1301:7-7-30 Industrial ovens.

Section 3001 General

3001.1 Scope. This chapter shall apply to the installation and operation of industrial ovens and furnaces. Industrial ovens and furnaces shall comply with the applicable provisions of the International Fuel Gas Code, the *mechanical code*, NFPA 86 and this chapter. The terms “ovens” and "furnaces" are used interchangeably in this chapter.

3001.2 Permits. Permits shall be required as set forth in *Chapter 1*.

Section 3002 Definitions

3002.1 Definitions. The following terms are defined in Chapter 2.

Furnace class A.

Furnace class B.

Furnace class C.

Furnace class D.

Section 3003 Location

3003.1 Ventilation. Enclosed rooms or basements containing industrial ovens or furnaces shall be provided with combustion air in accordance with the ~~*mechanical code* and the~~ International Fuel Gas Code and the *mechanical code*, and with ventilation air in accordance with the *mechanical code*.

3003.2 Exposure. When locating ovens, oven heaters and related equipment, the possibility of fire resulting from overheating or from the escape of fuel gas or fuel oil and the possibility of damage to the building and injury to persons resulting from explosion shall be considered.

3003.3 Ignition source. Industrial ovens and furnaces shall be located so as not to pose an ignition hazard to flammable vapors or mists or combustible dusts.

3003.4 Temperatures. Roofs and floors of ovens shall be insulated and ventilated to prevent temperatures at combustible ceilings and floors from exceeding 160°F (71°C).

Section 3004 Fuel piping

3004.1 Fuel-gas piping. Fuel-gas piping serving industrial ovens shall comply with the International Fuel Gas Code. Piping for other fuel sources shall comply with this section.

3004.2 Shutoff valves. Each industrial oven or furnace shall be provided with an approved manual fuel shutoff valve in accordance with the International Fuel Gas Code and the *mechanical code*.

3004.2.1 Fuel supply lines. Valves for fuel supply lines shall be located within 6 feet (1829 mm) of the appliance served.

Exception: ~~When~~Where approved and the valve is located in the same general area as the appliance served.

3004.3 Valve position. The design of manual fuel shutoff valves shall incorporate a permanent feature ~~which~~that visually indicates the open or closed position of the valve. Manual fuel shutoff valves shall not be equipped with removable handles or wrenches unless the handle or wrench can only be installed parallel with the fuel line when the valve is in the open position.

Section 3005 Interlocks

3005.1 Shut down. Interlocks shall be provided for Class A ovens so that conveyors or sources of flammable or combustible materials shall shut down if either the exhaust or recirculation air supply fails.

Section 3006 Fire protection

3006.1 Required protection. Class A and B ovens that contain, or are utilized for the processing of, combustible materials shall be protected by an approved automatic fire-extinguishing system complying with Chapter 9.

Exceptions:

1. Small tabletop ovens used in laboratory facilities.
2. Nonwalk-in ovens that are less than 4 feet (1219 mm) in length and width.

3006.2 Fixed fire-extinguishing systems. Fixed fire-extinguishing systems shall be provided for Class C or D ovens to protect against such hazards as overheating, spillage of molten salts or metals, quench tanks, ignition of hydraulic oil and escape of fuel. It shall be the user's responsibility to consult with the fire code official concerning the necessary requirements for such protection.

3006.3 Fire extinguishers. Portable fire extinguishers complying with Section 906 shall be provided not closer than 15 feet (4572 mm) or not more than 50 feet (15 240 mm) or in accordance with NFPA 10. This shall apply to the oven and related equipment.

Section 3007 Operation and maintenance

3007.1 Furnace system information. An approved, clearly worded, and prominently displayed safety design data form or manufacturer's nameplate shall be provided stating the safe operating condition for which the furnace system was designed, built, altered or extended.

3007.2 Oven nameplate. Safety data for Class A solvent atmosphere ovens shall be furnished on the manufacturer's nameplate. The nameplate shall provide the following design data:

1. The solvent used.
2. The number of gallons (L) used per batch or per hour of solvent entering the oven.
3. The required purge time.

4. The oven operating temperature.

5. The exhaust blower rating for the number of gallons (L) of solvent per hour or batch at the maximum operating temperature.

Exception: For low-oxygen ovens, the maximum allowable oxygen concentration shall be included in place of the exhaust blower ratings.

3007.3 Training. Operating, maintenance and supervisory personnel shall be thoroughly instructed and trained in the operation of ovens or furnaces.

3007.4 Equipment maintenance. Equipment shall be maintained in accordance with the manufacturer's instructions.

1301:7-7-31 Tents, temporary special event structures and other membrane structures.

Section 3101 General

3101.1 Scope. Tents, temporary ~~stage canopies~~special event structures and membrane structures shall comply with this chapter. The provisions of Section 3103 are applicable only to temporary tents and membrane structures. The provisions of Sections 3104 and 3106 are applicable to temporary and permanent tents and membrane structures. The provisions of Section 3105 are applicable to temporary special event structures. The provisions of Section 3106 are applicable to outdoor assembly events. Other temporary structures shall comply with the *building code*.

