CHAPTER 41
PYROPHORIC MATERIALS

SECTION 4101
GENERAL

4101.1 Scope. The storage and use of pyrophoric materials shall be in accordance with this chapter. Compressed gases shall also comply with Chapter 30.

4101.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 4102
DEFINITIONS

4102.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

PYROPHORIC. A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54°C).

SECTION 4103
GENERAL REQUIREMENTS

4103.1 Quantities not exceeding the maximum allowable quantity per control area. The storage and use of pyrophoric materials in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4101 and 4103.

4103.1.1 Emergency shutoff. Compressed gas systems conveying pyrophoric gases shall be provided with approved manual or automatic emergency shutoff valves that can be activated at each point of use and at each source.

4103.1.1.1 Shutoff at source. An automatic emergency shutoff valve shall be installed on supply piping at the cylinder or bulk source. The shutoff valve shall be operated by a remotely located manually activated shutdown control located not less than 15 feet (4572 mm) from the source of supply. Manual or automatic cylinder valves are allowed to be used as the required emergency shutoff valve when the source of supply is limited to unmanifolded cylinder sources.

4103.1.1.2 Shutoff at point of use. A manual or automatic emergency shutoff valve shall be installed on the supply piping at the point of use or at a point where the equipment using the gas is connected to the supply system.

4103.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 4104
STORAGE

4104.1 Indoor storage. Indoor storage of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1), shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

The storage of silane gas and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Section 4106.

4104.1.1 Liquid-tight floor. In addition to the requirements of Section 2704.12, floors of storage areas containing pyrophoric liquids shall be of liquid-tight construction.

4104.1.2 Pyrophoric solids and liquids. Storage of pyrophoric solids and liquids shall be limited to a maximum area of 100 square feet (9.3 m^2) per pile. Storage shall not exceed 5 feet (1524 mm) in height. Individual containers shall not be stacked.

Aisles between storage piles shall be a minimum of 10 feet (3048 mm) in width.

Individual tanks or containers shall not exceed 500 gallons (1893 L) in capacity.

4104.1.3 Pyrophoric gases. Storage of pyrophoric gases shall be in detached buildings where required by Section 2703.8.2.

4104.1.4 Separation from incompatible materials. In addition to the requirements of Section 2703.9.8, indoor storage of pyrophoric materials shall be isolated from incompatible hazardous materials by 1-hour fire barriers with openings protected in accordance with the *International Building Code*.

Exception: Storage in approved hazardous materials storage cabinets constructed in accordance with Section 2703.8.7.

4104.2 Outdoor storage. Outdoor storage of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

The storage of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Section 4106.

4104.2.1 Distance from storage to exposures. The separation of pyrophoric solids, liquids and gases from buildings, lot lines, public streets, public alleys, public ways or means of egress shall be in accordance with the following:

1. Solids and liquids. Two times the separation required by Chapter 34 for Class IB flammable liquids.
2. Gases. The location and maximum amount of pyrophoric gas per storage area shall be in accordance with Table 4104.2.1.

TABLE 4104.2.1
PYROPHORIC GASES—DISTANCE FROM STORAGE TO EXPOSURES[a]

MAXIMUM AMOUNT PER STORAGE AREA (cubic feet)	MINIMUM DISTANCE BETWEEN STORAGE AREAS (feet)	MINIMUM DISTANCE TO LOT LINES OF PROPERTY THAT CAN BE BUILT UPON (feet)	MINIMUM DISTANCE TO PUBLIC STREETS, PUBLIC ALLEYS OR PUBLIC WAYS (feet)	MINIMUM DISTANCE TO BUILDINGS ON THE SAME PROPERTY		
				Nonrated construction or openings within 25 feet	Two-hour construction and no openings within 25 feet	Four-hour construction and no openings within 25 feet
250	5	25	5	5	0	0
2,500	10	50	10	10	5	0
7,500	20	100	20	20	10	0

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m^3.

a. The minimum required distances shall be reduced to 5 feet when protective structures having a minimum fire resistance of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

4104.2.2 Weather protection. When overhead construction is provided for sheltering outdoor storage areas of pyrophoric materials, the storage areas shall be provided with approved automatic fire-extinguishing system protection.

SECTION 4105
USE

4105.1 General. The use of pyrophoric materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

4105.2 Weather protection. When overhead construction is provided for sheltering of outdoor use areas of pyrophoric materials, the use areas shall be provided with approved automatic fire-extinguishing system protection.

4105.3 Silane gas. The use of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Section 4106.

SECTION 4106
SILANE GAS

4106.1 General requirements. The storage and use of silane gas and gas mixtures with a silane concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3), shall be in accordance with this section.

4106.1.1 Building construction. Indoor storage and use of silane gas shall be within a room or building conforming to the *International Building Code*.

4106.1.2 Flow control. Compressed gas containers, cylinders and tanks containing silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be equipped with reduced flow valves equipped with restrictive-flow orifices not exceeding 0.010 inch (0.254 mm) in diameter. The presence of the restrictive flow orifice shall be indicated on the valve and on the container, cylinder or tank by means of a label placed at a prominent location by the manufacturer.

Exceptions:

1. Manufacturing and filling facilities where silane is produced or mixed and stored prior to sale.
2. Outdoor installations consisting of permanently mounted cylinders connected to a manifold, provided that the outlet connection from the manifold is equipped with a restrictive flow orifice not exceeding 0.125 inch (3.175 mm) in diameter and the setback distance to exposures is not less than 40 feet (12 192 mm). Footnote a of Table 4104.2.1 shall not apply.

4106.1.3 Valves. Container, cylinder and tank valves shall be constructed of stainless steel or other approved materials. Valves shall be equipped with outlet fittings in accordance with CGA V-1.

4106.2 Indoor storage. Indoor storage of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Section 4104.1 and Sections 4106.2.1 through 4106.2.3.

4106.2.1 Fire protection. When automatic fire-extinguishing systems are required, automatic sprinkler systems shall be used.

4106.2.2 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be constructed as follows:

1. Exhausted enclosures and gas cabinets shall be in accordance with Sections 2703.8.5 and 2703.8.6, respectively.
2. Exhausted enclosures and gas cabinets shall be internally sprinklered.
3. The velocity of ventilation across unwelded fittings and connections on the piping system shall not be less than 200 feet per minute (1.02 m/s).
4. The average velocity at the face of the access ports or windows in the gas cabinet shall not be less than 200 feet per minute (1.02 m/s) with a minimum velocity of 150 feet per minute (0.76 m/s) at any point of the access port or window.

4106.2.3 Emergency power. The ventilation system shall be provided with an automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

4106.3 Outdoor storage. Outdoor storage of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, shall be in accordance with Section 4104.2 and Sections 4106.3.1 through 4106.3.4.

4106.3.1 Volume. The maximum volume for each nest shall not exceed 10,000 cubic feet (283.2 m^3) of gas.

4106.3.2 Aisles. Storage nests shall be separated by aisles a minimum of 6 feet (1829 mm) in width.

4106.3.3 Separation. Storage shall be located a minimum of 25 feet (7620 mm) from lot lines, public streets, public alleys, public ways, means of egress or buildings.

4106.3.4 Weather protection. The clear height of overhead construction provided for sheltering of outdoor storage shall not be less than 12 feet (3658 mm).

4106.4 Indoor use and dispensing. The indoor use and dispensing of silane gas and gas mixtures with a silane concentration of 2 percent or more by volume, in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 4105 and this section.

4106.4.1 Exhausted enclosures or gas cabinets. When provided, exhausted enclosures and gas cabinets shall be installed in accordance with Section 4106.2.2.

4106.4.2 Remote manual shutdown. A remotely located, manually activated shutdown control shall be provided outside each gas cabinet.

4106.4.3 Emergency power. The ventilation system shall be provided with an approved automatic emergency power source in accordance with Section 604 and designed to operate at full capacity.

4106.4.4 Purge panels. Automated purge panels shall be provided.

4106.4.4.1 Purge gases. Purging of piping and controls located in gas cabinets or exhausted enclosures shall only be performed using a dedicated inert gas supply that is designed to prevent silane from entering the inert gas supply. The use of nondedicated systems or portions of piping systems is allowed on portions of the venting system that are continuously vented to atmosphere. Devices that could interrupt the continuous flow of purge gas to the atmosphere shall be prohibited.

Exception: Manufacturing and filling facilities where silane is produced or mixed.

4106.4.4.2 Venting. Gas vent headers or individual purge panel vent lines shall have a continuous flow of inert gas. The inert gas shall be introduced upstream of the first vent or exhaust connection to the header.

4106.4.4.3 Purging operations. Purging operations shall be performed by means ensuring complete purging of the piping and control system before the system is opened to the atmosphere.

4106.5 Outdoor use and dispensing. The outdoor use and dispensing of silane gas, and gas mixtures with a silane concentration of 2 percent or more by volume, exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 4105, 4106.4 and 4106.5.1.

4106.5.1 Outdoor use weather protection. When overhead construction is provided for sheltering outdoor use areas containing silane gas, or gas mixtures with a silane concentration of 2 percent or more by volume, the use areas shall be provided with approved automatic fire-extinguishing system protection.

CHAPTER 42
PYROXYLIN (CELLULOSE NITRATE) PLASTICS

SECTION 4201
GENERAL

4201.1 Scope. This chapter shall apply to the storage and handling of plastic substances, materials or compounds with cellulose nitrate as a base, by whatever name known, in the form of blocks, sheets, tubes or fabricated shapes.

Cellulose nitrate motion picture film shall comply with the requirements of Section 306.

4201.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 4202
DEFINITIONS

4202.1 Terms defined in Chapter 2. Words and terms used in this chapter and defined in Chapter 2 shall have the meanings ascribed to them as defined therein.

SECTION 4203
GENERAL REQUIREMENTS

4203.1 Displays. Cellulose nitrate (pyroxylin) plastic articles are allowed to be placed on tables not more than 3 feet (914 mm) wide and 10 feet (3048 mm) long. Tables shall be spaced at least 3 feet (914 mm) apart. Where articles are displayed on counters, they shall be arranged in a like manner.

4203.2 Space under tables. Spaces underneath tables shall be kept free from storage of any kind and accumulation of paper, refuse and other combustible material.

4203.3 Location. Sales or display tables shall be so located that in the event of a fire at the table, the table will not interfere with free means of egress from the room in at least one direction.

4203.4 Lighting. Lighting shall not be located directly above cellulose nitrate (pyroxylin) plastic material, unless provided with a suitable guard to prevent heated particles from falling.

SECTION 4204
STORAGE AND HANDLING

4204.1 Raw material. Raw cellulose nitrate (pyroxylin) plastic material in a Group F building shall be stored and handled in accordance with Sections 4204.1.1 through 4204.1.7.

4204.1.1 Storage of incoming material. Where raw material in excess of 25 pounds (11 kg) is received in a building or fire area, an approved vented cabinet or approved vented vault equipped with an approved automatic sprinkler system shall be provided for the storage of material.

4204.1.2 Capacity limitations. Cabinets in any one workroom shall not contain more than 1,000 pounds (454 kg) of raw material. Each cabinet shall not contain more than 500 pounds (227 kg). Each compartment shall not contain more than 250 pounds (114 kg).

4204.1.3 Storage of additional material. Raw material in excess of that allowed by Section 4204.1.2 shall be kept in vented vaults not exceeding 1,500-cubic-foot capacity (43 m^3) of total vault space, and with approved construction, venting and sprinkler protection.

4204.1.4 Heat sources. Cellulose nitrate (pyroxylin) plastic shall not be stored within 2 feet (610 mm) of heat-producing appliances, steam pipes, radiators or chimneys.

4204.1.5 Accumulation of material. In factories manufacturing articles of cellulose nitrate (pyroxylin) plastics, approved sprinklered and vented cabinets, vaults or storage rooms shall be provided to prevent the accumulation in workrooms of raw stock in process or finished articles.

4204.1.6 Operators. In workrooms of cellulose nitrate (pyroxylin) plastic factories, operators shall not be stationed closer together than 3 feet (914 mm), and the amount of material per operator shall not exceed one-shift's supply and shall be limited to the capacity of three tote boxes, including material awaiting removal or use.

4204.1.7 Waste material. Waste cellulose nitrate (pyroxylin) plastic materials such as shavings, chips, turnings, sawdust, edgings and trimmings shall be kept under water in metal receptacles until removed from the premises.

4204.2 Fire protection. The manufacture or storage of articles of cellulose nitrate (pyroxylin) plastic in quantities exceeding 100 pounds (45 kg) shall be located in a building or portion thereof equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

4204.3 Sources of ignition. Sources of ignition shall not be located in rooms in which cellulose nitrate (pyroxylin) plastic in excess of 25 pounds (11 kg) is handled or stored.

4204.4 Heating. Rooms in which cellulose nitrate (pyroxylin) plastic is handled or stored shall be heated by low-pressure steam or hot water radiators.

CHAPTER 43
UNSTABLE (REACTIVE) MATERIALS

SECTION 4301
GENERAL

4301.1 Scope. The storage and use of unstable (reactive) materials shall be in accordance with this chapter. Compressed gases shall also comply with Chapter 30.

Exceptions:

1. Display and storage in Group M and storage in Group S occupancies complying with Section 2703.11.
2. Detonable unstable (reactive) materials shall be stored in accordance with Chapter 33.

4301.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 4302
DEFINITIONS

4302.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

SECTION 4303
GENERAL REQUIREMENTS

4303.1 Quantities not exceeding the maximum allowable quantity per control area. Quantities of unstable (reactive) materials not exceeding the maximum allowable quantity per control area shall be in accordance with Sections 4303.1.1 through 4303.1.2.5.

4303.1.1 General. The storage and use of unstable (reactive) materials in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703 4301 and 4303.

4303.1.2 Limitations for indoor storage and use by occupancy. The indoor storage of unstable (reactive) materials shall be in accordance with Sections 4303.1.2.1 through 4303.1.2.5.

4303.1.2.1 Group A, E, I or U occupancies. In Group A, E, I or U occupancies, any amount of Class 3 and 4 unstable (reactive) materials shall be stored in accordance with the following:

1. Class 3 and 4 unstable (reactive) materials shall be stored in hazardous material storage cabinets complying with Section 2703.8.7.
2. The hazardous material storage cabinets shall not contain other storage.

4303.1.2.2 Group R occupancies. Class 3 and 4 unstable (reactive) materials shall not be stored or used within Group R occupancies.

4303.1.2.3 Group M occupancies. Class 4 unstable (reactive) materials shall not be stored or used in retail sales portions of Group M occupancies.

4303.1.2.4 Offices. Class 3 and 4 unstable (reactive) materials shall not be stored or used in offices of Group B, F, M or S occupancies.

4303.1.2.5 Classrooms. In classrooms in Group B, F or M occupancies, any amount of Class 3 and 4 unstable (reactive) materials shall be stored in accordance with the following:

1. Class 3 and 4 unstable (reactive) materials shall be stored in hazardous material storage cabinets complying with Section 2703.8.7.
2. The hazardous material storage cabinets shall not contain other storage.

4303.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 4304
STORAGE

4304.1 Indoor storage. Indoor storage of unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

In addition, Class 3 and 4 unstable (reactive) detonable materials shall be stored in accordance with the *International Building Code* requirements for explosives.

4304.1.1 Detached storage. Storage of unstable (reactive) materials shall be in detached buildings when required in Section 2703.8.2.

4304.1.2 Explosion control. Indoor storage rooms, areas and buildings containing Class 3 or 4 unstable (reactive) materials shall be provided with explosion control in accordance with Section 911.

4304.1.3 Liquid-tight floor. In addition to Section 2704.12, floors of storage areas for liquids and solids shall be of liquid-tight construction.

4304.1.4 Storage configuration. Unstable (reactive) materials stored in quantities greater than 500 cubic feet (14 m^3) shall be separated into piles, each not larger than 500 cubic feet (14 m^3). Aisle width shall not be less than the height of the piles or 4 feet (1219 mm), whichever is greater.

Exception: Materials stored in tanks.

