordance with approved routes and times or other approved procedures and safety measures.

2707.5 Transportation of hazardous materials by vehicle. Transportation of hazardous materials by vehicle shall be in accordance with this section, the rules, and the requirements contained in the regulations of the United States Department of Transportation, as set forth in 49 CFR, Parts 171, 172, 173, 177, 178, 180, 383, 387, 390, 392, 393, 396 and 397 and their appendices, and any amendments thereto, with respect to:

1. The design, construction, maintenance and equipment of cargo tanks and other vehicles.

2. The marking and placarding of vehicles.

3. The preparation, execution and use of shipping documents.

4. The handling, loading and unloading of hazardous materials.

5. The qualifications and commercial driver's license requirements of vehicle operators.

6. Insurance and other financial requirements.

2707.6 Transportation of explosives by vehicle. Transportation of explosives by vehicle for storage, handling and use in the city shall additionally comply with the requirements of FC 2707.6.1 through 2707.6.6.

2707.6.1 Approved vehicles. It shall be unlawful to transport, including delivering, any blasting materials or Division 1.1 or 1.5 explosives for storage, handling or use in the city, except in a vehicle designed and constructed in accordance with the rules, and for which a permit has been issued.

2707.6.2 Nitroglycerine. It shall be unlawful to transport any nitroglycerine-containing material, except nitroglycerine in the form of tablets, pills or granules, in quantities not exceeding ten thousand, containing not more than 1/50 of a grain each, or to transport frozen nitroglycerine.

2707.6.3 Packing and marking. Other than as prescribed or approved by the commissioner, it shall be unlawful to sell or deliver for use any explosive except in original and unopened packages, packed in accordance with FC 2707.6.3.1 through 2707.6.3.3.

2707.6.3.1 Explosives containing liquids. Dynamite and other explosives containing a liquid which may exude a liquid shall be transported in DOTn approved cases, lined with a liquidproof plastic lining sufficient to prevent the exudation of the liquid. Such cases shall contain not more than 50 pounds (22.7 kg) of net explosive weight.

2707.6.3.2 Other explosives. Other blasting materials (except black powder, blasting powder and smokeless propellant) that do not contain a substance subject to deterioration or instability by exposure to moisture shall be transported in DOTn approved cases each containing not more than 50 pounds (22.7 kg) of net explosive weight.

2707.6.3.3 Sticks or cartridges. All explosives in the form of sticks or cartridges shall be packed so as to lie on their sides; and, when the boxes are loaded in or upon a motor vehicle, marine vessel or watercraft they shall be so arranged that the sticks or cartridges rest on their sides.

2707.6.4 Detonators. Transportation of blasting caps and other detonators shall additionally comply with the requirements of FC 2707.6.4.1 and 2707.6.4.2.

2707.6.4.1 Packaging. It shall be unlawful to bring into, transport, or deliver within the city any blasting caps and other detonators, unless packaged in original, unopened boxes.

2707.6.4.2 Delivery vehicles. It shall be unlawful to transport any detonators in quantities exceeding five thousand, or to transport or cause to be transported, detonators together with any other explosives, except in an approved container in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 177.

2707.6.5 Black powder, blasting powder or smokeless propellants. Black powder, blasting powder or smokeless propellant shall be transported in containers of not more than 25 pounds (11.35 kg).

2707.6.6 Restrictions. Vehicles transporting explosives shall comply with the following requirements:

1. Explosives shall be delivered only during daylight hours.

2. No unnecessary stops shall be made in transit.

3. Vehicles shall be escorted in accordance with FC2707.12, as applicable.

4. If explosives are being transported in more than one vehicle, the vehicles shall maintain a safe distance from each other of not less than 250 feet (76 200 mm).

5. It shall be unlawful to transport or deliver any explosives in a subway or other underground tunnel or conveyance, except as approved for blasting operations.

2707.7 Transportation of explosives by marine vessel. Transportation of explosives by marine vessel and watercraft shall be in accordance with the regulations of the United States Department of Transportation, as set forth in CFR Part 176, and any amendments thereto, and shall additionally comply with the requirements of FC 2707.7.1 through 2707.7.5.

2707.7.1 Temporary storage on marine vessel. It shall be unlawful to store for more than 48 hours on board of any marine vessel or watercraft lying to at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters within the city, any explosives in excess of the amount required for the vessel's own use for signaling or lifesaving purposes.

2707.7.2 Supervision. Any powder-boat or other marine vessel or watercraft used to transport explosives upon the navigable waters within the city for delivery at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters, or to a marine vessel or watercraft lying thereto, shall, while transporting explosives, have on board at all times two persons, each holding a certificate of fitness for explosives handling. Only such certificate holders, the permit holder and the marine vessel or watercraft's crew shall be allowed in or upon such vessel or watercraft. Whenever practicable, all explosives shall be stowed on deck under a waterproof cover or otherwise kept dry.