Section 3102 Definitions

3102.1 Definitions. The following terms are defined in Chapter 2.

Air-inflated structure.

Air-supported structure.

Membrane structure.

Temporary ~~stage canopy~~special event structure.

Tent.

Section 3103 Temporary tents and membrane structures

3103.1 General. Tents and membrane structures used for temporary periods shall comply with this section and Section 3106. Other temporary structures erected for a period of 180 days or less shall comply with the *building code*.

3103.2 Approval required. Tents and membrane structures having an area in excess of 400 square feet (37 m^2) shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the fire code official.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Tents open on all sides ~~which~~that comply with all of the following:
   - 2.1 Individual tents having a maximum size of 700 square feet (65 m^2).
   - 2.2 The aggregate area of multiple tents placed side by side without a fire break clearance of 12 feet (3658 mm), not exceeding 700 square feet (65 m^2) total.
   - 2.3 A minimum clearance of 12 feet (3658 mm) to all structures and other tents.

3103.3 ~~Place of assembly~~Outdoor assembly event. For the purposes of this chapter, ~~a place of assembly~~an outdoor assembly event shall include a circus, carnival, tent show, theater, skating rink, dance hall or other place of assembly in or under which persons gather for any purpose.

3103.3.1 Special amusement area. Tents and other membrane structures erected as a special amusement building shall be equipped with an automatic sprinkler system in accordance with Section 914.7.1.

3103.4 Permits. Permits shall be required as set forth in *Chapter 1*.

3103.5 Use period. Temporary tents, air-supported, air-inflated or tensioned membrane structures shall not be erected for a period of more than 180 days within a 12-month period on a single premises.

3103.6 Construction documents. A detailed site and floor plan for tents or membrane structures with an occupant load of 50 or more shall be provided with each application for approval. The tent or membrane structure floor plan shall indicate details of the means of egress facilities, seating capacity, arrangement of the seating and location and type of heating and electrical equipment. The construction documents shall include an analysis of structural stability.

3103.7 Inspections. The entire tent, air-supported, air-inflated or tensioned membrane structure system shall be inspected at regular intervals, but not less than two times per permit use period, by the permittee, owner or agent to determine that the installation is maintained in accordance with this chapter.

Exception: Permit use periods of less than 30 days.

3103.7.1 Inspection report. Where required by the fire code official, an inspection report shall be provided and shall consist of maintenance, anchors and fabric inspections.

3103.8 Access, location and parking. Access, location and parking for temporary tents and membrane structures shall be in accordance with this section.

3103.8.1 Access. Fire apparatus access roads shall be provided in accordance with Section 503.

3103.8.2 Location. Tents or membrane structures shall not be located within 20 feet (6096 mm) of lot lines, buildings, other tents or membrane structures, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the temporary membrane structure or tent.

Exceptions:

1. Separation distance between membrane structures and tents not used for cooking is not required where the aggregate floor area does not exceed 15,000 square feet (1394 m^2).

2. Membrane structures or tents need not be separated from buildings ~~when~~where all of the following conditions are met:

2.1 The aggregate floor area of the membrane structure or tent shall not exceed 10,000 square feet (929 m^2).

2.2 The aggregate floor area of the building and membrane structure or tent shall not exceed the allowable floor area including increases as indicated in the *building code*.

2.3 Required means of egress are provided for both the building and the membrane structure or tent including travel distances.

2.4 Fire apparatus access roads are provided in accordance with Section 503.

3103.8.3 Location of structures in excess of 15,000 square feet in area. Membrane structures having an area of 15,000 square feet (1394 m^2) or more shall be located not less than 50 feet (15 240 mm) from any other tent or structure as measured from the sidewall of the tent or membrane structure unless joined together by a corridor.

3103.8.4 Membrane structures on buildings. Membrane structures that are erected on buildings, balconies, decks or other structures shall be regulated as permanent membrane structures in accordance with Section 3102 of the *building code*.

3103.8.5 Connecting corridors. Tents or membrane structures are allowed to be joined together by means of corridors. Exit doors shall be provided at each end of such corridor. On each side of such corridor and approximately opposite each other, there shall be provided openings not less than 12 feet (3658 mm) wide.

3103.8.6 Fire break. An unobstructed fire break passageway or fire road not less than 12 feet (3658 mm) wide and free from guy ropes or other obstructions shall be maintained on all sides of all tents and membrane structures unless otherwise approved by the fire code official *and the building code official in accordance with the applicable requirements of the building code*.

3103.9 Structural stability and ~~A~~anchorage required. Tents or membrane structures and their appurtenances shall be ~~adequately roped, braced and anchored~~ designed and installed to withstand the elements of weather and prevent ~~against~~ collapsing. Documentation of structural stability shall be furnished to the fire code official ~~on request~~.

3103.9.1 Tents and membrane structures ~~exceeding~~greater than one story. Tents and membrane structures exceeding one story shall be designed and constructed to comply with ~~chapter 16~~Sections 1606 through 1609 of the *building code*.