4304.1.5 Location in building. Unstable (reactive) materials shall not be stored in basements.

4304.2 Outdoor storage. Outdoor storage of unstable (reactive) materials in amounts exceeding the maximum allowable quantities per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4304.2.1 Distance from storage to exposures Class 4 and 3 (detonable) materials. Outdoor storage of Class 4 or 3 (detonable) unstable (reactive) material shall be in accordance with Table 3304.5.2(2). The number of pounds of material listed in the table shall be the net weight of the material present. Alternatively, the number of pounds of material shall be based on a trinitrotoluene (TNT) equivalent weight.

4304.2.2 Distance from storage to exposures Class 3 (deflagratable) materials. Outdoor storage of deflagratable Class 3 unstable (reactive) materials shall be in accordance with Table 3304.5.2(3). The number of pounds of material listed shall be the net weight of the material present.

4304.2.3 Distance from storage to exposures Class 2 and 1 materials. Outdoor storage of Class 2 or 1 unstable (reactive) materials shall not be located within 20 feet (6096 mm) of buildings not associated with the manufacture or distribution of such materials, lot lines, public streets, public alleys, public ways or means of egress. The minimum required distance shall not apply when fire barriers without openings or penetrations having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the storage and the exposure. The fire barrier shall either be an independent structure or the exterior wall of the building adjacent to the storage area.

4304.2.4 Storage configuration. Piles of unstable (reactive) materials shall not exceed 1,000 cubic feet (28 m^3).

4304.2.5 Aisle widths. Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

SECTION 4305
USE

4305.1 General. The use of unstable (reactive) materials in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

CHAPTER 44
WATER-REACTIVE SOLIDS AND LIQUIDS

SECTION 4401
GENERAL

4401.1 Scope. The storage and use of water-reactive solids and liquids shall be in accordance with this chapter.

Exceptions:

1. Display and storage in Group M and storage in Group S occupancies complying with Section 2703.11.
2. Detonable water-reactive solids and liquids shall be stored in accordance with Chapter 33.

4401.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 4402
DEFINITIONS

4402.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

WATER-REACTIVE MATERIAL. A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

Class 3. Materials that react explosively with water without requiring heat or confinement.

Class 2. Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.

Class 1. Materials that react with water with some release of energy, but not violently.

SECTION 4403
GENERAL REQUIREMENTS

4403.1 Quantities not exceeding the maximum allowable quantity per control area. The storage and use of water-reactive solids and liquids in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 4401 and 4403.

4403.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 4404
STORAGE

4404.1 Indoor storage. Indoor storage of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1), shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4404.1.1 Detached storage. Storage of water-reactive solids and liquids shall be in detached buildings when required by Section 2703.8.2.

4404.1.2 Liquid-tight floor. In addition to the provisions of Section 2704.12, floors in storage areas for water-reactive solids and liquids shall be of liquid-tight construction.

4404.1.3 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner which resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic sprinkler systems shall not be within such rooms or areas.

4404.1.4 Water-tight containers. When Class 3 water-reactive solids and liquids are stored in areas equipped with an automatic sprinkler system, the materials shall be stored in closed water-tight containers.

4404.1.5 Storage configuration. Water-reactive solids and liquids stored in quantities greater than 500 cubic feet (14 m^3) shall be separated into piles, each not larger than 500 cubic feet (14 m^3). Aisle widths between piles shall not be less than the height of the pile or 4 feet (1219 mm), whichever is greater.

Exception: Water-reactive solids and liquids stored in tanks.

Class 2 water-reactive solids and liquids shall not be stored in basements unless such materials are stored in closed water-tight containers or tanks.

Class 3 water-reactive solids and liquids shall not be stored in basements.

Class 2 or 3 water-reactive solids and liquids shall not be stored with flammable liquids.

4404.1.6 Explosion control. Indoor storage rooms, areas and buildings containing Class 2 or 3 water-reactive solids and liquids shall be provided with explosion control in accordance with Section 911.

4404.2 Outdoor storage. Outdoor storage of water-reactive solids and liquids in quantities exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

4404.2.1 General. Outdoor storage of water-reactive solids and liquids shall be within tanks or closed water-tight con-

tainers and shall be in accordance with Sections 4404.2.2 through 4404.2.5.

4404.2.2 Class 3 distance to exposures. Outdoor storage of Class 3 water-reactive solids and liquids shall not be within 75 feet (22 860 mm) of buildings, lot lines, public streets, public alleys, public ways or means of egress.

4404.2.3 Class 2 distance to exposures. Outdoor storage of Class 2 water-reactive solids and liquids shall not be within 20 feet (6096 mm) of buildings, lot lines, public streets, public alleys, public ways or means of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

4404.2.4 Storage conditions. Class 3 water-reactive solids and liquids shall be limited to piles not greater than 500 cubic feet (14 m^3).

Class 2 water-reactive solids and liquids shall be limited to piles not greater than 1,000 cubic feet (28 m^3).

Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

4404.2.5 Containment. Secondary containment shall be provided in accordance with the provisions of Section 2704.2.2.

SECTION 4405
USE

4405.1 General. The use of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

CHAPTER 45
REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.6.

AASHTO

American Association of State Highway
and Transportation Officials
444 North Capitol Street, Northwest, #249
Washington, DC 20001

Standard reference number	Title	Referenced in code section number
HB-17—2002	Specification for Highway Bridges, 17th Edition 2002	503.2.6

AFSI

Architectural Fabric Structures Institute
c/o Industrial Fabric Association International
1801 County Road B West
Roseville, MN 55113

Standard reference number	Title	Referenced in code section number
ASI—77	Design and Standard Manual	2403.10.2

API

American Petroleum Institute
1220 L Street, Northwest
Washington, DC 20005

Standard reference number	Title	Referenced in code section number
Spec 12P—(1995) (Reaffirmed 2000)	Specification for Fiberglass Reinforced Plastic Tanks	3404.2.13.1.5
RP 651—(1997)	Cathodic Protection of Aboveground Petroleum Storage Tanks	3406.7, 3406.7.1
Std 653—(2001)	Tank Inspection, Repair, Alteration and Reconstruction	3406.7
RP 752—(2003)	Management of Hazards Associated with Location of Process Plant Buildings, CMA Managers Guide	3406.7
RP 1604—(1996)	Closure of Underground Petroleum Storage Tanks	3404.2.13
RP 1615—(1996)	Installation of Underground Petroleum Storage Systems	3404.2.13.1.5, 3406.7
Std 2000—(1998)	Venting Atmosphere and Low Pressure Storage Tanks: Nonrefrigerated and Refrigerated	3404.2.7.3.6
RP 2001—(2005)	Fire Protection in Refineries, 8th Edition	3406.7
RP 2003—(1998)	Protection Against Ignitions Arising out of Static, Lightening, and Stray Currents	3406.7
Publ 2009—(2002)	Safe Welding and Cutting Practices in Refineries, Gas Plantsand Petrochemical Plants	3406.7
Std 2015—(2001)	Safe Entry and Clearing of Petroleum Storage Tanks	3406.7, 3406.7.2
RP 2023—(2001)	Guide for Safe Storage and Handling of Heated Petroleum-Derived Asphalt Products and Crude-oil Residue	3406.7, 3406.7.3
Publ 2028—(2002)	Flame Arrestors in Piping Systems	3404.2.7.3.2
Publ 2201—(2003)	Procedures for Welding or Hot Tapping on Equipment in Service	3406.7
RP 2350—(2005)	Overfill Protection for Storage Tanks in Petroleum Facilities, 3rd Edition	3404.2.7.5.8, 3406.4.6, 3406.7

ASME

The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Standard reference number	Title	Referenced in code section number
A13.1—96	Scheme for the Identification of Piping Systems	2609.3, 2703.2.2.1, 3003.4.2, 3203.4.5, 3403.5.2
A17.1—2004	Safety Code for Elevators and Escalators—with A17.1a-2004 Addenda and A17.1S Supplement	607.1, 1007.4

ASME—continued

A17.3—2002	Safety Code for Existing Elevators and Escalators—with A17.3a-2000 Addenda	607.1
A18.1—2003	Safety Standard for Platform Lifts and Stairway Chair Lifts	604.2.6
B16.18—2001	Cast Copper Alloy Solder Joint Pressure Fittings	909.13.1
B16.22—2001	Wrought Copper and Copper Alloy Solder-joint Pressure Fittings—with B16.22a-1998 Addenda	909.13.1
B31.3—2002	Process Piping	2209.5.4.3.1, 2703.2.2.2
B31.9—96	Building Services Piping Code for Pressure Piping	3403.6.2.1, 3403.6.3, 3403.6.11
BPVC-2001	ASME Boiler and Pressure Vessel Code, 2001 Edition of (Sections I, II, IV, V & VI, VIII)	2209.5.4.2, 3003.2, 3003.3.2, 3203.4.3, 3203.8, 3204.4.1, 3204.5, 3404.2.13.1.5

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard reference number	Title	Referenced in code section number
B 42—02e01	Specification for Seamless Copper Pipe, Standard Sizes	909.13.1
B 43—04	Specification for Seamless Red Brass Pipe, Standard Sizes	909.13.1
B 68—02	Specification for Seamless Copper Tube, Bright Annealed	909.13.1
B 88—03	Specification for Seamless Copper Water Tube	909.13.1
B 251—02e01	Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube	909.13.1
B 280—03	Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	909.13.1
D 56—02a	Test Method for Flash Point by Tag Closed Tester	3402.1
D 86—04b	Test Method for Distillation of Petroleum Products at Atmospheric Pressure	2702.1
D 92—02b	Test Method for Flash and Fire Points by Cleveland Open Cup	3401.2, 3402.1
D 93—02a	Test Method for Flash Point by Pensky-Martens Closed Up Tester	3402.1
D 323—99a	Test Method for Vapor Pressure of Petroleum Products (Reid Method)	2702.1
D 3278—96e01	Test Methods for Flash Point of Liquids by Small Scale Closed-cup Apparatus	3402.1
E 84—04	Test Method for Surface Burning Characteristics of Building Materials	803.1, 803.1.1, 803.1.2, 803.5.1, 803.7.3, 804.1, 804.2.4,
E 681—04	Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)	3502.1
E 1354—04a	Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter	808.1
E 1529—00	Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies	3404.2.9.1.3
E 1537—02a	Test Method for Fire Testing of Upholstered Furniture	805.1.1.2, 805.2.1.2, 805.3.1.2
E 1590—02	Test Method for Fire Testing of Mattresses	805.1.2.2, 805.2.2.2, 805.3.2.2

BHMA

Builders Hardware Manufacturers' Association
355 Lexington Avenue, 17th Floor
New York, NY 10017-6603

Standard reference number	Title	Referenced in code section number
A156.10—99	American National Standard for Power Operated Pedestrian Doors	1008.1.3.2
A156.19—02	American National Standard for Power Assist and Low Energy Power Operated Doors	1008.1.3.2

CA

State of California
Department of Consumer Affairs
Bureau of Home Furnishings and Thermal Insulation
3485 Orange Grove Avenue
North Highlands, CA 95660-5595

Standard reference number	Title	Referenced in code section number
California Technical Bulletin 129-1992	Flammability Test Procedure for Mattresses for Use In Public Buildings	805.1.1.2, 805.2.2.2, 805.3.2.2

CA—continued

California Technical Bulletin 133—1991	Flammability Test Procedure for Seating Furniture for Use in Public Occupancies	805.1.1.2, 805.2.1.2

CGA

Compressed Gas Association
1725 Jefferson Davis Highway
5th Floor
Arlington, VA 22202-4102

Standard reference number	Title	Referenced in code section number
C-7—(2000)	Guide to the Preparation of Precautionary Labeling and Marking of Compressed Gas Containers	3003.4.2, 3203.4.2
P-1—(2000)	Safe Handling of Compressed Gases in Containers	3005.7
P-18—(1992)	Standard for Bulk Inert Gas Systems at Consumer Sites	3201.1
S-1.1—(2002)	Relief Device Standards—Part 1—Cylinders for Compressed Gases	2209.5.4.2, 3003.3.2, 3203.2
S-1.2—(1995)	Pressure Relief Device Standards—Part 2—Cargo and Portable Tanks for Compressed Gases	2209.5.4.2, 3003.3.2, 3203.2
S-1.3—(1995)	Pressure Relief Device Standards—Part 3—Stationary Storage Containers for Compressed Gases	2209.5.4.2, 2209.5.4.3.5, 3003.3.2, 3203.2
V-1—(2002)	Gas Cylinder Valve Outlet and Inlet Connections	4106.1.3

CGR

Coast Guard Regulations
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard reference number	Title	Referenced in code section number
46 CFR Parts 30, 32, 35 & 39—1999	Shipping	3406.8

CPSC

Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Standard reference number	Title	Referenced in code section number
16 CFR Part 1500.41—1984	Method for Testing Primary Irritant Substances	202
16 CFR Part 1500.42—1984	Test for Eye Irritants	202
16 CFR Part 1500.44—2001	Method for Testing Extremely Flammable and Flammable Solids	3602.1
16 CFR Part 1500—1984	Hazardous Substances and Articles; Administration and Enforcement Regulations	3301.1.3, 3302.1
16 CFR Part 1507—2001	Fireworks Devices	3301.1.3, 3302.1

DOC

U.S. Department of Commerce
100 Bureau Drive, Stop 3460
Gaithersburg, MD 20899

Standard reference number	Title	Referenced in code section number
16 CFR Part 1632—1999	Standard for the Flammability of Mattress and Mattress Pads (FF 4—72, Amended)	805.1.2.1, 805.2.2.1, 805.3.2.1

DOL

U.S. Department of Labor
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard reference number	Title	Referenced in code section number
29 CFR Part 1910.1000—1974	Air Contaminants	1204.2.1, 2702.1
29 CFR Part 1910.1200—1999	Hazard Communication	2702.1, 3303.6

DOTn

U.S. Department of Transportation
Office of Hazardous Material Standards
400 7th Street, Southwest
Washington, DC 20590

Standard reference number	Title	Referenced in code section number
33 CFR Part 154 —1998	Facilities Transferring Oil or Hazardous Material in Bulk	3406.8
33 CFR Part 155 —1998	Oil or Hazardous Material Pollution Prevention Regulations for Vessels	3406.8
33 CFR Part 156 —1998	Oil and Hazardous Material Transfer Operations	3406.8
49 CFR—1998	Transportation	2605.4, 3302.1
49 CFR Part 1—1999	Transportation	3203.4.3, 3203.8
49 CFR Part 172—1999	Hazardous Materials Tables, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements	3304.6.5.2
49 CFR Part 173—1999	Shippers — General Requirements for Shipments and Packagings	3306.3
49 CFR Part 173.137—1990	Shippers — General Requirements for Shipments and Packagings: Class 8 — Assignment of Packing Group	3102.1
49 CFR Parts 100-178—1994	Hazardous Materials Regulations	3003.2, 3301.1, 3301.1.3, 3301.3, 3406.5.1.15

DOTy

U.S. Department of Treasury
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard reference number	Title	Referenced in code section number
27 CFR Part 55—1998	Commerce in Explosives, as amended through April 1, 1998	3302.1, 3304.6.5.2

ICC

International Code Council, Inc.
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041

Standard reference number	Title	Referenced in code section number
ICC/ANSI A117.1—03	Accessible and Usable Buildings and Facilities	907.10.1.4, 1007.6.5, 1010.1, 1010.6.5, 1010.9, 1011.3
ICC 300—02	Standard on Bleachers, Folding and Telescopic Seating and Grandstands	1025.1.1
ICC EC—06	ICC Electrical Code®	603.1.3, 603.1.7, 603.5.2, 604.2.16.1, 604.2.16.2, 605.1, 605.3, 605.4, 605.9, 606.16, 904.3.1, 907.6, 909.11, 909.12.1, 909.16.3, 1106.3.4, 1204.2.3, Table 1304.1, 1404.7, 1503.2.1, 1503.2.1.1, 1503.2.1.4, 1503.2.5, 1504.6.1.2.2, 1504.9.4, 1604.5, 1703.2.1, 1803.7.1, 1803.7.2, 1803.7.3, 1903.4, 2004.1, 2201.5, 2205.4, 2208.8.1.2.4, 2209.2.3, 2211.3.1, 2211.8.1.2.4, 2403.12.6.1, 2404.15.7, 2606.4, 2703.7.3, 2703.8.7.1, 2703.9.4, 2704.7, 2705.1.5, 3003.7.6, 3003.8, 3003.16.11, 3003.16.14, 3203.7, 3203.7.2, 3403.1, Table 3403.1.1, 3403.1.3, 3404.2.8.12, 3404.2.8.17, 3406.2.8, 3503.1.5, 3503.1.5.1, 3606.5.5, 3606.5.6, 3704.2.2.8