2707.7.3 Detonators. Except for marine vessels and watercraft engaged in export trade, it shall be unlawful to carry in or upon a marine vessel or watercraft transporting explosives within the city, detonators together with any other explosives, except in approved containers

in accordance with the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 176.

2707.7.4 Unloading. It shall be unlawful to unload explosives onto a wharf, pier, bulkhead or other structure over or contiguous to navigable waters. Explosives intended for storage, handling or use within the city shall be transferred from the marine vessel or watercraft making the delivery directly to a vehicle at a wharf, pier, bulkhead or other structure over or contiguous to navigable waters approved by the commissioner. Explosives intended for shipment to points outside the city may be transferred from a marine vessel or watercraft directly to another marine vessel or watercraft lying at a wharf, pier, bulkhead or other structure within the city over or contiguous to navigable waters approved by the commissioner, provided the amount so transferred does not exceed 2,500 pounds (1135 kg). All such shipments in quantities exceeding 2,500 pounds (1135 kg) but not more than 5,000 pounds (2270 kg), may be transferred from marine vessel or watercraft to a marine vessel or watercraft at a distance of not less than 1,000 feet (304 800 mm) from any pier line.

2707.7.5 Smoking and intoxicated persons. It shall be unlawful to smoke or maintain any flame while in or upon any marine vessel or watercraft carrying explosives, or allow in or upon such vessel or watercraft, any intoxicated person.

2707.8 Transportation of fireworks by vehicle. Transportation of fireworks by vehicle for firework displays in the city shall additionally comply with the requirements of FC 2707.8.1 and 2707.8.2.

2707.8.1 Delivery to display site. It shall be unlawful to transport fireworks through the city unless such fireworks are being transported to or from a display site for which a permit has been issued and such vehicle is escorted by department firefighting apparatus in accordance with FC2707.12.

2707.8.2 Restrictions. Vehicles transporting fireworks shall comply with the requirements of FC2707.6.6.

2707.9 Transportation of flammable and combustible liquids by vehicle. Transportation of flammable and combustible liquids by vehicle shall additionally comply with the requirements of FC 2707.9.1 through 2707.9.5.

2707.9.1 Operation of cargo tanks. Cargo tanks shall be maintained and operated in accordance with FC 2707.9.1.1 through 2707.9.1.13.

2707.9.1.1 Vehicle maintenance. Cargo tanks shall not be used unless they are in good working order and free from accumulation of grease, oil or other flammable or combustible waste.

2707.9.1.2 Monitoring of loading and unloading. The operator of a cargo tank shall not remain in the vehicle during loading or unloading of the cargo and shall personally supervise such operation from a location at which the operator may observe the vehicle, the delivery and vapor recovery hoses, the fill connection and any overfilling of the tank.

2707.9.1.3 Vehicle shutdown. The cargo tank motor shall be shut down during the making and breaking of hose connections. If loading or unloading is performed without the use of a power pump, the cargo tank motor shall be shut down throughout such operations.

2707.9.1.4 Secured from movement. All appropriate actions shall be taken to prevent vehicle movement during the loading and unloading of the cargo, including setting the parking brake and chocking of tires.

2707.9.1.5 Outage. A cargo tank or compartment thereof shall not be loaded to absolute capacity. The vacant space in a cargo tank or compartment thereof shall not be less than 1 percent to prevent leakage from or distortion of such tank or compartment by expansion of the contents caused by a rise in temperature.

2707.9.1.6 Overfill prevention. The operator of a cargo tank shall, before making delivery to a tank, determine the unfilled capacity of the tank by use of a suitable gauging device, and shall not deliver cargo in excess of that amount.

2707.9.1.7 Securing hatches. During the loading of cargo tanks with openable domes, the domes shall be secured on all but the receiving compartment, except that during loading of gasoline, all domes shall be secured.

2707.9.1.8 Cargo temperature. Flammable and combustible liquids shall not be loaded into or transported in a cargo tank or delivered at a temperature above the material's ignition temperature.

2707.9.1.9 Bonding to underground tanks. An external bond-wire connection or bond-wire integral to the delivery hose shall be provided when transferring flammable liquids into underground tanks.

2707.9.1.10 Smoking. It shall be unlawful for the operator of a cargo tank to smoke in and within 25 feet (7620 mm) of the vehicle while transporting, loading or unloading cargo or to allow others to do so.

2707.9.1.11 Hose connections. Flammable and combustible liquids shall be transferred to tanks by means of approved liquid- and vapor-tight connections between the delivery hose and fill tank connection. Where underground tanks are equipped with a vapor recovery system, all connections required for the safe and proper functioning of the vapor recovery system shall be made and maintained liquid- and vapor-tight throughout the unloading process. Vapors shall not be discharged at grade level during delivery.

2707.9.1.12 Hose protection. In making any delivery of flammable or combustible liquid the operator of the cargo tank shall ensure, prior to unloading, that all hoses utilized for liquid delivery and vapor recovery are protected from physical damage, including damage by motor vehicles. Such protection shall be provided by positioning the cargo

tank to prevent motor vehicles from passing through the area or areas occupied by hoses, or by other approved equivalent means.