3103.9.2 Tents and membrane structures greater than 7,500 square feet. Tents and membrane structures greater than 7,500 square feet (697 m^2) shall be designed and constructed to comply with Sections 1606 through 1609 of the *building code*.

3103.9.3 Tents and membrane structures with an occupant load greater than 1,000. Tents and membrane structures with an occupant capacity greater than 1,000 persons shall be designed and constructed to comply with Sections 1606 through 1609 of the *building code*.

3103.10 Temporary air-supported and air-inflated membrane structures. Temporary air-supported and air-inflated membrane structures shall be in accordance with Sections 3103.10.1 through 3103.10.4.

3103.10.1 Door operation. During high winds exceeding 50 miles per hour (22 m/s) or in snow conditions, the use of doors in air-supported structures shall be controlled to avoid excessive air loss. Doors shall not be left open.

3103.10.2 Fabric envelope design and construction. Air-supported and air-inflated structures shall have the design and construction of the fabric envelope and the method of anchoring in accordance with Architectural Fabric Structures Institute ~~ASI 77~~FSAAS.

3103.10.3 Blowers. An air-supported structure used as a place of assembly shall be furnished with not less than two blowers, each of which has adequate capacity to maintain full inflation pressure with normal leakage. The design of the blower shall be so as to provide integral limiting pressure at the design pressure specified by the manufacturer.

3103.10.4 Auxiliary ~~power~~inflation systems. Places of public assembly for more than 200 persons shall be furnished with an auxiliary inflation system capable of powering a blower with the capacity to maintain full inflation pressure with normal leakage in accordance with Section 3103.10.3 for a minimum duration of 4 hours. The auxiliary inflation system shall be either a fully automatic auxiliary engine-generator set or a supplementary blower powered by an internal combustion engine that shall be automatic in operation. The system shall be capable of automatically operating the required blowers at full power within 60 seconds of a commercial power failure.

3103.11 Seating arrangements. Seating in tents or membrane structures shall be in accordance with Chapter 10.

3103.12 Means of egress. Means of egress for temporary tents and membrane structures shall be in accordance with Sections 3103.12.1 through 3103.12.8.

3103.12.1 Distribution. Exits shall be spaced at approximately equal intervals around the perimeter of the tent or membrane structure and shall be located such that all points are 100 feet (30 480 mm) or less from an exit.

3103.12.2 Number. Tents, or membrane structures or a usable portion thereof shall have not less than one exit and not less than the number of exits required by Table 3103.12.2. The total width of means of egress in inches (mm) shall be not less than the total occupant load served by a means of egress multiplied by 0.2 inches (5 mm) per person.

Table 3103.12.2
Minimum number of means of egress and means of egress widths from temporary membrane structures and tents

Occupant load	Minimum number of means of egress	Minimum width of each means of egress (inches)	Minimum width of each means of egress (inches)
		Tent	Membrane structure
10 to 199	2	72	36
200 to 499	3	72	72

500 to 999	4	96	72
1,000 to 1,999	5	120	96
2,000 to 2,999	6	120	96
Over 3,000[a]	7	120	96

For SI: 1 inch = 25.4 mm.

a. When the occupant load exceeds 3,000, the total width of means of egress (in inches) shall be not less than the total occupant load multiplied by 0.2 ~~inches~~ inch per person.

3103.12.3 Exit openings from tents. Exit openings from tents shall remain open unless covered by a flame-resistant curtain. The curtain shall comply with the following requirements:

1. Curtains shall be free sliding on a metal support. The support shall be not less than 80 inches (2032 mm) above the floor level at the exit. The curtains shall be so arranged that, when open, no part of the curtains obstructs the exit.

2. Curtains shall be of a color, or colors, that contrasts with the color of the tent.

3103.12.4 Doors. Exit doors shall swing in the direction of exit travel. To avoid hazardous air and pressure loss in air-supported membrane structures, such doors shall be automatic closing against operating pressures. Opening force at the door edge shall not exceed 15 pounds (66 N).

3103.12.5 Aisle. The width of aisles without fixed seating shall be in accordance with the following:

1. In areas serving employees only, the minimum aisle width shall be 24 inches (610 mm) but not less than the width required by the number of employees served.

2. In public areas, smooth-surfaced, unobstructed aisles having a minimum width of not less than 44 inches (1118 mm) shall be provided from seating areas, and aisles shall be progressively increased in width to provide, at all points, not less than 1 foot (305 mm) of aisle width for each 50 persons served by such aisle at that point.

3103.12.5.1 Arrangement and maintenance. The arrangement of aisles shall be subject to approval by the fire code official and shall be maintained clear at all times during occupancy.

3103.12.6 Exit signs. Exits shall be clearly marked. Exit signs shall be installed at required exit doorways and where otherwise necessary to indicate clearly the direction of egress where the exit serves an occupant load of 50 or more.