ICC—continued

IBC—06	International Building Code®	102.3, 102.4, 201.3, 202, 304.1.3, 306.1, 311.1.1, 311.3, 313.1, 313.2, 408.7.2, 504.1, 509.1, 603.2, 603.3.2, 603.5.2, 603.6.1, 603.8,604.1, 604.2.9, 604.2.15.1.3, 604.2.16, 604.2.16.1.1, 604.2.17, 608.4, 608.8, 701.1, 803.1, Table 803.3, 803.7.1, 803.7.2, 805.3.1.2, 807.1.2, 807.4.2.2, 901.4.1, 901.4.2, 903.2.4.2, 903.2.8.1, 903.2.9, 903.3.2, 903.3.5.2, 903.6, 907.2.6.2,907.2.7, 907.2.12, 907.2.18, 907.2.21, 907.15, 909.1, 909.2, 909.3, 909.4.3, 909.5, 909.5.2, 909.5.2.1, 909.10.5, 911.2,914.1, 914.2.1, 914.3.1, 914.5.3, 914.10, 1003.2, 1003.3.4, 1003.5, 1006.3, 1007.2, 1007.4, 1007.5, 1007.6.2, 1007.8, 1008.1.3.3, 1008.1.6, 1008.1.8.1, 1008.1.8.7, 1009.10, 1009.11.1, 1010.1, 1011.4, 1011.5.3, 1012.1, 1013.1, 1014.4.1, Table 1016.1, 1017.1, Table 1017.1, Table 1019.2, 1020.1, 1020.1.1, 1020.1.2, 1020.1.3, 1020.1.4, 1020.1.7, 1021.3, 1021.4, 1021.5, 1022.2, 1022.3,1024.3, 1026.1, 1027.5, 1027.17, 1027.17.1,Table 1027.17.2, 1104.6, 1106.17, 1107.1, 1107.4, 1203.3, 1207.1, 1414.1, 1502.1, 1504.2, 1504.3.1, 1504.3.2.6, 1504.3.3, 1505.2, 1801.1, 1801.4, 1803.2.2, 1803.3.1, 1803.3.2, 1803.3.3, 1803.3.4, 1803.3.8, 1803.14, 1803.14.1, 1803.15.1, 1804.3.1 1805.2.2.1, 1805.2.3.2, 1805.3.1, 1805.3.2, 1805.3.3, 1903.1, 2005.1, 2009.2, 2009.4, 2009.6, 2201.1, 2201.4, 2203.1, 2207.4, 2208.3, 2208.3.1, Table 2209.3.1, 2209.3.2.3, 2209.3.2.6.1, 2209.3.3, 2210.1, 2211.1, 2211.3.1, 2211.4.1, 2211.8.1.2.3, 2301.3, Table 2306.2, 2306.3.1, 2306.3.2.1, 2306.3.2.2, 2306.8, 2307.2,2308.2, 2402.1, 2403.8.2, 2404.1, 2503.1, 2703.2.2.2, 2703.2.8, 2703.8.1, Table 2703.8.2, 2703.8.3.1, 2703.8.4.1, 2703.9.9, 2704.13, 2705.2, 2705.3.9, 2801.1, 2904.3, 2904.4, 2904.5, 3003.16.1, 3003.16.2, 3203.1.2, 3203.5.2,3204.2, 3204.2.2.2, 3204.4.3, 3205.4.1, 3304.2, Table 3304.5.2.3, 3305.5, 3401.3, 3404.2.7.7, 3404.2.8.1, 3404.2.8.2, 3404.2.9.2, 3404.2.9.3, 3404.3.3.5, 3404.3.7.1, 3404.3.8, 3405.3.4, 3405.3.5.3, 3405.3.7.1, 3405.3.7.2, 3405.3.7.3, 3405.3.7.4, 3405.3.7.5.1, 3406.2.3, 3406.4.1,3606.2.2, 3606.2.3, 3606.4.2, 3703.1.4.2, 3705.3.1, 3809.11.2, 3904.1.2, 4004.1.2, 4104.1.4, 4106.1.1, 4304.1
IFGC—06	International Fuel Gas Code®	201.3, 603.1, 603.1.2, 603.5.2, 603.8, 1403.1, 1403.3, 1604.5, 2101.1, 2103.1, 2104.1, 2104.2, 2201.1, 2201.6, 2209.3.2.3, 2209.3.2.6, 2404.15.1, 2404.15.2, 2404.16.1, Table 2703.1.1(1), 3001.1, 3501.1, 3503.1.4, 3803.1, 3803.2.1.7, 3803.3
IMC—06	International Mechanical Code®	201.3, 202, 308.3.7, 603.1, 603.1.2, 603.2, 603.3, 603.5.2, 603.8,606.1, 606.2, 606.3, 606.4, 606.7, 606.8, 606.16, 608.6.1, 609.1, 903.2.12.1, 904.11, 909.1, 909.10.2, 1015.5, 1017.4.1, 1204.2.1, 1205.3, 1403.1, 1504.7, 1504.7.2, 1604.5, 1803.2.2, 1803.10.4, 1803.14, 1903.2, 1903.3, 2101.1, 2103.1, 2104.2, 2201.1, 2201.6,2209.3.2.3, 2211.3.1, 2211.4.3, 2211.7.1, 2404.15.1, Table 2703.1.1(1), 2404.15.2, 2703.8.4.2, 2703.8.5.2, 2703.8.6.2, 2704.3.1, 2903.5,3003.7.6, 3003.16.9, 3005.5, 3006.2.2, 3204.2.1.3, 3204.2.2.3, 3205.4.1.1, 3401.3, 3403.6.1, 3404.2.8.9, 3405.3.7.5.1, 3406.2, 3406.4.4, 3703.1.3, 3703.2.3.2, 3704.2.2.7, 3705.3.1, 3705.3.2, 3803.2.1.7
IPC—06	International Plumbing Code®	201.3, 903.3.5, 912.5, 2211.2.3, 2704.2.2.6
IPMC—06	International Property Maintenance Code®	311.1.1
IRC—06	International Residential Code®	202, 1001.1
IWUIC—06	International Wildland-Urban Interface Code™	304.1.2

ISO

International Organization for Standardization (ISO)
ISO Central Secretariat
1, rue de Varembee, Case postale 56
CH-1211 Geneva 20, Switzerland

Standard reference number	Title	Referenced in code section number
ISO 8115—86	Cotton Bales—Dimensions and Density	Table 1804.2.1, Table 2703.1(1)

NEMA

National Electrical Manufacturer's Association
1300 N. 17th Street
Suite 1847
Rosslyn, VA 22209

Standard reference number	Title	Referenced in code section number
250—2003	Enclosures for Electrical Equipment (1,000 Volt Maximum)	3705.2

NFPA

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269

Standard reference number	Title	Referenced in code section number
10—02	Portable Fire Extinguishers	Table 901.6.1, 906.2, 906.3, Table 906.3(1), Table 906.3(2), 2106.3
11—02	Low-, Medium-, High-expansion Foam	904.7, 3404.2.9.1.2
11A—99	Medium- and High-expansion Foam Systems	904.7, 3404.2.9.1.2
12—00	Carbon Dioxide Extinguishing Systems	Table 901.6.1, 904.8, 904.11
12A—04	Halon 1301 Fire Extinguishing Systems	Table 901.6.1, 904.9

NFPA—continued

13—02	Installation of Sprinkler Systems . . . . . Table 704.1, 903.3.1.1, 903.3.2, 903.3.5.1.1, 903.3.5.2, 904.11, 905.3.4, 907.9, 2301.1, 2304.2, Table 2306.2, 2306.9, 2307.2, 2307.2.1, 2308.2.2, 2308.2.2.1, 2310.1, 2501.1, 2804.1, 2806.5.7, 3404.3.3.9, Table 3404.3.6.3(7), 3404.3.7.5.1, 3404.3.8.4
13D—02	Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes 903.3.1.3, 903.3.5.1.1
13R—02	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4
14—03	Installation of Standpipe and Hose Systems 905.2, 905.3.4, 905.4.2, 905.8
15—01	Water Spray Fixed Systems for Fire Protection 3404.2.9.1.3
16—03	Installation of Foam-water Sprinkler and Foam-water Spray Systems 904.7, 904.11
17—02	Dry Chemical Extinguishing Systems . . . . . Table 901.6.1, 904.6, 904.11
17A—02	Wet Chemical Extinguishing Systems . . . . . Table 901.6.1, 904.5, 904.11
20—03	Installation of Stationary Pumps for Fire Protection 913.1, 913.2, 913.5.1
22—03	Water Tanks for Private Fire Protection 508.2.2
24—02	Installation of Private Fire Service Mains and their Appurtenances. 508.2.1, 1909.5
25—02	Inspection, Testing and Maintenance of Water-based Fire Protection Systems . . . . . 508.5.3, Table 901.6.1, 904.7.1, 912.6, 913.5,
30—03	Flammable and Combustible Liquids Code 3403.6.2, 3403.6.2.1, 3404.2.7, 3404.2.7.1, 3404.2.7.2, 3404.2.7.3.6, 3404.2.7.4, 3404.2.7.6, 3404.2.7.7, 3404.2.7.8, 3404.2.7.9, 3404.2.9.2, 3404.2.9.3, 3404.2.9.5.1.1, 3404.2.9.5.1.2, 3404.2.9.5.1.3, 3404.2.9.5.1.4, 3404.2.9.5.1.5, 3404.2.9.5.2, 3404.2.9.6.4, 3404.2.10.2, 3404.2.11.4, 3404.2.11.5.2, 3404.2.12.1, 3404.3.1, 3404.3.6, 3404.3.7.2.3, 3404.3.7.5.1, 3404.3.8.4, 3406.8.3
30A—03	Code for Motor Fuel-dispensing Facilities and Repair Garages 2201.4, 2201.5, 2201.6, 2206.6.3, 2210.1
30B—02	Manufacture and Storage of Aerosol Products. . . . . 2801.1, 2803.1, 2804.1, Table 2804.3.1, Table 2804.3.2, Table 2804.3.2.2, 2804.4.1, 2804.5.2, 2804.6, Table 2806.2, 2806.2.3, 2806.3.2, Table 2806.4, 2806.5.1, 2806.5.6, 2807.1
31—01	Installation of Oil-burning Equipment 603.1.7, 603.3.1, 603.3.3
32—00	Dry Cleaning Plants 1207.1, 1207.3
33—03	Spray Application Using Flammable or Combustible Materials 1504.3.2
34—03	Dipping and Coating Processes Using Flammable or Combustible Liquids 1505.3, 1505.4.1.1
35—99	Manufacture of Organic Coatings 2001.3, 2005.4
40—01	Storage and Handling of Cellulose Nitrate Film. 306.2
51—02	Design and Installation of Oxygen-fuel Gas Systems for Welding, Cutting and Allied Processes 2601.5, 2607.1, 2609.1
51A—01	Acetylene Cylinder Charging Plants 2608.1
52—02	Compressed Natural Gas (CNG) Vehicular Fuel System Code 3001.1
55-05	Standard for the Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationery Containers Cylinders and Tanks 2209.2.1, 3201.1, 3501.1, 4001.1
57—02	Liquefied Natural Gas (LNG) Vehicular Fuel System Code 3001.1
58—04	Liquefied Petroleum Gas Code 3801.1, 3803.1, 3803.2.1, 3803.2.1.2, 3803.2.1.7, 3803.2.2, 3804.1, 3804.3.1, 3804.4, 3806.2, 3806.3, 3807.2, 3808.1, 3808.2, 3809.11.2, 3811.3
59A—01	Production, Storage and Handling of Liquefied Natural Gas (LNG) 3001.1, 3201.1
61—02	Prevention of Fires and Dust Explosions in Agricultural and Food Products Facilities. . . . . Table 1304.1
69—02	Explosion Prevention Systems . . . . . 911.1, 911.3, Table 1304.1
72—02	National Fire Alarm Code . . . . . 509.1, Table 901.6.1, 903.4.1, 904.3.5, 907.2, 907.2.1.1, 907.2.10, 907.2.10.4, 907.2.11.2, 907.2.11.3, 907.2.12.2.3, 907.2.12.3, 907.3, 907.5, 907.6, 907.10.2, 907.11, 907.15, 907.17, 907.18, 907.20, 907.20.2, 907.20.5
80—99	Fire Doors and Fire Windows 703.2, 1008.1.3.3
85—04	Boiler and Combustion System Hazards Code . . . . . Table 1304.1
86—03	Ovens and Furnaces. 2101.1
92B—05	Smoke Management Systems in Malls, Atria and Large Spaces 909.8
99—02	Health Care Facilities 3006.4
101—03	Life Safety Code. 1025.6.2
110—02	Emergency and Standby Power Systems 604.1, 604.3, 604.4, 913.5.2, 913.5.3
111—01	Stored Electrical Energy Emergency and Standby Power Systems 604.1, 604.3, 604.4
120—99	Coal Preparation Plants . . . . . Table 1304.1
160—01	Flame Effects Before an Audience. 308.3.6
211—03	Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances 603.2
230—03	Fire Protection of Storage 2301.1, 2308.4, 2310.1, 2501.1, 3404.3.3.9
241—00	Safeguarding Construction, Alteration, and Demolition Operations 1401.1
260—03	Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture 805.1.1.1, 805.2.1.1, 805.3.1.1

NFPA—continued

261—03	Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes	805.2.1.1, 805.3.1.1
265—02	Method of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings in Full Height Panels and Walls	803.5.1, 803.5.1.1, 803.5.1.2
286—00	Standard Method of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth	803.1, 803.1.2, 803.1.2.1, 803.5.1
303—00	Fire Protection Standard for Marinas and Boatyards	905.3.7
385—00	Tank Vehicles for Flammable and Combustible Liquids	3406.5.4.5, 3406.6, 3406.6.1
407—01	Aircraft Fuel Servicing	1106.2, 1106.3
409—01	Aircraft Hangars	914.8.2, 914.8.5
430—00	Storage of Liquid and Solid Oxidizers	4004.1.4
484—02	Combustible Metals, Metal Powders, and Metal Dusts	Table 1304.1
490—02	Storage of Ammonium Nitrate	3301.1.5
495—01	Explosive Materials Code	911.1, 911.4, 3301.1.1, 3301.1.5, 3302.1, 3304.2, 3304.6.2, 3304.6.3, 3304.7.1, 3305.1, 3306.1, 3306.5.2.1, 3306.5.2.3, 3307.1, 3307.9, 3307.11, 3307.15
498—01	Safe Havens and Interchange Lots for Vehicles Transporting Explosives	3301.1.2
505—02	Powered Industrial Trucks, Including Type Designations, Areas of Use, Maintenance, and Operation	2703.7.3
654—00	Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids	Table 1304.1
655—01	Prevention of Sulfur Fires and Explosions	Table 1304.1
664—02	Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities	Table 1304.1, 1905.3
701—99	Methods of Fire Tests for Flame-propagation of Textiles and Films	806.2, 807.1, 807.1.2, 807.2, 807.4.2.2, 1703.5
703—00	Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials	803.4
704—01	Identification of the Hazards of Materials for Emergency Response	606.7, 1802.1, 2404.2, 2703.2.2.1, 2703.2.2.2, 2703.5, 2703.10.2, 2705.1.10, 2705.2.1.1, 2705.4.4, 3203.4.1, 3404.2.3.2
750—03	Water Mist Fire Protection Systems	Table 901.6.1
1122—02	Model Rocketry	3301.1.4
1123—00	Fireworks Display	3302.1, 3304.2, 3308.1, 3308.2.2, 3308.5, 3308.6
1124—03	Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles	3302.1, 3304.2, 3305.1, 3305.3, 3305.4, 3305.5
1125—01	Manufacture of Model Rocket and High Power Rocket Motors	3301.1.4
1126—01	Use of Pyrotechnics Before a Proximate Audience	3304.2, 3305.1, 3308.1, 3308.2.2, 3308.4, 3308.5
1127—02	High Power Rocketry	3301.1.4
2001—04	Clean Agent Fire Extinguishing Systems	Table 901.6.1, 904.10