2707.9.1.13 Method of discharge. Gasoline that is transferred to underground tanks shall be discharged by gravity only.

2707.9.2 Parking restrictions. Parking of cargo tanks shall be in accordance with FC 2707.9.2.1 and 2707.9.2.2, except that in the event of an accident, mechanical breakdown or other emergency, a cargo tank may be parked and left unattended at any safe location while the operator is obtaining assistance.

2707.9.2.1 Restricted areas. It shall be unlawful to:

1. Leave a cargo tank unattended at any time on a public street, or any off-street location within 250 feet (76 200 mm) of an occupied building, or any other restricted location designated by the commissioner by rule or as a condition of a permit.

2. Park cargo tanks indoors.

2707.9.2.2 Approved parking. Cargo tanks temporarily parked during working hours shall be parked at an approved off-street location not less than 250 feet (76 200 mm) from an occupied building. Cargo tanks shall be parked during nonworking hours on the grounds of a bulk plant or terminal, not less than 25 feet (7620 mm) from the nearest lot line; or at other approved location, not less than 50 feet (15 240 mm) from any building.

2707.9.3 Portable fire extinguishers. Cargo tanks shall be equipped with a portable fire extinguisher complying with the requirements of FC906 and having a minimum rating of 2-A:20-B:C. During unloading of the cargo tank, the portable fire extinguisher shall be outside of the motor vehicle and shall be readily available, but at a distance of at least 15 feet (4572 mm) from the unloading valves.

2707.9.4 Delivery and unloading of cargo. Except as otherwise provided in FC3406.2.8, cargo tanks shall deliver flammable or combustible liquids only to approved stationary storage systems. Flammable liquids being transported by a motor vehicle other than a cargo tank shall not be dispensed from a container prior to removal of the container from the vehicle.

2707.9.5 Emergency transfers between vehicles. Department representatives may authorize a transfer from one cargo tank directly into a permitted or other approved cargo tank in the interest of public safety, such as when a cargo tank has been involved in a vehicular accident or has otherwise been damaged.

2707.9.6 Compartmental markings. The maximum capacity of each compartment of a cargo tank shall be marked, in gallons, on the driver and passenger sides of the cargo tank in 3-inch (76-mm) white letters.

2707.10 Transportation of compressed gases by cargo tank. Transportation of compressed gases by cargo tank shall additionally comply with the requirements of FC2707.10.1.

2707.10.1 Prohibited compressed gases. It shall be unlawful to transport the following compressed gases in a cargo tank:

1. Acetylene.
2. Liquefied carbon monoxide.
3. Liquefied chlorine.
4. Cyanogen.
5. Cyclopropane.
6. Diborane.
7. Di-, mono-, and tri-methylamines.
8. Dimethyl ether.
9. Ethylene.
10. Fluorine.
11. Liquefied hydrogen.
12. Hydrogen cyanide.
13. Hydrogen sulfide.
14. Liquefied petroleum gases (LPG).
15. Liquefied natural gas (LNG).
16. Methylacetylene propadiene mixture-stabilized, including propyns, mapp gas or apache gas.
17. Methyl chloride.
18. Methyl mercaptan.
19. Phosgene.
20. Phosphine.
21. Vinyl chloride.
22. Vinyl fluoride.
23. Vinyl methyl ether.
24. Any gas mixtures of the foregoing.
25. Any gas that contains:
    - 25.1. Bromacetone.
    - 25.2. Cyanogen chloride containing less than 0.9 percent water.
    - 25.3. Diphosgene.
    - 25.4. Ethyldichlorarsine.
    - 25.5. Methyldichlorarsine.
    - 25.6. Nitrogen peroxide (tetroxide).
    - 25.7. Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.

2707.11 Route and time requirements. Vehicles transporting hazardous materials shall comply with such route and time requirements as the commissioner may promulgate by rule, except that vehicles for which a permit has been issued for the transportation of hazardous materials may transport such hazardous materials, including delivery, without having to comply with such route and time requirements.

2707.12 Escort requirements for vehicles transporting explosives and fireworks. Vehicles transporting explosives and fireworks shall additionally comply with the requirements of FC 2707.12.1 and 2707.12.2.

2707.12.1 Vehicles transporting explosives. Vehicles transporting in or through the city Division 1.1, 1.2, 1.3 or 1.5 explosives requiring the vehicle to be placarded pursuant to DOTn regulations, including vehicles in continuous transit or transporting such explosives on approved routes at approved times, shall be escorted by department firefighting apparatus unless such explosives are transported in a vehicle for which a transportation permit has been issued.

2707.12.2 Vehicles transporting fireworks. Vehicles transporting fireworks in amounts requiring the vehicle to be placarded pursuant to DOTn regulations, whether in continuous transit through the city or to or from a fireworks display in the city or surrounding waters, shall be escorted by department firefighting apparatus, in accordance with approved routes and times.