3103.12.6.1 Exit sign illumination. Exit signs shall be either listed and labeled in accordance with UL 924 as the internally illuminated type and used in accordance with the listing or shall be externally illuminated by luminaires supplied in either of the following manners:

1. Two separate circuits, one of which shall be separate from all other circuits, for occupant loads of 300 or less.

2. Two separate sources of power, one of which shall be an approved emergency system, shall be provided where the occupant load exceeds 300. Emergency systems shall be supplied from storage batteries or from the on-site generator set, and the system shall be installed in accordance with NFPA 70. The emergency system provided shall have a minimum duration of 90 minutes when operated at full design demand.

3103.12.7 Means of egress illumination. Means of egress shall be illuminated with light having an intensity of not less than 1 foot-candle (11 lux) at floor level while the structure is occupied. Fixtures required for means of egress illumination shall be supplied from a separate circuit or source of power.

3103.12.8 Maintenance of means of egress. The required width of exits, aisles and passageways shall be maintained at all times to a public way. Guy wires, guy ropes and other support members shall not cross a means of egress at a height of less than 8 feet (2438 mm). The surface of means of egress shall be maintained in an approved manner.

Section 3104 Temporary and permanent tents and membrane structures

3104.1 General. ~~All t~~Tents and membrane structures, both temporary and permanent, shall be in accordance with this section and Sections 3106 and 3107. Permanent tents and membrane structures shall also comply with the *building code*.

3104.2 Flame propagation performance ~~treatment~~ testing and certification. Before a permit is granted, the owner or agent shall file with the fire code official a certificate ~~executed~~ provided by the product manufacturer to verify that the materials have been tested and certified by an approved testing laboratory. ~~certifying~~The certificate shall indicate that the floor coverings, tents, ~~and~~ membrane structures and their appurtenances~~;~~, which include sidewalls, drops and tarpaulins are composed of materials meeting the flame propagation performance of Test Method 2, as appropriate, of NFPA 701.~~;~~ ~~floor coverings,~~ Additionally, it shall indicate that the bunting and combustible decorative materials and effects~~, including sawdust where used on floors or passageways,~~ are composed of material meeting the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701, as applicable. ~~or~~Alternatively, the materials shall be treated with a flame retardant in an approved manner and meet the flame propagation performance criteria of ~~Test Method 1 or Test Method 2, as appropriate,~~the applicable test method of NFPA 701.~~, and that such~~ The certificate shall indicate compliance with the testing requirements of NFPA 701, Chapter 16. The flame propagation performance criteria ~~are~~shall be effective for the period specified by the permit.

3104.3 Label. Membrane structures or tents shall have a permanently affixed label bearing the ~~identification of size and fabric or material type~~ following information.

~~(4) **3104.4 Certification.** An affidavit or affirmation shall be submitted to the fire code official and a copy retained on the premises on which the tent or air-supported structure is located. The affidavit shall attest to all of the following information relative to the flame propagation performance criteria of the fabric:~~

~~(a) Names and address of the owners of the tent or air-supported structure.~~

~~(b) Date~~

1. The identification of size and fabric or material.

2. The names and addresses of the manufacturers of the tent or air-supported structure.

3. A statement that the fabric or material meets the requirements of Section 3104.2.

~~(d)~~4 If treated, the date the fabric or material was last treated with flame-retardant solution, ~~.~~

~~(c) Trade~~the trade name or kind of chemical used in treatment, name.

~~(d) Name~~ of person or firm treating the fabric or material~~.~~ and

~~(e) Name~~ name of testing agency and test standard by which the fabric or material was tested.

5. If untreated, a statement that no treatment was applied when the fabric or material met the requirements of Section 3104.2.

3104.4 ~~Affidavit~~*Certificate*. The ~~affidavit~~*certificate* required by Section 3104.2 shall contain all of the information specified in Section 3104.3.

~~(5) **3104.5 Combustible materials.** Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for public performance or exhibit shall not be prohibited provided the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.~~

~~(6) **3104.6 Smoking.** Smoking shall not be permitted in tents or membrane structures. Approved "No Smoking" signs shall be conspicuously posted in accordance with *paragraph* (J)(310) *of rule 1301:7-7-03 of the Administrative Code*.~~

~~(7) **3104.7 Open or exposed flame.** Open flame or other devices emitting flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet (6096 mm) of the tent or membrane structures while open to the public unless approved by the fire code official.~~

~~(8) **3104.8 Fireworks.** Fireworks shall not be used within 100 feet (30 480 mm) of tents or membrane structures.~~

~~(9) **3104.9 Spot lighting.** Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with approved noncombustible insulation not less than 9¼ inches (235 mm) thick.~~

~~(10) **3104.10 Safety film.** Motion pictures shall not be displayed in tents or membrane structures unless the motion picture film is safety film.~~

~~(11) **3104.11 Clearance.** There shall be a minimum clearance of at least 3 feet (914 mm) between the fabric envelope and all contents located inside membrane structures.~~

~~(12) **3104.12 Portable fire extinguishers.** Portable fire extinguishers shall be provided as required by *paragraph* (F)(906) *of rule 1301:7-7-09 of the Administrative Code*.~~

(13) **3104.13 Fire protection equipment.** Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the fire code official.