UL

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

Standard reference number	Title	Referenced in code section number
30—04	Metal Safety Cans	2705.1.10, 3405.2.4
58—96	Steel Underground Tanks for Flammable and Combustible Liquids—with Revisions through July 1998	3404.2.13.1.5
199E–04	Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers	904.11.4.1
217–97	Single and Multiple Station Smoke Alarms—with Revisions through January 2004	907.2.10
268—96	Control Units for Fire Protective Signaling Systems—with Revisions through October 2003	907.2.6.2
300—96	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas—with Revisions through December 1998	904.11
710B—04	Recirculating Systems	904.11
793—03	Standard for Automatically Operated Roof Vents for Smoke and Heat	910.3.1
864—03	Standard for Control Units and Accessories for Fire Alarm Systems—with Revisions through October 2003	909.12
900—94	Air Filter Units—with Revisions through October 1999	1504.7.8
1275—94	Flammable Liquid Storage Cabinets—with Revisions through March 1997	2703.8.7.1, 3404.3.2.1.1
1315-95	Standard for Safety for Metal Waste Paper Containers—with Revisions through December 2003	808.1
1316—94	Glass Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-gasoline Mixtures—with Revisions through April 1996	3404.2.13.1.5

UL—continued

1363—96	Standard for Relocatable Power Taps—with Revisions through July 2004	605.4.1
1975—96	Fire Tests for Foamed Plastics Used for Decorative Purpose	807.4.2.1, 808.2
2085—97	Protected Aboveground Tanks for Flammable and Combustible Liquids—with Revisions through December 1999	3402.1, 3404.2.9.1.3, 3404.2.9.6.5, 3405.3.8.2
2200—98	Standard for Stationary Engine Generator Assemblies—with Revisions through July 2004	604.1.1
2208—96	Solvent Distillation Units—with Revisions through August 2001	3405.4.1
2245—99	Below-Grade Vaults for Flammable Liquid Storage Tanks	3404.2.8.1
2335—01	Fire Tests of Storage Pallets—with Revisions through May 2002	2308.2.1

USC

United States Code
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

Standard reference number	Title	Referenced in code section number
18 USC Part 1, Chapter 40	Importation, Manufacture, Distribution and Storage of Explosive Materials	3302.1

APPENDIX A

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

BOARD OF APPEALS

SECTION A101
GENERAL

A101.1 Scope. A board of appeals shall be established within the jurisdiction for the purpose of hearing applications for modification of the requirements of the *International Fire Code* pursuant to the provisions of Section 108 of the *International Fire Code*. The board shall be established and operated in accordance with this section, and shall be authorized to hear evidence from appellants and the fire code official pertaining to the application and intent of this code for the purpose of issuing orders pursuant to these provisions.

A101.2 Membership. The membership of the board shall consist of five voting members having the qualifications established by this section. Members shall be nominated by the fire code official or the chief administrative officer of the jurisdiction, subject to confirmation by a majority vote of the governing body. Members shall serve without remuneration or compensation, and shall be removed from office prior to the end of their appointed terms only for cause.

A101.2.1 Design professional. One member shall be a practicing design professional registered in the practice of engineering or architecture in the state in which the board is established.

A101.2.2 Fire protection engineering professional. One member shall be a qualified engineer, technologist, technician or safety professional trained in fire protection engineering, fire science or fire technology. Qualified representatives in this category shall include fire protection contractors and certified technicians engaged in fire protection system design.

A101.2.3 Industrial safety professional. One member shall be a registered industrial or chemical engineer, certified hygienist, certified safety professional, certified hazardous materials manager or comparably qualified specialist experienced in chemical process safety or industrial safety.

A101.2.4 General contractor. One member shall be a contractor regularly engaged in the construction, alteration, maintenance, repair or remodeling of buildings or building services and systems regulated by the code.

A101.2.5 General industry or business representative. One member shall be a representative of business or industry not represented by a member from one of the other categories of board members described above.

A101.3 Terms of office. Members shall be appointed for terms of four years. No member shall be reappointed to serve more than two consecutive full terms.

A101.3.1 Initial appointments. Of the members first appointed, two shall be appointed for a term of 1 year, two for a term of 2 years, one for a term of 3 years.

A101.3.2 Vacancies. Vacancies shall be filled for an unexpired term in the manner in which original appointments are required to be made. Members appointed to fill a vacancy in an unexpired term shall be eligible for reappointment to two full terms.

A101.3.3 Removal from office. Members shall be removed from office prior to the end of their terms only for cause. Continued absence of any member from regular meetings of the board shall, at the discretion of the applicable governing body, render any such member liable to immediate removal from office.

A101.4 Quorum. Three members of the board shall constitute a quorum. In varying the application of any provisions of this code or in modifying an order of the fire code official, affirmative votes of the majority present, but not less than three, shall be required.

A101.5 Secretary of board. The fire code official shall act as secretary of the board and shall keep a detailed record of all its proceedings, which shall set forth the reasons for its decisions, the vote of each member, the absence of a member and any failure of a member to vote.

A101.6 Legal counsel. The jurisdiction shall furnish legal counsel to the board to provide members with general legal advice concerning matters before them for consideration. Members shall be represented by legal counsel at the jurisdiction's expense in all matters arising from service within the scope of their duties.

A101.7 Meetings. The board shall meet at regular intervals, to be determined by the chairman. In any event, the board shall meet within 10 days after notice of appeal has been received.

A101.8 Conflict of interest. Members with a material or financial interest in a matter before the board shall declare such interest and refrain from participating in discussions, deliberations, and voting on such matters.

A101.9 Decisions. Every decision shall be promptly filed in writing in the office of the fire code official and shall be open to public inspection. A certified copy shall be sent by mail or otherwise to the appellant, and a copy shall be kept publicly posted in the office of the fire code official for 2 weeks after filing.

A101.10 Procedures. The board shall be operated in accordance with the Administrative Procedures Act of the state in which it is established or shall establish rules and regulations for its own procedure not inconsistent with the provisions of this code and applicable state law.

APPENDIX B
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the fire code official is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation. Portions of buildings which are separated by fire walls without openings, constructed in accordance with the *International Building Code,* are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

Exception: Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings. The minimum fire-flow requirements for one- and two-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min). Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet (344.5 m^2) shall not be less than that specified in Table B105.1.

Exception: A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table B105.1.

Exception: A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1.

SECTION B106
REFERENCED STANDARDS

ICC	IBC	International Building Code	B104.2, Table B105.1
ICC	IWUIC	International Wildland-Urban Interface Code	B103.3
NFPA	1142	Standard on Water Supplies for Suburban and Rural Fire Fighting	B103.3

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS[a]

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[c]	FLOW DURATION (hours)
Type IA and IB[b]	Type IIA and IIIA[b]	Type IV and V-A[b]	Type IIB and IIIB[b]	Type V-B[b]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. The minimum required fire flow shall be allowed to be reduced by 25 percent for Group R.

b. Types of construction are based on the *International Building Code.*

c. Measured at 20 psi.

APPENDIX C
FIRE HYDRANT LOCATIONS AND DISTRIBUTION

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C101
GENERAL

C101.1 Scope. Fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, hereafter constructed.

SECTION C102
LOCATION

C102.1 Fire hydrant locations. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

SECTION C103
NUMBER OF FIRE HYDRANTS

C103.1 Fire hydrants available. The minimum number of fire hydrants available to a building shall not be less than that listed in Table C105.1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table C105.1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

SECTION C104
CONSIDERATION OF EXISTING FIRE HYDRANTS

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

SECTION C105
DISTRIBUTION OF FIRE HYDRANTS

C105.1 Hydrant spacing. The average spacing between fire hydrants shall not exceed that listed in Table C105.1.

Exception: The fire chief is authorized to accept a deficiency of up to 10 percent where existing fire hydrants provide all or a portion of the required fire hydrant service.

Regardless of the average spacing, fire hydrants shall be located such that all points on streets and access roads adjacent to a building are within the distances listed in Table C105.1.

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

APPENDIX D

FIRE APPARATUS ACCESS ROADS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION D101 GENERAL

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the *International Fire Code*.

SECTION D102 REQUIRED ACCESS

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an approved fire apparatus access road with an asphalt, concrete or other approved driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34 050 kg).

SECTION D103 MINIMUM SPECIFICATIONS

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm). See Figure D103.1.

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

Exception: Grades steeper than 10 percent as approved by the fire chief.

D103.3 Turning radius. The minimum turning radius shall be determined by the fire code official.

D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

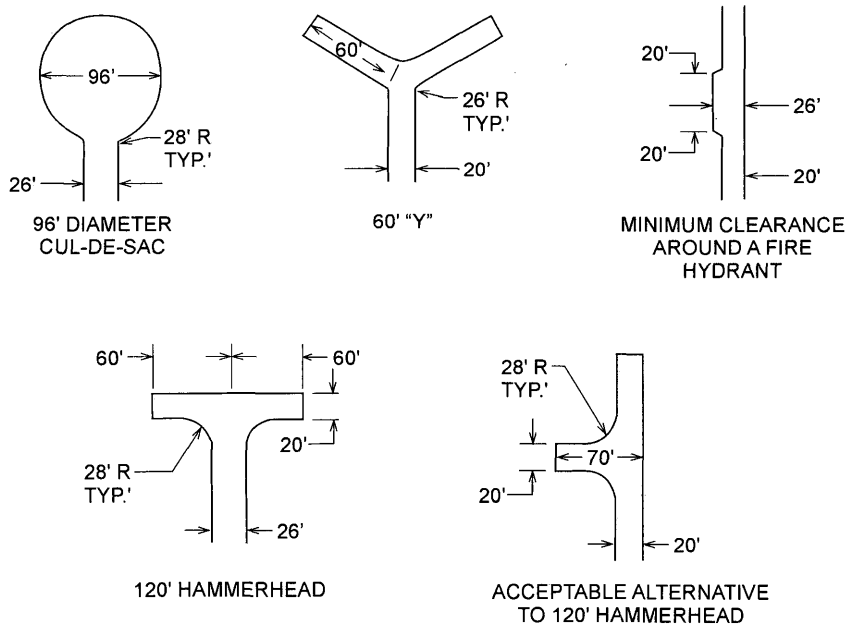
TABLE D103.4
REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0–150	20	None required
151–500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
501–750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

For SI: 1 foot = 304.8 mm.

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. The minimum gate width shall be 20 feet (6096 mm).



For SI: 1 foot = 304.8 mm.

FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

2. Gates shall be of the swinging or sliding type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools or when a key box containing the key(s) to the lock is installed at the gate location.
7. Locking device specifications shall be submitted for approval by the fire code official.

D103.6 Signs. Where required by the fire code official, fire apparatus access roads shall be marked with permanent NO PARKING—FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.

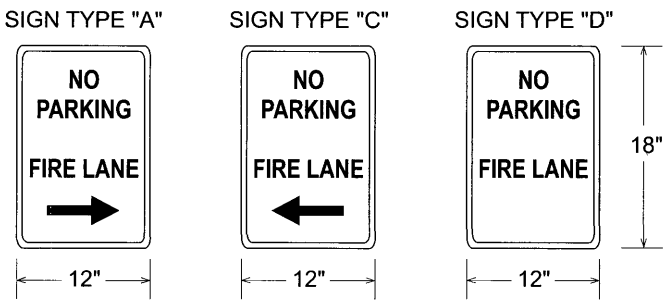


FIGURE D103.6
FIRE LANE SIGNS

D103.6.1 Roads 20 to 26 feet in width. Fire apparatus access roads 20 to 26 feet wide (6096 to 7925 mm) shall be posted on both sides as a fire lane.

D103.6.2 Roads more than 26 feet in width. Fire apparatus access roads more than 26 feet wide (7925 mm) to 32 feet wide (9754 mm) shall be posted on one side of the road as a fire lane.

SECTION D104
COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least three means of fire apparatus access for each structure.

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross building area of more than 62,000 square feet (5760 m^2) shall be provided with two separate and approved fire apparatus access roads.

Exception: Projects having a gross building area of up to 124,000 square feet (11 520 m^2) that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems.

D104.3 Remoteness. Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

SECTION D105
AERIAL FIRE APPARATUS ACCESS ROADS

D105.1 Where required. Buildings or portions of buildings or facilities exceeding 30 feet (9144 mm) in height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway.

D105.2 Width. Fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm) in the immediate vicinity of any building or portion of building more than 30 feet (9144 mm) in height.

D105.3 Proximity to building. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet (4572 mm) and a maximum of 30 feet (9144 mm) from the building, and shall be positioned parallel to one entire side of the building.

SECTION D106
MULTIPLE-FAMILY RESIDENTIAL DEVELOPMENTS

D106.1 Projects having more than 100 dwelling units. Multiple-family residential projects having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads.

Exception: Projects having up to 200 dwelling units may have a single approved fire apparatus access road when all buildings, including nonresidential occupancies, are equipped throughout with approved automatic sprinkler systems installed in accordance with Section 903.3.1.1 or 903.3.1.2.

D106.2 Projects having more than 200 dwelling units. Multiple-family residential projects having more than 200 dwelling units shall be provided with two separate and approved fire apparatus access roads regardless of whether they are equipped with an approved automatic sprinkler system.

SECTION D107
ONE- OR TWO-FAMILY RESIDENTIAL DEVELOPMENTS

D107.1 One- or two-family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads and shall meet the requirements of Section D104.3.

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.3, access from two directions shall not be required.
2. The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development, as determined by the fire code official.

APPENDIX E
HAZARD CATEGORIES

This appendix is for information purposes and is not intended for adoption.

SECTION E101
GENERAL

E101.1 Scope. This appendix provides information, explanations and examples to illustrate and clarify the hazard categories contained in Chapter 27 of the *International Fire Code*. The hazard categories are based upon the DOL 29 CFR. Where numerical classifications are included, they are in accordance with nationally recognized standards.

This appendix should not be used as the sole means of hazardous materials classification.

SECTION E102
HAZARD CATEGORIES

E102.1 Physical hazards. Materials classified in this section pose a physical hazard.

E102.1.1 Explosives and blasting agents. The current UN/DOT classification system recognized by international authorities, the Department of Defense and others classifies all explosives as Class 1 materials. They are then divided into six separate divisions to indicate their relative hazard. There is not a direct correlation between the designations used by the old DOT system and those used by the current system nor is there correlation with the system (high and low) established by the Bureau of Alcohol, Tobacco and Firearms (BATF). Table 3304.3 provides some guidance with regard to the current categories and their relationship to the old categories. Some items may appear in more than one division, depending on factors such as the degree of confinement or separation, by type of packaging, storage configuration or state of assembly.

In order to determine the level of hazard presented by explosive materials, testing to establish quantitatively their explosive nature is required. There are numerous test methods that have been used to establish the character of an explosive material. Standardized tests, required for finished goods containing explosives or explosive materials in a packaged form suitable for shipment or storage, have been established by UN/DOT and BATF. However, these tests do not consider key elements that should be examined in a manufacturing situation. In manufacturing operations, the condition and/or the state of a material may vary within the process. The in-process material classification and classification requirements for materials used in the manufacturing process may be different from the classification of the same material when found in finished goods depending on the stage of the process in which the material is found. A classification methodology must be used that recognizes the hazards commensurate with the application to the variable physical conditions as well as potential variations of physical character and type of explosive under consideration.

Test methods or guidelines for hazard classification of energetic materials used for in-process operations shall be approved by the fire code official. Test methods used shall be DOD, BATF, UN/DOT or other approved criteria. The results of such testing shall become a portion of the files of the jurisdiction and be included as an independent section of any Hazardous Materials Management Plan (HMMP) required by Section 3305.2.1. Also see Section 104.7.2.

Examples of materials in various Divisions are as follows:

1. Division 1.1 (High Explosives). Consists of explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire pile of material instantaneously. Includes substances that, when tested in accordance with approved methods, can be caused to detonate by means of a blasting cap when unconfined or will transition from deflagration to a detonation when confined or unconfined. Examples: dynamite, TNT, nitroglycerine, C-3, HMX, RDX, encased explosives, military ammunition.
2. Division 1.2 (Low Explosives). Consists of explosives that have a projection hazard, but not a mass explosion hazard. Examples: nondetonating encased explosives, military ammunition and the like.
3. Division 1.3 (Low Explosives). Consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. The major hazard is radiant heat or violent burning, or both. Can be deflagrated when confined. Examples: smokeless powder, propellant explosives, display fireworks.
4. Division 1.4. Consists of explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is expected. An internal fire must not cause virtually instantaneous explosion of almost the entire contents of the package. Examples: squibs (nondetonating igniters), explosive actuators, explosive trains (low level detonating cord).
5. Division 1.5 (Blasting Agents). Consists of very insensitive explosives. This division is comprised of substances which have a mass explosion hazard, but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport. Materials are not cap sensitive; however, they are mass detonating when provided with sufficient input. Examples: oxidizer and liquid fuel slurry mixtures and gels, ammonium nitrate combined with fuel oil.

6. Division 1.6. Consists of extremely insensitive articles which do not have a mass explosive hazard. This division is comprised of articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation. Although this category of materials has been defined, the primary application is currently limited to military uses. Examples: Low vulnerability military weapons.

Explosives in each division are assigned a compatibility group letter by the Associate Administrator for Hazardous Materials Safety (DOT) based on criteria specified by DOTn 49CFR. Compatibility group letters are used to specify the controls for the transportation and storage related to various materials to prevent an increase in hazard that might result if certain types of explosives were stored or transported together. Altogether, there are 35 possible classification codes for explosives, e.g., 1.1A, 1.3C, 1.4S, etc.

E102.1.2 Compressed gases. Examples include:

1. Flammable: acetylene, carbon monoxide, ethane, ethylene, hydrogen, methane. Ammonia will ignite and burn although its flammable range is too narrow for it to fit the definition of flammable gas.
2. Oxidizing: oxygen, ozone, oxides of nitrogen, chlorine and fluorine. Chlorine and fluorine do not contain oxygen but reaction with flammables is similar to that of oxygen.
3. Corrosive: ammonia, hydrogen chloride, fluorine.
4. Highly toxic: arsine, cyanogen, fluorine, germane, hydrogen cyanide, nitric oxide, phosphine, hydrogen selenide, stibine.
5. Toxic: chlorine, hydrogen fluoride, hydrogen sulfide, phosgene, silicon tetrafluoride.
6. Inert (chemically unreactive): argon, helium, krypton, neon, nitrogen, xenon.
7. Pyrophoric: diborane, dichloroborane, phosphine, silane.
8. Unstable (reactive): butadiene (unstabilized), ethylene oxide, vinyl chloride.

E102.1.3 Flammable and combustible liquids. Examples include:

1. Flammable liquids.

   Class IA liquids shall include those having flash points below 73°F (23°C) and having a boiling point at or below 100°F (38°C).

   Class IB liquids shall include those having flash points below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

   Class IC liquids shall include those having flash points at or above 73°F (23°C.) and below 100°F (38°C).

2. Combustible liquids.

   Class II liquids shall include those having flash points at or above 100°F (38°C) and below 140°F (60°C).

   Class IIIA liquids shall include those having flash points at or above 140°F (60°C) and below 200°F (93°C).

   Class IIIB liquids shall include those liquids having flash points at or above 200°F (93°C).

E102.1.4 Flammable solids. Examples include:

1. Organic solids: camphor, cellulose nitrate, naphthalene.
2. Inorganic solids: decaborane, lithium amide, phosphorous heptasulfide, phosphorous sesquisulfide, potassium sulfide, anhydrous sodium sulfide, sulfur.
3. Combustible metals (except dusts and powders): cesium, magnesium, zirconium.

E102.1.5 Combustible dusts and powders. Finely divided solids which may be dispersed in air as a dust cloud: wood sawdust, plastics, coal, flour, powdered metals (few exceptions).

E102.1.6 Combustible fibers. See Section 2902.1.

E102.1.7 Oxidizers. Examples include:

1. Gases: oxygen, ozone, oxides of nitrogen, fluorine and chlorine (reaction with flammables is similar to that of oxygen).
2. Liquids: bromine, hydrogen peroxide, nitric acid, perchloric acid, sulfuric acid.
3. Solids: chlorates, chromates, chromic acid, iodine, nitrates, nitrites, perchlorates, peroxides.

E102.1.7.1 Examples of liquid and solid oxidizers according to hazard.

Class 4: ammonium perchlorate (particle size greater than 15 microns), ammonium permanganate, guanidine nitrate, hydrogen peroxide solutions more than 91 percent by weight, perchloric acid solutions more than 72.5 percent by weight, potassium superoxide, tetranitromethane.

Class 3: ammonium dichromate, calcium hypochlorite (over 50 percent by weight), chloric acid (10 percent maximum concentration), hydrogen peroxide solutions (greater than 52 percent up to 91 percent), mono-(trichloro)-tetra-(monopotassium dichloro)-penta-s-triazinetrione, nitric acid, (fuming —more than 86 percent concentration), perchloric acid solutions (60 percent to 72 percent by weight), potassium bromate, potassium chlorate, potassium dichloro-s-triazinetrione (potassium dichloro-isocyanurate), sodium bromate, sodium chlorate, sodium chlorite (over 40 percent by weight) and

sodium dichloro-s-triazinetrione (sodium dichloroisocyanurate).

Class 2: barium bromate, barium chlorate, barium hypochlorite, barium perchlorate, barium permanganate, 1-bromo-3-chloro-5, 5-dimethylhydantoin, calcium chlorate, calcium chlorite, calcium hypochlorite (50 percent or less by weight), calcium perchlorate, calcium permanganate, chromium trioxide (chromic acid), copper chlorate, halane (1, 3-dichloro-5, 5-dimethylhydantoin), hydrogen peroxide (greater than 27.5 percent up to 52 percent), lead perchlorate, lithium chlorate, lithium hypochlorite (more than 39 percent available chlorine), lithium perchlorate, magnesium bromate, magnesium chlorate, magnesium perchlorate, mercurous chlorate, nitric acid (more than 40 percent but less than 86 percent), perchloric acid solutions (more than 50 percent but less than 60 percent), potassium perchlorate, potassium permanganate, potassium peroxide, potassium superoxide, silver peroxide, sodium chlorite (40 percent or less by weight), sodium perchlorate, sodium perchlorate monohydrate, sodium permanganate, sodium peroxide, strontium chlorate, strontium perchlorate, thallium chlorate, trichloro-s-triazinetrione (trichloroisocyanuric acid), urea hydrogen peroxide, zinc bromate, zinc chlorate and zinc permanganate.

Class 1: all inorganic nitrates (unless otherwise classified), all inorganic nitrites (unless otherwise classified), ammonium persulfate, barium peroxide, calcium peroxide, hydrogen peroxide solutions (greater than 8 percent up to 27.5 percent), lead dioxide, lithium hypochlorite (39 percent or less available chlorine), lithium peroxide, magnesium peroxide, manganese dioxide, nitric acid (40 percent concentration or less), perchloric acid solutions (less than 50 percent by weight), potassium dichromate, potassium percarbonate, potassium persulfate, sodium carbonate peroxide, sodium dichloro-s-triazinetrione dihydrate, sodium dichromate, sodium perborate (anhydrous), sodium perborate monohydrate, sodium perborate tetrahydrate, sodium percarbonate, sodium persulfate, strontium peroxide and zinc peroxide.

E102.1.8 Organic peroxides. Organic peroxides contain the double oxygen or peroxy (-o-o) group. Some are flammable compounds and subject to explosive decomposition. They are available as:

1. Liquids.
2. Pastes.
3. Solids (usually finely divided powers).

E102.1.8.1 Classification of organic peroxides according to hazard.

Unclassified: Unclassified organic peroxides are capable of detonation and are regulated in accordance with Chapter 33.

Class I: acetyl cyclohexane sulfonyl 60-65 percent concentration by weight, fulfonyl peroxide, benzoyl peroxide over 98 percent concentration, t-butyl hydroperoxide 90 percent, t-butyl peroxyacetate 75 percent, t-butyl peroxyisopropylcarbonate 92 percent, diisopropyl peroxydicarbonate 100 percent, di-n-propyl peroxydicarbonate 98 percent, and di-n-propyl peroxydicarbonate 85 percent.

Class II: acetyl peroxide 25 percent, t-butyl hydroperoxide 70 percent (with DTBP and t-BuOH diluents), t-butyl peroxybenzoate 98 percent, t-butyl peroxy-2-ethylhexanoate 97 percent, t-butyl peroxyisobutyrate 75 percent, t-butyl peroxyisopropyl-carbonate 75 percent, t-butyl peroxypivalate 75 percent, dybenzoyl peroxydicarbonate 85 percent, di-sec-butyl peroxydicarbonate 98 percent, di-sec-butyl peroxydicarbonate 75 percent, 1,1-di-(t-butylperoxy)-3,5,5-trimethyecyclohexane 95 percent, di-(2-ethythexyl) peroxydicarbonate 97 percent, 2,5-dymethyl-2-5 di (benzoylperoxy) hexane 92 percent, and peroxyacetic acid 43 percent.

Class III: acetyl cyclohexane sulfonal peroxide 29 percent, benzoyl peroxide 78 percent, benzoyl peroxide paste 55 percent, benzoyl peroxide paste 50 percent peroxide/50 percent butylbenzylphthalate diluent, cumene hydroperoxide 86 percent, di-(4-butylcyclohexyl) peroxydicarbonate 98 percent, t-butyl peroxy-2-ethylhexanoate 97 percent, t-butyl peroxyneodecanoate 75 percent, decanoyl peroxide 98.5 percent, di-t-butyl peroxide 99 percent, 1,1-di-(t-butylperoxy)3,5,5-trimethylcyclohexane 75 percent, 2,4-dichlorobenzoyl peroxide 50 percent, diisopropyl peroxydicarbonate 30 percent, 2,-5-dimethyl-2,5-di-(2-ethylhexanolyperoxy)-hexane 90 percent, 2,5-dimethyl-2,5-di-(t-butylperoxy) hexane 90 percent and methyl ethyl ketone peroxide 9 percent active oxygen diluted in dimethyl phthalate.

Class IV: benzoyl peroxide 70 percent, benzoyl peroxide paste 50 percent peroxide/15 percent water/35 percent butylphthalate diluent, benzoyl peroxide slurry 40 percent, benzoyl peroxide powder 35 percent, t-butyl hydroperoxide 70 percent, (with water diluent), t-butyl peroxy-2-ethylhexanoate 50 percent, decumyl peroxide 98 percent, di-(2-ethylhexal) peroxydicarbonate 40 percent, laurel peroxide 98 percent, p-methane hydroperoxide 52.5 percent, methyl ethyl ketone peroxide 5.5 percent active oxygen and methyl ethyl ketone peroxide 9 percent active oxygen diluted in water and glycols.

Class V: benzoyl peroxide 35 percent, 1,1-di-t-butyl peroxy 3,5,5-trimethylcyclohexane 40 percent, 2,5-di-(t-butyl peroxy) hexane 47 percent and 2,4-pentanedione peroxide 4 percent active oxygen.

E102.1.9 Pyrophoric materials. Examples include:

1. Gases: diborane, phosphine, silane.
2. Liquids: diethylaluminum chloride, diethylberyllium, diethylphosphine, diethylzinc, dimethylarsine, triethylaluminum etherate, triethylbismuthine, triethylboron, trimethylaluminum, trimethylgallium.

3. Solids: cesium, hafnium, lithium, white or yellow phosphorous, plutonium, potassium, rubidium, sodium, thorium.

E102.1.10 Unstable (reactive) materials. Examples include:

Class 4: acetyl peroxide, dibutyl peroxide, dinitrobenzene, ethyl nitrate, peroxyacetic acid and picric acid (dry) trinitrobenzene.

Class 3: hydrogen peroxide (greater than 52 percent), hydroxylamine, nitromethane, paranitroaniline, perchloric acid and tetrafluoroethylene monomer.

Class 2: acrolein, acrylic acid, hydrazine, methacrylic acid, sodium perchlorate, styrene and vinyl acetate.

Class 1: acetic acid, hydrogen peroxide 35 percent to 52 percent, paraldehyde and tetrahydrofuran.

E102.1.11 Water-reactive materials. Examples include:

Class 3: aluminum alkyls such as triethylaluminum, isobutylaluminum and trimethylaluminum; bromine pentafluoride, bromine trifluoride, chlorodiethylaluminium and diethylzinc.

Class 2: calcium carbide, calcium metal, cyanogen bromide, lithium hydride, methyldichlorosilane, potassium metal, potassium peroxide, sodium metal, sodium peroxide, sulfuric acid and trichlorosilane.

Class 1: acetic anhydride, sodium hydroxide, sulfur monochloride and titanium tetrachloride.

E102.1.12 Cryogenic fluids. The cryogenics listed will exist as compressed gases when they are stored at ambient temperatures.

1. Flammable: carbon monoxide, deuterium (heavy hydrogen), ethylene, hydrogen, methane.
2. Oxidizing: fluorine, nitric oxide, oxygen.
3. Corrosive: fluorine, nitric oxide.
4. Inert (chemically unreactive): argon, helium, krypton, neon, nitrogen, xenon.
5. Highly toxic: fluorine, nitric oxide.

E102.2 Health hazards. Materials classified in this section pose a health hazard.

E102.2.1 Highly toxic materials. Examples include:

1. Gases: arsine, cyanogen, diborane, fluorine, germane, hydrogen cyanide, nitric oxide, nitrogen dioxide, ozone, phosphine, hydrogen selenide, stibine.
2. Liquids: acrolein, acrylic acid, 2-chloroethanol (ethylene chlorohydrin), hydrazine, hydrocyanic acid, 2-methylaziridine (propylenimine), 2-methylacetonitrile (acetone cyanohydrin), methyl ester isocyanic acid (methyl isocyanate), nicotine, tetranitromethane and tetraethylstannane (tetraethyltin).
3. Solids: (aceto) phenylmercury (phenyl mercuric acetate), 4-aminopyridine, arsenic pentoxide, arsenic trioxide, calcium cyanide, 2-chloroacetophenone, aflatoxin B, decaborane(14), mercury (II) bromide (mercuric bromide), mercury (II) chloride (corrosive mercury chloride), pentachlorophenol, methyl parathion, phosphorus (white) and sodium azide.

E102.2.2 Toxic materials. Examples include:

1. Gases: boron trichloride, boron trifluoride, chlorine, chlorine trifluoride, hydrogen fluoride, hydrogen sulfide, phosgene, silicon tetrafluoride.
2. Liquids: acrylonitrile, allyl alcohol, alpha-chlorotoluene, aniline, 1-chloro-2,3-epoxypropane, chloroformic acid (allyl ester), 3-chloropropene (allyl chloride), o-cresol, crotonaldehyde, dibromomethane, diisopropylamine, diethyl ester sulfuric acid, dimethyl ester sulfuric acid, 2-furaldehyde (furfural), furfural alcohol, phosphorus chloride, phosphoryl chloride (phosphorus oxychloride) and thionyl chloride.
3. Solids: acrylamide, barium chloride, barium (II) nitrate, benzidine, p-benzoquinone, beryllium chloride, cadmium chloride, cadmium oxide, chloroacetic acid, chlorophenylmercury (phenyl mercuric chloride), chromium (VI) oxide (chromic acid, solid), 2,4-dinitrotoluene, hydroquinone, mercury chloride (calomel), mercury (II) sulfate (mercuric sulfate), osmium tetroxide, oxalic acid, phenol, P-phenylenediamine, phenylhydrazine, 4-phenylmorpholine, phosphorus sulfide, potassium fluoride, potassium hydroxide, selenium (IV) disulfide and sodium fluoride.