(14) **3104.14 Occupant load factors.** The occupant load allowed in an assembly structure, or portion thereof, shall be determined in accordance with *rule 1301:7-7-10 of the Administrative Code*.

(15) **3104.15 Heating and cooking equipment.** Heating and cooking equipment shall be in accordance with *paragraphs* (D)(15)(a)(3104.15.1) *to* (D)(15)(g)(3104.15.7) *of this rule*.

(a) **3104.15.1 Installation.** Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the *mechanical code* and the International Fuel Gas Code *as listed in rule 1301:7-7-80 of the Administrative Code*, and shall be approved by the fire code official *and the building code official in accordance with the applicable requirements of the building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(b) **3104.15.2 Venting.** Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outside air as specified in the International Fuel Gas Code and the *mechanical code as listed in rule 1301:7-7-80 of the Administrative Code*. Such vents shall be equipped with approved spark arresters where required. Where vents or flues are used, all portions of the tent or membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.

(c) **3104.15.3 Location.** Cooking and heating equipment shall not be located within 10 feet (3048 mm) of exits or combustible materials.

(d) **3104.15.4 Operations.** Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices which do not pose an ignition hazard, shall be approved.

(e) **3104.15.5 Cooking tents.** Tents with sidewalls or drops where cooking is performed shall be separated from other tents or membrane structures by not less than 20 feet (6096 mm).

(f) **3104.15.6 Outdoor cooking.** Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a tent or membrane structure.

(g) **3104.15.7 Electrical heating and cooking equipment.** Electrical cooking and heating equipment shall comply with NFPA 70 *as listed in rule 1301:7-7-80 of the Administrative Code*.

(16) **3104.16 LP-gas.** The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with *paragraphs* (D)(16)(a)(3104.16.1) *to* (D)(16)(c)(3104.16.3) *of this rule*.

(a) **3104.16.1 General.** LP-gas equipment such as tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved and in accordance with *rule 1301:7-7-61 of the Administrative Code* and with the International Fuel Gas Code *as listed in rule 1301:7-7-80 of the Administrative Code*.

(b) **3104.16.2 Location of containers.** LP-gas containers shall be located outside. Safety release valves shall be pointed away from the tent or membrane structure.

(i) **3104.16.2.1 Containers 500 gallons or less.** Portable LP-gas containers with a capacity of 500 gallons (1893 L) or less shall have a minimum separation between the container and structure not less than 10 feet (3048 mm).

(ii) **3104.16.2.2 Containers more than 500 gallons.** Portable LP-gas containers with a capacity of more than 500 gallons (1893 L) shall have a minimum separation between the container and structures not less than 25 feet (7620 mm).

(iii) **3104.16.2.3 Protection and security.** Portable LP-gas containers, piping, valves and fittings that are located outside and are being used to fuel equipment inside a tent or membrane structure shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an approved location. Portable LP-gas containers shall be securely fastened in place to prevent unauthorized movement.

(17) **3104.17 Flammable and combustible liquids.** The storage of flammable and combustible liquids and the use of flammable-liquid-fueled equipment shall be in accordance with *paragraphs* (D)(17)(a)(3104.17.1) *to* (D)(17)(c)(3104.17.3) *of this rule*.

(a) **3104.17.1 Use.** Flammable-liquid-fueled equipment shall not be used in tents or membrane structures.

(b) **3104.17.2 Flammable and combustible liquid storage.** Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet (15 240 mm) from tents or membrane structures. Storage shall be in accordance with *rule 1301:7-7-57 of the Administrative Code*.

(c) **3104.17.3 Refueling.** Refueling shall be performed in an approved location not less than 20 feet (6096 mm) from tents or membrane structures.

(18) **3104.18 Display of motor vehicles.** Liquid- and gas-fueled vehicles and equipment used for display within tents or membrane structures shall be in accordance with *paragraphs* (D)(18)(a)(3104.18.1) *to* (D)(18)(c)(iii)(3104.18.5.3) *of this rule*.

(a) **3104.18.1 Batteries.** Batteries shall be disconnected in an appropriate manner.

(b) **3104.18.2 Fuel.** Vehicles or equipment shall not be fueled or defueled within the tent or membrane structure.

(i) **3104.18.2.1 Quantity limit.** Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons (19 L), whichever is less.

(ii) **3104.18.2.2 Inspection.** Fuel systems shall be inspected for leaks.

(iii) **3104.18.2.3 Closure.** Fuel tank openings shall be locked and sealed to prevent the escape of vapors.

(c) **3104.18.3 Location.** The location of vehicles or equipment shall not obstruct means of egress.

(d) **3104.18.4 Places of assembly.** When a compressed natural gas (CNG) or liquefied petroleum gas (LP-gas) powered vehicle is parked inside a place of assembly, all the following conditions shall be met:

(i) The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LP-gas container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors.

(ii) The hot lead of the battery shall be disconnected.

(iii) Dual fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this *paragraph* and *paragraphs* (D)(18)(a)(3104.18.1) *to* (D)(18)(e)(iii)(3104.18.5.3) *of this rule* for gasoline-powered vehicles.

(e) **3104.18.5 Competitions and demonstrations.** Liquid- and gas-fueled vehicles and equipment used for competition or demonstration within a tent or membrane structure shall comply with *paragraphs* (D)(18)(e)(i)(3104.18.5.1) *to* (D)(18)(e)(iii)(3104.18.5.3) *of this rule*.

(i) **3104.18.5.1 Fuel storage.** Fuel for vehicles or equipment shall be stored in approved containers in an approved location outside of the structure in accordance with *paragraph* (D)(17)(b)(3104.17.2) *of this rule*.

(ii) **3104.18.5.2 Fueling.** Refueling shall be performed outside of the structure in accordance with *paragraph* (D)(17)(e)(3104.17.3) *of this rule*.

(iii) **3104.18.5.3 Spills.** Fuel spills shall be cleaned up immediately.

(19) **3104.19 Separation of generators.** Generators and other internal combustion power sources shall be separated from tents or membrane structures by not less than 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other approved means.

(20) **3104.20 Standby personnel.** Where, in the opinion of the fire code official, it is essential for public safety in a tent or membrane structure used as a place of assembly or any other use where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall employ one or more qualified persons, as required and approved, to remain on duty during the times such places are open to the public, or when such activity is being conducted.

(a) **3104.20.1 Duties.** Before each performance or the start of such activity, standby personnel shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that occur and assist in the evacuation of the public from the structure.

(b) **3104.20.2 Crowd managers.** There shall be trained crowd managers or crowd managers/supervisors at a ratio of one crowd manager/supervisor for every 250 occupants, as approved.

(21) **3104.21 Combustible vegetation.** Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a tent or membrane structure, and from areas within 30 feet (9144 mm) of such structures.

~~(22) **3104.22 Combustible waste material.** The floor surface inside tents or membrane structures and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept free of combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in approved containers and removed from the premises not less than once a day during the period the structure is occupied by the public.~~

Section 3105 Temporary ~~stage canopies~~special event structures

3105.1 General. Temporary ~~stage canopies~~special event structures shall comply with Section 3104, Sections 3105.2 through ~~3105.8~~ 3105.9 and ANSI E1.21.

3105.2 Approval. Temporary ~~stage canopies~~special event structures in excess of 400 square feet (37 m^2) shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the fire code official and the building official.

3105.3 Permits. Permits shall be required as set forth in *Chapter 1*.

3105.4 Use period. Temporary ~~stage canopies~~special event structures erected in accordance with ANSI E1.21 shall not be erected for a period of more than ~~45 days~~six consecutive weeks.

3105.5 Required documents. The following documents shall be submitted to the fire code official and the building official for review before a permit is approved:

1. Construction documents: Construction documents shall be prepared by a registered design professional in accordance with the *building code* and ANSI E1.21 ~~by a registered design professional~~where applicable. Construction documents shall include:

   1.1 A summary sheet showing the building code used, design criteria, loads and support reactions.

   1.2 Detailed construction and installation drawings.

   1.3 Design calculations.

   1.4 Operating limits of the structure explicitly outlined by the registered design professional including environmental conditions and physical forces.

   1.5 Effects of additive elements such as video walls, supported scenery, audio equipment, vertical and horizontal coverings.

   1.6 Means for adequate stability including specific requirements for guying and cross-bracing, ground anchors or ballast for different ground conditions.

2. Designation of responsible party: The owner of the temporary ~~stage canopy~~special event structure shall designate in writing a person to have responsibility for the temporary ~~stage canopy~~special event structure on the site. The designated person shall have sufficient knowledge of the construction documents, manufacturer's recommendations and operations plan to make judgments regarding the structure's safety and to coordinate with the fire code official.

3. Operations plan: The operations plan shall reflect manufacturer's operational guidelines, procedures for environmental monitoring and actions to be taken under specified conditions consistent with the construction documents.

3105.6 Inspections. Inspections shall comply with Section ~~106~~ ~~107~~*108* and Sections 3105.6.1 and 3105.6.2.

3105.6.1 Independent inspector. The owner of a temporary ~~stage canopy~~special event structure shall employ a qualified, independent approved agency or individual to inspect the installation of a temporary ~~stage canopy~~special event structure.

3105.6.2 Inspection report. The inspecting agency or individual shall furnish an inspection report to the fire code official. The inspection report shall indicate that the temporary ~~stage canopy~~special event structure was inspected and was or was not installed in accordance with the approved construction documents. Discrepancies shall be brought to the immediate attention of the installer for correction. Where any discrepancy is not corrected, it shall be brought to the attention of the fire code official and the designated responsible party.

3105.7 Means of egress. The means of egress for temporary ~~stage canopies~~special event structures shall comply with Chapter 10.

3105.8 Location. Temporary ~~stage canopies~~special event structure shall be located a distance from property lines and buildings to accommodate distances indicated in the construction drawings for guy wires, cross-bracing, ground anchors or ballast. Location shall not interfere with egress from a building or encroach on fire apparatus access roads.