E102.2.3 Corrosives. Examples include:

1. Acids: Examples: chromic, formic, hydrochloric (muriatic) greater than 15 percent, hydrofluoric, nitric (greater than 6 percent, perchloric, sulfuric (4 percent or more).
2. Bases (alkalis): hydroxides—ammonium (greater than 10 percent), calcium, potassium (greater than 1 percent), sodium (greater than 1 percent); certain carbonates—potassium.
3. Other corrosives: bromine, chlorine, fluorine, iodine, ammonia.

Note: Corrosives that are oxidizers, e.g., nitric acid, chlorine, fluorine; or are compressed gases, e.g., ammonia, chlorine, fluorine; or are water-reactive, e.g., concentrated sulfuric acid, sodium hydroxide, are physical hazards in addition to being health hazards.

SECTION E103
EVALUATION OF HAZARDS

E103.1 Degree of hazard. The degree of hazard present depends on many variables which should be considered individually and in combination. Some of these variables are as shown in Sections E103.1.1 through E103.1.5.

E103.1.1 Chemical properties of the material. Chemical properties of the material determine self reactions and reactions which may occur with other materials. Generally,

materials within subdivisions of hazard categories will exhibit similar chemical properties. However, materials with similar chemical properties may pose very different hazards. Each individual material should be researched to determine its hazardous properties and then considered in relation to other materials that it might contact and the surrounding environment.

E103.1.2 Physical properties of the material. Physical properties, such as whether a material is a solid, liquid or gas at ordinary temperatures and pressures, considered along with chemical properties will determine requirements for containment of the material. Specific gravity (weight of a liquid compared to water) and vapor density (weight of a gas compared to air) are both physical properties which are important in evaluating the hazards of a material.

E103.1.3 Amount and concentration of the material. The amount of material present and its concentration must be considered along with physical and chemical properties to determine the magnitude of the hazard. Hydrogen peroxide, for example, is used as an antiseptic and a hair bleach in low concentrations (approximately 8 percent in water solution). Over 8 percent, hydrogen peroxide is classed as an oxidizer and is toxic. Above 90 percent, it is a Class 4 oxidizer "that can undergo an explosive reaction when catalyzed or exposed to heat, shock or friction," a definition which incidentally also places hydrogen peroxide over 90-percent concentration in the unstable (reactive) category. Small amounts at high concentrations may present a greater hazard than large amounts at low concentrations.

E103.1.3.1 Mixtures. Gases—toxic and highly toxic gases include those gases which have an LC_{50} of 2,000 parts per million (ppm) or less when rats are exposed for a period of 1 hour or less. To maintain consistency with the definitions for these materials, exposure data for periods other than 1 hour must be normalized to 1 hour. To classify mixtures of compressed gases that contain one or more toxic or highly toxic components, the LC_{50} of the mixture must be determined. Mixtures that contain only two components are binary mixtures. Those that contain more than two components are multi-component mixtures. When two or more hazardous substances (components) having an LC_{50} below 2,000 ppm are present in a mixture, their combined effect, rather than that of the individual substances (components), must be considered. In the absence of information to the contrary, the effects of the hazards present must be considered as additive. Exceptions to the above rule may be made when there is a good reason to believe that the principal effects of the different harmful substances (components) are not additive.

For binary mixtures where the hazardous component is diluted with a nontoxic gas such as an inert gas, the LC_{50} of the mixture is estimated by use of the following formula:

$$LC_{50m} = \frac{1}{[C_i / LC_{50i}]} \qquad \textbf{(Equation E-1)}$$

For multi-component mixtures where more than one component has a listed LC_{50}, the LC_{50} of the mixture is estimated by use of the following formula:

$$C_{50m} = \frac{1}{(C_{il} / LC_{50il}) + (C_{i2} / LC_{50i2}) + (C_{in} / LC_5)} \qquad \textbf{(Equation E-2)}$$

where:

LC_{50m}= LC_{50} of the mixture in parts per million (ppm).

C_i = concentration of component (i) in decimal percent. The concentration of the individual components in a mixture of gases is to be expressed in terms of percent by volume.

LC_{50i} = LC_{50} of component (i). The LC_{50} of the component is based on a 1-hour exposure. LC_{50} data which are for other than 1-hour exposures shall be normalized to 1-hour by multiplying the LC_{50} for the time determined by the factor indicated in Table E103.1.3.1. The preferred mammalian species for LC_{50} data is the rat, as specified in the definitions of toxic and highly toxic in Chapter 2 of the *International Fire Code*. If data for rats are unavailable, and in the absence of information to the contrary, data for other species may be utilized. The data shall be taken in the following order of preference: rat, mouse, rabbit, guinea pig, cat, dog, monkey.

i_n = component 1, component 2 and so on to the nth component.

Examples:

a. What is the LC_{50} of a mixture of 15-percent chlorine, 85-percent nitrogen?

The 1-hour (rat) LC_{50} of pure chlorine is 293 ppm.

LC_{50m} = 1 / (0.15 / 293) or 1,953 ppm. Therefore, the mixture is toxic.

b. What is the LC_{50} of a mixture of 15-percent chlorine, 15-percent fluorine and 70-percent nitrogen? The 1-hour (rat) LC_{50} of chlorine is 293 ppm. The 1-hour (rat) LC_{50} of fluorine is 185 ppm.

LC_{50m} = 1 / (0.15 / 293) + (0.15 / 185) or 755 ppm. Therefore the mixture is toxic.

c. Is the mixture of 1 percent phosphine in argon toxic or highly toxic? The 1-hour (rat) LC_{50} is 11 ppm.

LC_{50m} = 1 / [0.01 / (11 2)] or 2,200 ppm. Therefore the mixture is neither toxic nor highly toxic. Note that the 4-hour LC_{50} of 11 ppm was normalized to 1-hour by use of Section E103.1.3.1.

TABLE E103.1.3.1
NORMALIZATION FACTOR

TIME (hours)	MULTIPLY BY
0.5	0.7
1.0	1.0
1.5	1.2
2.0	1.4
3.0	1.7
4.0	2.0
5.0	2.2
6.0	2.4
7.0	2.6
8.0	2.8

E103.1.4 Actual use, activity or process involving the material. The definition of handling, storage and use in closed systems refers to materials in packages or containers. Dispensing and use in open containers or systems describes situations where a material is exposed to ambient conditions or vapors are liberated to the atmosphere. Dispensing and use in open systems, then, are generally more hazardous situations than handling, storage or use in closed systems. The actual use or process may include heating, electric or other sparks, catalytic or reactive materials and many other factors which could affect the hazard and must therefore be thoroughly analyzed.

E103.1.5 Surrounding conditions. Conditions such as other materials or processes in the area, type of construction of the structure, fire protection features (e.g., fire walls, sprinkler systems, alarms, etc.), occupancy (use) of adjoining areas, normal temperatures, exposure to weather, etc., must be taken into account in evaluating the hazard.

E103.2 Evaluation questions. The following are sample evaluation questions:

1. What is the material? Correct identification is important; exact spelling is vital. Check labels, MSDS, ask responsible persons, etc.
2. What are the concentration and strength?
3. What is the physical form of the material? Liquids, gases and finely divided solids have differing requirements for spill and leak control and containment.
4. How much material is present? Consider in relation to permit amounts, maximum allowable quantity per control area (from Group H occupancy requirements), amounts which require detached storage and overall magnitude of the hazard.
5. What other materials (including furniture, equipment and building components) are close enough to interact with the material?
6. What are the likely reactions?
7. What is the activity involving the material?
8. How does the activity impact the hazardous characteristics of the material? Consider vapors released or hazards otherwise exposed.
9. What must the material be protected from? Consider other materials, temperature, shock, pressure, etc.
10. What effects of the material must people and the environment be protected from?
11. How can protection be accomplished? Consider:
    - 11.1. Proper containers and equipment.
    - 11.2. Separation by distance or construction.
    - 11.3. Enclosure in cabinets or rooms.
    - 11.4. Spill control, drainage and containment.
    - 11.5. Control systems — ventilation, special electrical, detection and alarm, extinguishment, explosion venting, limit controls, exhaust scrubbers and excess flow control.
    - 11.6. Administrative (operational) controls—signs, ignition source control, security, personnel training, established procedures, storage plans and emergency plans.

    Evaluation of the hazard is a strongly subjective process; therefore, the person charged with this responsibility must gather as much relevant data as possible so that the decision will be objective and within the limits prescribed in laws, policies and standards.

    It may be necessary to cause the responsible persons in charge to have tests made by qualified persons or testing laboratories to support contentions that a particular material or process is or is not hazardous. See Section 104.7.2 of the *International Fire Code*.

APPENDIX F
HAZARD RANKING

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION F101
GENERAL

F101.1 Scope. Assignment of levels of hazards to be applied to specific hazard classes as required by NFPA 704 shall be in accordance with this appendix. The appendix is based on application of the degrees of hazard as defined in NFPA 704 arranged by hazard class as for specific categories defined in Chapter 2 of the *International Fire Code* and used throughout.

F101.2 General. The hazard rankings shown in Table F101.2 have been established by using guidelines found within NFPA 704. As noted in Section 4.2 of NFPA 704, there could be specific reasons to alter the degree of hazard assigned to a specific material; for example, ignition temperature, flammable range or susceptibility of a container to rupture by an internal combustion explosion or to metal failure while under pressure or because of heat from external fire. As a result, the degree of hazard assigned for the same material can vary when assessed by different people of equal competence.

The hazard rankings assigned to each class represent reasonable minimum hazard levels for a given class based on the use of criteria established by NFPA 704. Specific cases of use or storage may dictate the use of higher degrees of hazard in certain cases.

SECTION F102
REFERENCED STANDARDS

ICC	IFC	International Fire Code	F101.1
NFPA	704	Identification of the Hazards of Materials for Emergency Response	F101.1, F101.2

TABLE F101.2
FIRE FIGHTER WARNING PLACARD DESIGNATIONS BASED ON HAZARD CLASSIFICATION CATEGORIES

HAZARD CATEGORY	DESIGNATION
Combustible liquid II	F2
Combustible liquid IIIA	F2
Combustible liquid IIIB	F1
Combustible dust	F4
Combustible fiber	F3
Cryogenic flammable	F4, H3
Cryogenic oxidizing	OX, H3
Explosive	R4
Flammable solid	F2
Flammable gas (gaseous)	F4
Flammable gas (liquefied)	F4
Flammable liquid IA	F4
Flammable liquid IB	F3
Flammable liquid IC	F3
Organic peroxide, UD	R4
Organic peroxide I	F4, R3
Organic peroxide II	F3, R3
Organic peroxide III	F2, R2
Organic peroxide IV	F1, R1
Organic peroxide V	Nonhazard
Oxidizing gas (gaseous)	OX
Oxidizing gas (liquefied)	OX
Oxidizer 4	OX
Oxidizer 3	OX
Oxidizer 2	OX
Pyrophoric gases	F4
Pyrophoric solids, liquids	F3
Unstable reactive 4D	R4
Unstable reactive 3D	R4
Unstable reactive 3N	R3
Unstable reactive 2	R2
Water reactive 3	W, R3
Water reactive 2	W, R2
Corrosive	H3, COR
Toxic	H3
Highly toxic	H4

F—Flammable category.
R—Reactive category.
H—Health category.
W—Special hazard: water reactive.
OX—Special hazard: oxidizing properties.
COR—Corrosive.
UD—Unclassified detonable material.
4D—Class 4 detonable material.
3D—Class 3 detonable material.
3N—Class 3 nondetonable material.

APPENDIX G

CRYOGENIC FLUIDS—WEIGHT AND VOLUME EQUIVALENTS

This appendix is for information purposes and is not intended for adoption.

SECTION G101
GENERAL

G101.1 Scope. This appendix is used to convert from liquid to gas for cryogenic fluids.

G101.2 Conversion. Table G101.2 shall be used to determine the equivalent amounts of cryogenic fluids in either the liquid or gas phase.

G101.2.1 Use of the table. To use Table G101.2, read horizontally across the line of interest. For example, to determine the number of cubic feet of gas contained in 1.0 gallon (3.785 L) of liquid argon, find 1.000 in the column entitled "Volume of Liquid at Normal Boiling Point." Reading across the line under the column entitled "Volume of Gas at 70°F and 1 atmosphere 14.7 psia," the value of 112.45 cubic feet (3.184 m^3) is found.

G101.2.2 Other quantities. If other quantities are of interest, the numbers obtained can be multiplied or divided to obtain the quantity of interest. For example, to determine the number of cubic feet of argon gas contained in a volume of 1,000 gallons (3785 L) of liquid argon at its normal boiling point, multiply 112.45 by 1,000 to obtain 112,450 cubic feet (3184 m^3).

TABLE G101.2
WEIGHT AND VOLUME EQUIVALENTS FOR COMMON CRYOGENIC FLUIDS

CRYOGENIC FLUID	WEIGHT OF LIQUID OR GAS		VOLUME OF LIQUID AT NORMAL BOILING POINT		VOLUME OF GAS AT NTP	
	Pounds	Kilograms	Liters	Gallons	Cubic feet	Cubic meters
Argon	1.000	0.454	0.326	0.086	9.67	0.274
	2.205	1.000	0.718	0.190	21.32	0.604
	3.072	1.393	1.000	0.264	29.71	0.841
	11.628	5.274	3.785	1.000	112.45	3.184
	10.340	4.690	3.366	0.889	100.00	2.832
	3.652	1.656	1.189	0.314	35.31	1.000
Helium	1.000	0.454	3.631	0.959	96.72	2.739
	2.205	1.000	8.006	2.115	213.23	6.038
	0.275	0.125	1.000	0.264	26.63	0.754
	1.042	0.473	3.785	1.000	100.82	2.855
	1.034	0.469	3.754	0.992	100.00	2.832
	0.365	0.166	1.326	0.350	35.31	1.000
Hydrogen	1.000	0.454	6.409	1.693	191.96	5.436
	2.205	1.000	14.130	3.733	423.20	11.984
	0.156	0.071	1.000	0.264	29.95	0.848
	0.591	0.268	3.785	1.000	113.37	3.210
	0.521	0.236	3.339	0.882	100.00	2.832
	0.184	0.083	1.179	0.311	35.31	1.000
Oxygen	1.000	0.454	0.397	0.105	12.00	0.342
	2.205	1.000	0.876	0.231	26.62	0.754
	2.517	1.142	1.000	0.264	30.39	0.861
	9.527	4.321	3.785	1.000	115.05	3.250
	8.281	3.756	3.290	0.869	100.00	2.832
	2.924	1.327	1.162	0.307	35.31	1.000
Nitrogen	1.000	0.454	0.561	0.148	13.80	0.391
	2.205	1.000	1.237	0.327	30.43	0.862
	1.782	0.808	1.000	0.264	24.60	0.697
	6.746	3.060	3.785	1.000	93.11	2.637
	7.245	3.286	4.065	1.074	100.00	2.832
	2.558	1.160	1.436	0.379	35.31	1.000
LNG[a]	1.000	0.454	1.052	0.278	22.968	0.650
	2.205	1.000	2.320	0.613	50.646	1.434
	0.951	0.431	1.000	0.264	21.812	0.618
	3.600	1.633	3.785	1.000	82.62	2.340
	4.356	1.976	4.580	1.210	100.00	2.832
	11.501	5.217	1.616	0.427	35.31	1.000

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m^3, °C = [(°F)-32]/1.8, 1 pound per square inch atmosphere = 6.895 kPa.

a. The values listed for liquefied natural gas (LNG) are "typical" values. LNG is a mixture of hydrocarbon gases, and no two LNG streams have exactly the same composition.

INDEX

A

B

C

D

E

F

G

H

I

K

L

M

N

O

Q

R

S

T

U

V

W

Z

Savings. Services. Success.

Check into

International Code Council®

Your career deserves the added prestige that comes with membership in the International Code Council. The International Code Council offers complete support for building safety and fire prevention professionals. Sign up today to begin enjoying these exclusive benefits.