3105.9 Portable fire extinguishers. Portable fire extinguishers shall be provided as required by Section 906.

Section 3106 Outdoor assembly events

3106.1 Scope. Outdoor assembly events shall comply with this section.

3106.2 General. Outdoor assembly events shall be in accordance with this section and Section 403.11. Temporary structures erected for outdoor assembly events shall comply with this chapter.

3106.2.1 Approval required. Outdoor assembly events shall be approved by the fire code official.

3106.2.2 Permits. An operational permit shall be required as set forth in *Chapter 1*.

3106.2.3 Access. An approved means of fire apparatus access shall be provided.

3106.2.3.1 Fire service features. Unobstructed access to fire hydrants, drafting sources and other fire protection features shall be maintained at all times.

3106.3 Occupancy and means of egress. The number and location of emergency egress and escape routes shall be approved by the fire code official.

3106.3.1 Occupant load. The fire code official shall establish an occupant load for the event site.

3106.3.2 Maintenance of emergency egress and escape routes. Emergency egress and escape routes shall be maintained at all times.

3106.4 Public safety for events. Outdoor assembly events shall comply with Sections 3106.4.1 through 3106.4.7.

3106.4.1 Public safety plan for gatherings. A public safety plan shall be prepared where required by Section 403.11.2. The public safety plan shall be submitted to the fire code official with the application for an operational permit as required by Section 3106.2.2.

3106.4.2 Weather monitoring person. Where required by the fire code official, the event operator or agent shall designate one qualified individual to continuously monitor local weather reports, forecasts and conditions. Said person shall be responsible for initiating weather-related event mitigation activities, ordering the suspension or cancellation of the outdoor assembly event and issuing the evacuation signal in accordance with the approved public safety plan.

3106.4.3 Crowd managers. Where events involve a gathering of more than 1,000 people, trained crowd managers shall be provided in accordance with Section 403.11.3.

3106.4.4 Portable fire extinguishers. Approved portable fire extinguishers complying with Section 906 shall be provided and placed in locations approved by the fire code official.

3106.4.5 Smoking. Smoking shall be permitted only in designated areas. Other areas shall have approved “No Smoking” signs conspicuously posted and maintained in accordance with Section 310.

3106.4.6 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the outdoor assembly event area.

3106.4.7 Combustible refuse. Combustible refuse shall be kept in noncombustible containers with tight-fitting or self-closing lids. Combustible refuse shall be removed from the event site at regular intervals to prevent an unsafe accumulation within the event site.

3106.5 Cooking appliances or devices. Outdoor assembly events with concession stands or booths using cooking appliances or devices shall comply with Sections 3106.5.1 through 3106.5.3.

3106.5.1 Separation from tents or structures. Cooking appliances or devices that produce sparks or grease-laden vapors or flying embers (firebrands) shall not be used within 20 feet (6096 mm) of a tent or temporary structure.

Exceptions:

1. Designated cooking tents not occupied by the public when approved by the fire code official.

2. Tents or structures where cooking appliances are protected with an automatic fire-extinguishing system in accordance with Section 904.13.

3106.5.2 Protection. Cooking equipment using combustible oils or solids shall meet the following:

1. A noncombustible lid shall be immediately available. The lid shall be of sufficient size to cover the cooking well completely.

2. The equipment shall be placed on a noncombustible surface.

3. An approved portable fire extinguisher for protection from cooking grease fires shall be provided at a location approved by the fire code official.

3106.5.3 Liquefied petroleum gas (LP-gas). The use of liquefied petroleum gas (LP-gas) shall be in accordance with Chapter 61.

3106.6 Electrical equipment and wiring. Outdoor assembly events with concession stands or booths using electrical equipment and temporary wiring for electrical power or lighting shall comply with the applicable provisions of NFPA 70 and Sections 3106.6.1 through 3106.6.3.

3106.6.1 Outdoor use. Electrical equipment and wiring shall be listed and labeled for outdoor use.

3106.6.2 Generators. Generators shall be installed not less than 10 feet (3048 mm) from combustible materials~~,~~ and shall be isolated from the public by physical guard, fence or enclosure installed not less than 3 feet (914 mm) away from the internal combustion power source.

3106.6.3 Portable fire extinguishers. Each generator shall be provided with an approved portable fire extinguisher complying with Section 906.

3107 Operational requirements

3107.1 General. Temporary and permanent tents and membrane structures shall comply with this ~~*paragraph*~~section.

(5) ~~**3104.5**~~**3107.2 Combustible materials.** Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for public performance or exhibit shall not be prohibited provided that the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.

(6) ~~**3104.6**~~**3107.3 Smoking.** Smoking shall not be permitted in tents or membrane structures. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

(7) ~~**3104.7**~~**3107.4 Open or exposed flame.** Open flame or other devices emitting flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet (6096 mm) of the tent or membrane structures while open to the public unless approved by the fire code official.

(8) ~~**3104.8**~~**3107.5 Fireworks.** Fireworks shall not be used within ~~100~~*150* feet (~~30 480~~*45 720* mm) of tents or membrane structures.