- FREE code opinions for ALL International Code Council (ICC®) members
- Substantial discounts on *I-Codes*®, code commentaries, supplements, updates, referenced standards and other publications; in-person, online and telephone seminars; and technical services including plan review
- FREE code book with new membership (Save up to $100)*
- Subscription to *Building Safety Journal*™ (ICC's magazine), *Building Safety Bulletin* (ICC's newsletter), and *eNews* (ICC's electronic newsletter) included in member dues
- FREE job postings in the members-only area of the ICC Web site
- FREE (upon request) monographs and other publications regarding proposed revisions to the *I-Codes*
- National representation in organizations involving standards development, code administration and code enforcement matters
- Voting privileges for preliminary hearings on proposed changes to any of the *I-Codes***
- Access to the member-only area of the International Code Council Web site *www.iccsafe.org*. This area contains a searchable membership directory, an order area showing member discount pricing, and other valuable services available only to International Code Council members
- An International Code Council membership card, wall certificate and International Code Council logo decals to identify your commitment to the community and to the safety of people worldwide

**A new member has not had an active membership with ICC, BOCA, ICBO or SBCCI within the last five years.*

***Contact your Member Services Representative for details on voting privileges.*

ICC
INTERNATIONAL CODE COUNCIL®
People Helping People Build a Safer World™

Call 1-888-ICC-SAFE (422-7233), ext. 33804 or visit www.iccsafe.org/membership

REF 66-05-274

INTERNATIONAL CODE COUNCIL®

People Helping People Build a Safer World™

Membership Application

This form may be photocopied

Please refer to Tracking Number 66-05-274 when applying.

MEMBERSHIP CATEGORIES AND DUES*— ANNUAL MEMBERSHIP

Special membership structures are also available for Educational Institutions and Federal Agencies. For more information, please visit www.iccsafe.org/membership or call 1-888-ICC-SAFE (422-7233), x33804.

GOVERNMENTAL MEMBER**

Government/Municipality (including agencies, departments or units) engaged in administration, formulation or enforcement of laws, regulations or ordinances relating to public health, safety and welfare. Annual member dues (by population) are shown below. Please verify the current ICC membership status of your employer prior to applying.

☐ Up to 50,000.....$100 ☐ 50,001–150,000..... $180 ☐ 150,001+..... $280

**A Governmental Member may designate 4 to 12 voting representatives (based on population) who are employees or officials of that governmental member and are actively engaged on a full- or part-time basis in the administration, formulation or enforcement of laws, regulations or ordinances relating to public health, safety and welfare. Number of representatives is based on population. All dues for representatives have been included in the annual member dues payment. Please call 1-888-ICC-SAFE (422-7233), x33804 for information about how to designate your voting representatives.

☐ **CORPORATE MEMBERS ($300)** An association, society, testing laboratory, manufacturer, company or corporation

INDIVIDUAL MEMBERS

☐ **PROFESSIONAL ($150)** A design professional duly licensed or registered by any state or other recognized governmental agency

☐ **COOPERATING ($150)** An individual who is interested in International Code Council purposes and objectives and would like to take advantage of membership benefits

☐ **CERTIFIED ($75)** An individual who holds a current Legacy or International Code Council certification

☐ **ASSOCIATE ($35)** An employee of a current ICC Governmental Member

☐ **STUDENT ($25)** An individual who is enrolled in classes or a course of study including at least 12 hours of classroom instruction per week

☐ **RETIRED ($20)** A former governmental representative, corporate or individual member who has retired

New Governmental and Corporate Members will receive a free package of 7 code books. New Individual Members will receive one free code book. Upon receipt of your completed application and payment, you will be contacted by an ICC Member Services Representative regarding your free code package or code book. For more information, please visit www.iccsafe.org/membership or call 1-888-ICC-SAFE (422-7233), x33804.

Please print clearly or type information below:

Name

Name of Jurisdiction, Association, Institute or Company, etc.

Title

Billing Address

City State Zip+4

Street Address for Shipping

City State Zip+4

E-mail

Telephone

Tax Exempt Number (If applicable, must attach copy of tax exempt license if claiming an exemption)

Payment Information:

VISA, MC, AMEX or DISCOVER Account Number **Exp. Date**

Return this application to:
International Code Council
Attn: Membership
5360 Workman Mill Road
Whittier, CA 90601-2298

Toll Free: 1-888-ICC-SAFE (1-888-422-7233), x33804
FAX: (562) 692-6031 (Los Angeles District Office)
Or, apply online at **www.iccsafe.org/membership.**
Please refer to Tracking Number 66-05-274 when applying.

If you have any questions about membership in the International Code Council, call 1-888-ICC-SAFE (1-888-422-7233), x33804 and request a Member Services Representative.

REF 66-05-274

*Membership categories and dues subject to change. Please visit www.iccsafe.org/membership for the most current information.

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

SECTION 202
GENERAL DEFINITIONS

OCCUPANCY CLASSIFICATION. For the purposes of this code, certain occupancies are defined as follows:

[B] Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering together of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation.

Exceptions:

1. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.
2. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or classified as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and is accessory to another occupancy shall be classified as a Group B occupancy or classified as part of that occupancy.

Assembly occupancies shall include the following: (No change to remainder of Group A text.) *(posted 6-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

CHAPTER 5
FIRE SERVICE FEATURES

504.3 Stairway access to roof. New buildings four or more stories in height, except those with a roof slope greater than four units vertical in 12 units horizontal (33.3 percent slope), shall be provided with a stairway to the roof. Stairway access to the roof shall be in accordance with Section ~~1009.12~~ 1009.11. Such stairway shall be marked at street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such occupancy classification. *(posted 6-27-07)*

CHAPTER 9
FIRE PROTECTION SYSTEMS

907.2.7 Group M. A manual fire alarm system shall be installed in Group M occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. The initiation of a signal from a manual fire alarm box shall initiate alarm notification appliances as required by Section 907.10.

Exceptions:

1. A manual fire alarm system is not required in covered mall buildings complying with Section 402 of the *International Building Code*.

2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the alarm notification appliances will automatically activate upon sprinkler water flow. *(posted 6-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

CHAPTER 10
MEANS OF EGRESS

1007.5.1 Openness. Platform lifts on an accessible means of egress shall not be installed in a fully enclosed hoistway ~~or fire- rated shaft~~. *(posted 06-27-07)*

1008.1.3.3 Horizontal sliding doors. In other than Group H occupancies, horizontal sliding doors permitted to be a component of a means of egress in accordance with Exception ~~5~~ 6 to Section 1008.1.2 shall comply with all of the following criteria: (No change to Items 1 through 8.) *(posted 06-27-07)*

1023.1 Exterior exit ramps and stairways. Exterior exit ramps and stairways serving as an element of a required means of egress shall comply with this section.

> **Exception:** Exterior exit ramps and stairways for outdoor stadiums complying with Section ~~1019.1~~ 1020.1, Exception 2. *(posted 06-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

APPENDIX D
FIRE APPARATUS ACCESS ROADS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least ~~three~~ two means of fire apparatus access for each structure. *(posted 06-27-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 8
INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS

805.1.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537 or California Technical Bulletin 133, as follows:

1. (No change)

2. The total energy released by the single upholstered furniture item during the first ~~5~~ 10 minutes of the test shall not exceed ~~24~~ 25 megajoules (MJ).

Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 9
FIRE PROTECTION SYSTEMS

914.4.1 Automatic sprinkler system. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered, provided that portion of the building is separated from the atrium portion by not less than a 2-hour fire resistance-rated fire barrier or horizontal assembly, or both. *(posted 1-23-07)*

2. Where the ceilings of the atrium are more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 10
MEANS OF EGRESS

1012.4 Continuity. Handrail-gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

Exceptions:

1. Handrails within dwelling units are permitted to be interrupted by a newel post at a stair or ramp landing. *(posted 1-23-07)*
2. And 3. (No change)

1012.5 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. At stairways where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp~~s~~ runs.

Exceptions:

1. And 2. (No change) *(posted 1-23-07)*

1020.1.7 Smokeproof enclosures. In buildings required to comply with Section 403 or 405 of the International Building Code, each of the exits of a building that serves stories where the floor surface is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access or more than 30 feet (9144 mm) below the level of exit discharge serving such floor levels shall be a smokeproof enclosure or pressurized stairway in accordance with Section 909.20 of the *International Building Code*. *(posted 12-14-06)*

1023.1 Exterior exit ramps and stairways. Exterior exit ramps and stairways serving as an element of a required means of egress shall comply with this section.

Exception: Exterior exit ramps and stairways for outdoor stadiums complying with Section ~~1019.1~~ 1020.1, Exception 2. *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 14
FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION

~~**[B]1411.3 Stairway floor number signs.** Temporary stairway floor number signs shall be provided in accordance with the requirements of Section 1012.1.7.~~ *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 33
EXPLOSIVES AND FIREWORKS

TABLE 3301.8.1(1), Column 4 ("Operating Building"), Rows 4 and 5: Table ~~3304.5.2(2)~~ 3304.5.2(1) *(posted 1-23-07)*

TABLE 3301.8.1(2), Column 4 ("Operating Building"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(3)~~ 3304.5.2(2) *(posted 1-23-07)*

Section 3306.5.2.3, Item 1 should read as follows:

3306.5.2.3 Small arms primers. Commercial stocks of small arms primers shall be stored as follows:

1. Quantities not to exceed 750,000 small arms primers stored in a building shall be arranged such that not more than 100,000 small arms primers are stored in any one pile and piles are at least 15 feet (4572 mm) apart. *(posted 12-13-06)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 45
REFERENCED STANDARDS

ASME:

A13.1—96 (Reaffirmed 2002) Scheme for the Identification of Piping Systems....(Posted 1-23-07)

UL:

268—96 ~~Control Units for Fire Protective~~ Smoke Detectors for Fire Alarm Signaling Systems—with Revisions through October 2003..... *(posted 1-23-07)*

APPENDIX B
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

SECTION B106
REFERENCED STANDARDS

ICC IBC-06 International Building Code B104.2, Table B105.1 *(posted 1-23-07)*

ICC IWUIC-06 International Wildland-Urban Interface Code B103.3 *(posted 1-23-07)*

NFPA 1142-01 Standard on Water Supplies for Suburban and Rural Fire Fighting B103.3 *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

APPENDIX F
HAZARD RANKING

SECTION F102
REFERENCED STANDARDS

ICC IFC-06 International Fire Code F101.1 *(posted 1-23-07)*

NFPA 704-01 Identification of the Hazards of Materials for Emergency Response F101.1, F101.2 *(posted 1-23-07)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 2
DEFINITIONS

Section 202: *Revise as follows:*

OCCUPANCY CLASSIFICATION.

[B] Institutional Group I.

Group I-2. This occupancy shall include...(no change)

A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code*.

A child care facility that provides care on a 24-hour basis to more than five children $2^1/_2$ years of age or less shall be classified as Group I-2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 6
BUILDING SERVICES AND SYSTEMS

Section 603.6.1 should read as follows:

603.6.1 Masonry chimneys. Masonry chimneys that, upon inspection, are found to be without a flue liner and that have open mortar joints which will permit smoke or gases to be discharged into the building, or which are cracked as to be dangerous, shall be repaired or relined with a listed chimney liner system installed in accordance with the manufacturer's installation instructions or a flue lining system installed in accordance with the requirements of the *International Building Code* and appropriate for the intended class of chimney service. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 9
FIRE PROTECTION SYSTEMS

904.2.1 Hood system suppression. Each required commercial kitchen exhaust hood and duct system required by Section ~~610~~ 609 to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code. *(posted 7-10-06)*

909.9.2: Equation 9-8 is deleted. *(posted 7-10-06)*

Table 910.3 : Revise the section references in column 1, rows 3 through 6 of the table as follows: ~~910.2.3~~ 910.2.2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 10
MEANS OF EGRESS

1007.2 Continuity and components. *(No change)*
Items 1 through 5. *(No change)*
6. Horizontal exits complying with Section ~~1021~~ 1022. *(posted 7-10-06)*
Items 7 and 8. *(No change)*

1007.6.2 Separation. Each area of refuge shall be separated from the remainder of the story by a smoke barrier complying with Section 709 or a horizontal exit complying with Section ~~1021~~ 1022. Each area of refuge shall be designed to minimize the intrusion of smoke.

Exception: Areas of refuge located within a vertical exit enclosure. *(posted 7-10-06)*

1008.1 Doors. Means of egress doors shall meet the requirements of this section. Doors serving a means of egress system shall meet the requirements of this section and Section ~~1017.2~~ 1018.2. …….*(posted 7-10-06)*

Table 1016.1: *Revise column 3 and add note c, as follows:*

WITH SPRINKLER SYSTEM ~~b~~ (feet)
250 [b]
300 [c]
400 [c]
75 [c]
100 [c]
150 [c]
175 [c]
200 [c]
200 [c]

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. *(posted 7-10-06)*

1023.5 Location. Exterior exit ramps and stairways shall be located in accordance with Section ~~1023.3~~ 1024.3. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 15
FLAMMABLE FINISHES

1505.4.1 Fixed fire-extinguishing equipment. An approved automatic fire-extinguishing system or dip tank cover in accordance with Section ~~1505.7~~ 1505.3.4 shall be provided for the following dip tanks: (remainder of text unchanged)
(posted 7-10-06)

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 18
SEMICONDUCTOR FABRICATION FACILITIES

Sections 1805.2.2.1, 1805.2.2.2 and 1805.2.2.3: *Delete without substitution. (posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 33
EXPLOSIVES AND FIREWORKS

3301.8.1.1 Mass-detonating explosives. The total net explosive weight of Division 1.1, 1.2 or 1.5 explosives shall be used. See Table ~~3304.5.2(2)~~ 3304.5.2(1) or Table 3305.3 as appropriate.

> **Exception:** When the TNT equivalence of the explosive material has been determined, the equivalence is allowed to be used to establish the net explosive weight. *(posted 7-10-06)*

3301.8.1.2 Nonmass-detonating explosives (excluding Division 1.4). Nonmass-detonating explosives shall be as follows:

1. Division 1.3 propellants. The total weight of the propellants alone shall be the net explosive weight. The net weight of propellant shall be used. See Table ~~3304.5.2(3)~~ 3304.5.2(2).

2. Combinations of bulk metal powder and pyrotechnic compositions. The sum of the net weights of metal powders and pyrotechnic compositions in the containers shall be the net explosive weight. See Table ~~3304.5.2(3)~~ 3304.5.2(2). *(posted 7-10-06)*

TABLE 3301.8.1(1), Column 2 ("Magazine"), Column 6 ("Inhabited Building") and Column 8 ("Public Traffic Route"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(2)~~ 3304.5.2(1) *(posted 7-10-06)*

TABLE 3301.8.1(2), Column 2 ("Magazine"), Column 6 ("Inhabited Building" and Column 8 ("Public Traffic Route"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(3)~~ 3304.5.2(2) *(posted 7-10-06)*

TABLE 3301.8.1(3), Column 2 ("Magazine"), Column 4 ("Operating Building"), Column 6("Inhabited Building") and Column 8 ("Public Traffic Route") in Rows 2, 3, 4 and 5: Table ~~3304.5.2(4)~~ 3304.5.2(3) *(posted 7-10-06)*

3301.8.1.3 Combinations of mass-detonating and nonmass-detonating explosives (excluding Division 1.4). Combination of mass-detonating and nonmass-detonating explosives shall be as follows:

1. When Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity considered first as 1.1 and then as 1.2. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.2 is known, the TNT equivalent weight of the 1.2 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table ~~3304.5.2(3)~~ 3304.5.2(2) or Table 3305.3 as appropriate.

2. When Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1 and then as 1.3. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.3 is known, the TNT equivalent weight of the 1.3 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table ~~3304.5.2(2)~~ 3304.5.2(1), ~~3304.5.2(3)~~ 3304.5.2(2) or 3305.3, as appropriate.

3. When Division 1.1, 1.2 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1, next as 1.2 and finally as 1.3. The required distance is the greatest of the three. As allowed by paragraphs 1 and 2 above, TNT equivalent weights for 1.2 and 1.3 items are allowed to be used to determine the net weight of explosives for Division 1.1 distance determination. Table ~~3304.5.2(2)~~ 3304.5.2(1) or 3305.3 shall be used when TNT equivalency is used to establish the net explosive weight.

4. For composite pyrotechnic items Division 1.1 and Division 1.3, the sum of the net weights of the pyrotechnic composition and the explosives involved shall be used. See Tables ~~3304.5.2(2)~~ 3304.5.2(1) and ~~3304.5.2(3)~~ 3304.5.2(2).

Table 3304.5.2(1), For Row "Pounds over 500"/"Pounds not over 600", Column 3: ~~240~~ 340 *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 34
FLAMMABLE AND COMBUSTIBLE LIQUIDS

3404.3.2 Liquid storage cabinets. Where other sections of this code require that liquid containers be stored in storage cabinets, such cabinets and storage shall be in accordance with Sections 3404.3.2.1 through ~~3404.3.2.3~~ 3404.3.2.2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 35
FLAMMABLE GASES

Insert Section 3503.1.6 to read as follows:

3503.1.6 Liquefied flammable gases and flammable gases in solution. Containers of liquefied flammable gases and flammable gases in solution shall be positioned in the upright position or positioned so that the pressure relief valve is in direct contact with the vapor space of the container.

Exceptions:

1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or less.
2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons (5 L), designed to preclude the discharge of liquid from safety relief devices. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 36
FLAMMABLE SOLIDS

3606.1 General. Storage, use, handling and processing of magnesium, including the pure metal and alloys of which the major part is magnesium, shall be in accordance with Chapter 27 and Sections 3602.2 through ~~3606.8~~ 3606.5.8. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 38
LIQUEFIED PETROLEUM GASES

Section 3809.14 Alternative location and protection of storage: *Delete (posted 7-10-06)*

Section <u>3809.14</u> ~~3809.15~~ Alternative location and protection of storage: *Renumber (posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 45
REFERENCED STANDARDS

ASME:
A17.1—2004 Safety Code for Elevators and Escalators with A17.1a-2004 Addenda and A17.1S Supplement 2005
(posted 7-10-06)

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

APPENDIX D
FIRE APPARATUS ACCESS ROADS

D107.1 One- or two-family dwelling residential developments. Developments of...*(no change)*

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or ~~903.3.1.3.3~~ 903.3.1.3 , access from two directions shall not be required.

2. *(No Change) (posted 7-10-06)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

SECTION 202
GENERAL DEFINITIONS

OCCUPANCY CLASSIFICATION. For the purposes of this code, certain occupancies are defined as follows:

[B] Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering together of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation.

Exceptions:

1. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.
2. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or classified as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and is accessory to another occupancy shall be classified as a Group B occupancy or classified as part of that occupancy.

Assembly occupancies shall include the following: (No change to remainder of Group A text.) *(posted 6-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

CHAPTER 5
FIRE SERVICE FEATURES

504.3 Stairway access to roof. New buildings four or more stories in height, except those with a roof slope greater than four units vertical in 12 units horizontal (33.3 percent slope), shall be provided with a stairway to the roof. Stairway access to the roof shall be in accordance with Section ~~1009.12~~ 1009.11. Such stairway shall be marked at street and floor levels with a sign indicating that the stairway continues to the roof. Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such occupancy classification. *(posted 6-27-07)*

CHAPTER 9
FIRE PROTECTION SYSTEMS

907.2.7 Group M. A manual fire alarm system shall be installed in Group M occupancies having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. The initiation of a signal from a manual fire alarm box shall initiate alarm notification appliances as required by Section 907.10.

Exceptions:

1. A manual fire alarm system is not required in covered mall buildings complying with Section 402 of the *International Building Code*.

2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the alarm notification appliances will automatically activate upon sprinkler water flow. *(posted 6-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

CHAPTER 10
MEANS OF EGRESS

1007.5.1 Openness. Platform lifts on an accessible means of egress shall not be installed in a fully enclosed hoistway ~~or fire- rated shaft~~. *(posted 06-27-07)*

1008.1.3.3 Horizontal sliding doors. In other than Group H occupancies, horizontal sliding doors permitted to be a component of a means of egress in accordance with Exception ~~5~~ 6 to Section 1008.1.2 shall comply with all of the following criteria: (No change to Items 1 through 8.) *(posted 06-27-07)*

1023.1 Exterior exit ramps and stairways. Exterior exit ramps and stairways serving as an element of a required means of egress shall comply with this section.

> **Exception:** Exterior exit ramps and stairways for outdoor stadiums complying with Section ~~1019.1~~ 1020.1, Exception 2. *(posted 06-27-07)*

2006 International Fire Code Errata

THIRD PRINTING (Updated June 27, 2007)

APPENDIX D
FIRE APPARATUS ACCESS ROADS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least ~~three~~ two means of fire apparatus access for each structure. *(posted 06-27-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 8
INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS

805.1.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537 or California Technical Bulletin 133, as follows:

1. (No change)

2. The total energy released by the single upholstered furniture item during the first ~~5~~ 10 minutes of the test shall not exceed ~~24~~ 25 megajoules (MJ).

Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 9
FIRE PROTECTION SYSTEMS

914.4.1 Automatic sprinkler system. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered, provided that portion of the building is separated from the atrium portion by not less than a 2-hour fire resistance-rated fire barrier or horizontal assembly, or both. *(posted 1-23-07)*

2. Where the ceilings of the atrium are more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 10
MEANS OF EGRESS

1012.4 Continuity. Handrail-gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

Exceptions:

1. Handrails within dwelling units are permitted to be interrupted by a newel post at a stair or ramp landing. *(posted 1-23-07)*
2. And 3. (No change)

1012.5 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. At stairways where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp~~s~~ runs.

Exceptions:

1. And 2. (No change) *(posted 1-23-07)*

1020.1.7 Smokeproof enclosures. In buildings required to comply with Section 403 or 405 of the International Building Code, each of the exits of a building that serves stories where the floor surface is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access or more than 30 feet (9144 mm) below the level of exit discharge serving such floor levels shall be a smokeproof enclosure or pressurized stairway in accordance with Section 909.20 of the *International Building Code*. *(posted 12-14-06)*

1023.1 Exterior exit ramps and stairways. Exterior exit ramps and stairways serving as an element of a required means of egress shall comply with this section.

Exception: Exterior exit ramps and stairways for outdoor stadiums complying with Section ~~1019.1~~ 1020.1, Exception 2. *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 14
FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION

~~**[B]1411.3 Stairway floor number signs.** Temporary stairway floor number signs shall be provided in accordance with the requirements of Section 1012.1.7.~~ *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 33
EXPLOSIVES AND FIREWORKS

TABLE 3301.8.1(1), Column 4 ("Operating Building"), Rows 4 and 5: Table ~~3304.5.2(2)~~ 3304.5.2(1) *(posted 1-23-07)*

TABLE 3301.8.1(2), Column 4 ("Operating Building"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(3)~~ 3304.5.2(2) *(posted 1-23-07)*

Section 3306.5.2.3, Item 1 should read as follows:

3306.5.2.3 Small arms primers. Commercial stocks of small arms primers shall be stored as follows:

1. Quantities not to exceed 750,000 small arms primers stored in a building shall be arranged such that not more than 100,000 small arms primers are stored in any one pile and piles are at least 15 feet (4572 mm) apart. *(posted 12-13-06)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

CHAPTER 45
REFERENCED STANDARDS

ASME:

A13.1—96 (Reaffirmed 2002) Scheme for the Identification of Piping Systems....(Posted 1-23-07)

UL:

268—96 ~~Control Units for Fire Protective~~ Smoke Detectors for Fire Alarm Signaling Systems—with Revisions through October 2003..... *(posted 1-23-07)*

APPENDIX B
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

SECTION B106
REFERENCED STANDARDS

ICC IBC-06 International Building Code B104.2, Table B105.1 *(posted 1-23-07)*

ICC IWUIC-06 International Wildland-Urban Interface Code B103.3 *(posted 1-23-07)*

NFPA 1142-01 Standard on Water Supplies for Suburban and Rural Fire Fighting B103.3 *(posted 1-23-07)*

2006 International Fire Code Errata

SECOND PRINTING (Updated JANUARY 23, 2006)

APPENDIX F
HAZARD RANKING

SECTION F102
REFERENCED STANDARDS

ICC IFC-06 International Fire Code F101.1 *(posted 1-23-07)*

NFPA 704-01 Identification of the Hazards of Materials for Emergency Response F101.1, F101.2 *(posted 1-23-07)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 2
DEFINITIONS

Section 202: *Revise as follows:*

OCCUPANCY CLASSIFICATION.

[B] Institutional Group I.

Group I-2. This occupancy shall include...(no change)

A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code*.

A child care facility that provides care on a 24-hour basis to more than five children $2^1/_2$ years of age or less shall be classified as Group I-2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 6
BUILDING SERVICES AND SYSTEMS

Section 603.6.1 should read as follows:

603.6.1 Masonry chimneys. Masonry chimneys that, upon inspection, are found to be without a flue liner and that have open mortar joints which will permit smoke or gases to be discharged into the building, or which are cracked as to be dangerous, shall be repaired or relined with a listed chimney liner system installed in accordance with the manufacturer's installation instructions or a flue lining system installed in accordance with the requirements of the *International Building Code* and appropriate for the intended class of chimney service. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 9
FIRE PROTECTION SYSTEMS

904.2.1 Hood system suppression. Each required commercial kitchen exhaust hood and duct system required by Section ~~610~~ 609 to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code. *(posted 7-10-06)*

909.9.2: Equation 9-8 is deleted. *(posted 7-10-06)*

Table 910.3 : Revise the section references in column 1, rows 3 through 6 of the table as follows: ~~910.2.3~~ 910.2.2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 10
MEANS OF EGRESS

1007.2 Continuity and components. *(No change)*
Items 1 through 5. *(No change)*
6. Horizontal exits complying with Section ~~1021~~ 1022. *(posted 7-10-06)*
Items 7 and 8. *(No change)*

1007.6.2 Separation. Each area of refuge shall be separated from the remainder of the story by a smoke barrier complying with Section 709 or a horizontal exit complying with Section ~~1021~~ 1022. Each area of refuge shall be designed to minimize the intrusion of smoke.

Exception: Areas of refuge located within a vertical exit enclosure. *(posted 7-10-06)*

1008.1 Doors. Means of egress doors shall meet the requirements of this section. Doors serving a means of egress system shall meet the requirements of this section and Section ~~1017.2~~ 1018.2. …….*(posted 7-10-06)*

Table 1016.1: *Revise column 3 and add note c, as follows:*

WITH SPRINKLER SYSTEM ~~b~~ (feet)
250 [b]
300 [c]
400 [c]
75 [c]
100 [c]
150 [c]
175 [c]
200 [c]
200 [c]

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. *(posted 7-10-06)*

1023.5 Location. Exterior exit ramps and stairways shall be located in accordance with Section ~~1023.3~~ 1024.3. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 15
FLAMMABLE FINISHES

1505.4.1 Fixed fire-extinguishing equipment. An approved automatic fire-extinguishing system or dip tank cover in accordance with Section ~~1505.7~~ 1505.3.4 shall be provided for the following dip tanks: (remainder of text unchanged)
(posted 7-10-06)

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 18
SEMICONDUCTOR FABRICATION FACILITIES

Sections 1805.2.2.1, 1805.2.2.2 and 1805.2.2.3: *Delete without substitution. (posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 33
EXPLOSIVES AND FIREWORKS

3301.8.1.1 Mass-detonating explosives. The total net explosive weight of Division 1.1, 1.2 or 1.5 explosives shall be used. See Table ~~3304.5.2(2)~~ 3304.5.2(1) or Table 3305.3 as appropriate.

> **Exception:** When the TNT equivalence of the explosive material has been determined, the equivalence is allowed to be used to establish the net explosive weight. *(posted 7-10-06)*

3301.8.1.2 Nonmass-detonating explosives (excluding Division 1.4). Nonmass-detonating explosives shall be as follows:

1. Division 1.3 propellants. The total weight of the propellants alone shall be the net explosive weight. The net weight of propellant shall be used. See Table ~~3304.5.2(3)~~ 3304.5.2(2).

2. Combinations of bulk metal powder and pyrotechnic compositions. The sum of the net weights of metal powders and pyrotechnic compositions in the containers shall be the net explosive weight. See Table ~~3304.5.2(3)~~ 3304.5.2(2). *(posted 7-10-06)*

TABLE 3301.8.1(1), Column 2 ("Magazine"), Column 6 ("Inhabited Building") and Column 8 ("Public Traffic Route"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(2)~~ 3304.5.2(1) *(posted 7-10-06)*

TABLE 3301.8.1(2), Column 2 ("Magazine"), Column 6 ("Inhabited Building" and Column 8 ("Public Traffic Route"), Rows 2, 3, 4 and 5: Table ~~3304.5.2(3)~~ 3304.5.2(2) *(posted 7-10-06)*

TABLE 3301.8.1(3), Column 2 ("Magazine"), Column 4 ("Operating Building"), Column 6("Inhabited Building") and Column 8 ("Public Traffic Route") in Rows 2, 3, 4 and 5: Table ~~3304.5.2(4)~~ 3304.5.2(3) *(posted 7-10-06)*

3301.8.1.3 Combinations of mass-detonating and nonmass-detonating explosives (excluding Division 1.4). Combination of mass-detonating and nonmass-detonating explosives shall be as follows:

1. When Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity considered first as 1.1 and then as 1.2. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.2 is known, the TNT equivalent weight of the 1.2 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table ~~3304.5.2(3)~~ 3304.5.2(2) or Table 3305.3 as appropriate.

2. When Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1 and then as 1.3. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.3 is known, the TNT equivalent weight of the 1.3 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table ~~3304.5.2(2)~~ 3304.5.2(1), ~~3304.5.2(3)~~ 3304.5.2(2) or 3305.3, as appropriate.

3. When Division 1.1, 1.2 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1, next as 1.2 and finally as 1.3. The required distance is the greatest of the three. As allowed by paragraphs 1 and 2 above, TNT equivalent weights for 1.2 and 1.3 items are allowed to be used to determine the net weight of explosives for Division 1.1 distance determination. Table ~~3304.5.2(2)~~ 3304.5.2(1) or 3305.3 shall be used when TNT equivalency is used to establish the net explosive weight.

4. For composite pyrotechnic items Division 1.1 and Division 1.3, the sum of the net weights of the pyrotechnic composition and the explosives involved shall be used. See Tables ~~3304.5.2(2)~~ 3304.5.2(1) and ~~3304.5.2(3)~~ 3304.5.2(2).

Table 3304.5.2(1), For Row "Pounds over 500"/"Pounds not over 600", Column 3: ~~240~~ 340 *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 34
FLAMMABLE AND COMBUSTIBLE LIQUIDS

3404.3.2 Liquid storage cabinets. Where other sections of this code require that liquid containers be stored in storage cabinets, such cabinets and storage shall be in accordance with Sections 3404.3.2.1 through ~~3404.3.2.3~~ 3404.3.2.2. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 35
FLAMMABLE GASES

Insert Section 3503.1.6 to read as follows:

3503.1.6 Liquefied flammable gases and flammable gases in solution. Containers of liquefied flammable gases and flammable gases in solution shall be positioned in the upright position or positioned so that the pressure relief valve is in direct contact with the vapor space of the container.

Exceptions:

1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or less.
2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons (5 L), designed to preclude the discharge of liquid from safety relief devices. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 36
FLAMMABLE SOLIDS

3606.1 General. Storage, use, handling and processing of magnesium, including the pure metal and alloys of which the major part is magnesium, shall be in accordance with Chapter 27 and Sections 3602.2 through ~~3606.8~~ 3606.5.8. *(posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 38
LIQUEFIED PETROLEUM GASES

Section 3809.14 Alternative location and protection of storage: *Delete (posted 7-10-06)*

Section <u>3809.14</u> ~~3809.15~~ Alternative location and protection of storage: *Renumber (posted 7-10-06)*

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

CHAPTER 45
REFERENCED STANDARDS

ASME:
A17.1—2004 Safety Code for Elevators and Escalators with A17.1a-2004 Addenda and A17.1S Supplement 2005
(posted 7-10-06)

2006 International Fire Code Errata

FIRST PRINTING (Updated July 1, 2006)

APPENDIX D
FIRE APPARATUS ACCESS ROADS

D107.1 One- or two-family dwelling residential developments. Developments of...*(no change)*

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or ~~903.3.1.3.3~~ 903.3.1.3 , access from two directions shall not be required.

2. *(No Change) (posted 7-10-06)*