(9) **~~3104.9~~3107.6 Spot lighting.** Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with approved noncombustible insulation not less than 9¼ inches (235 mm) thick.

(10) **~~3104.10~~3107.7 Safety film.** Motion pictures shall not be displayed in tents or membrane structures unless the motion picture film is safety film.

(11) **~~3104.11~~3107.8 Clearance.** There shall be a ~~minimum~~ clearance of ~~at least~~not less than 3 feet (914 mm) between the fabric envelope and all contents located inside membrane structures.

(12) **~~3104.12~~3107.9 Portable fire extinguishers.** Approved ~~P~~portable fire extinguishers ~~shall be provided as required by~~ complying with Section 906 shall be provided and placed in locations as required by the fire code official.

(13) **~~3104.13~~3107.10 Fire protection equipment.** Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the fire code official.

(14) **~~3104.14~~3107.11 Occupant load factors.** The occupant load allowed in an assembly structure, or portion thereof, shall be determined in accordance with Chapter 10.

(15) **~~3104.15~~3107.12 Heating and cooking equipment.** Heating and cooking equipment shall be in accordance with Sections ~~3104.15.1~~3107.12.1 through ~~3104.15.7~~3107.12.7.

~~3104.15.1~~3107.12.1 Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the ~~*mechanical code* and the~~ International Fuel Gas Code and the *mechanical code*, and shall be approved by the fire code official *and the building code official in accordance with the applicable requirements of the building code*.

~~3104.15.2~~ 3107.12.2 Venting. Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outside air as specified in the International Fuel Gas Code and the *mechanical code*. Such vents shall be equipped with approved spark arresters where required. Where vents or flues are used, all portions of the tent or membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.

~~3104.15.3~~3107.12.3 Location. Cooking and heating equipment shall not be located within 10 feet (3048 mm) of exits or combustible materials.

~~3104.15.4~~3107.12.4 Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices ~~which~~that do not pose an ignition hazard, shall be approved.

~~3104.15.5~~3107.12.5 Cooking tents. Tents with sidewalls or drops where cooking is performed shall be separated from other tents or membrane structures by not less than 20 feet (6096 mm).

~~3104.15.6~~3107.12.6 Outdoor cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a tent or membrane structure.

~~3104.15.7~~3107.12.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with NFPA 70.

(~~16~~) **~~3104.16~~3107.13 LP-gas.** The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with Sections ~~3104.16.1~~3107.13.1 through ~~3104.16.3~~3107.13.3.

~~3104.16.1~~3107.13.1 General. LP-gas equipment such as containers, tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved and in accordance with Chapter 61 and with the International Fuel Gas Code.

~~3104.16.2~~3107.13.2 Location of containers. LP-gas containers and tanks shall be located outside in accordance with Table 6104.3. ~~Safety release valves~~Pressure relief devices shall be pointed away from the tent or membrane structure.

~~(i) **3104.16.2.1 Containers 500 gallons or less.** Portable LP-gas containers with a capacity of 500 gallons (1893 L) or less shall have a minimum separation between the container and structure not less than 10 feet (3048 mm).~~

~~(ii) **3104.16.2.2 Containers more than 500 gallons.** Portable LP-gas containers with a capacity of more than 500 gallons (1893 L) shall have a minimum separation between the container and structures not less than 25 feet (7620 mm).~~

(iii) **~~3104.16.2.3~~3107.13.3 Protection and security.** Portable LP-gas containers, tanks, piping, valves and fittings that are located outside and are being used to fuel equipment inside a tent or membrane structure shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an approved location. Portable LP-gas containers shall be ~~securely fastened in place~~ secured to prevent unauthorized movement.

(~~17~~) **~~3104.17~~3107.14 Flammable and combustible liquids.** The storage of flammable and combustible liquids and the use of flammable-liquid-fueled equipment shall be in accordance with Sections ~~3104.17.1~~3107.14.1 through ~~(3104.17.3~~3107.14.3.

~~3104.17.1~~3107.14.1 Use. Flammable-liquid-fueled equipment shall not be used in tents or membrane structures.

~~3104.17.2~~3107.14.2 Flammable and combustible liquid storage. Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet (15 240 mm) from tents or membrane structures. Storage shall be in accordance with Chapter 57.

~~3104.17.3~~3107.14.3 Refueling. Refueling shall be performed in an approved location not less than 20 feet (6096 mm) from tents or membrane structures.

(~~18~~) **~~3104.18~~3107.15 Display of motor vehicles.** Liquid- and gas-fueled vehicles and equipment used for display within tents or membrane structures shall be in accordance with Sections ~~3104.18.1~~3107.15.1 through ~~3104.18.5.3~~3107.15.5.3.

~~3104.18.1~~3107.15.1 Batteries. Batteries shall be disconnected ~~in an appropriate manner~~ except where the fire code official requires that the batteries remain connected to maintain safety features.

~~3104.18.2~~3107.15.2 **Fuel.** Vehicles or equipment shall not be fueled or defueled within the tent or membrane structure.

~~3104.18.2.1~~3107.15.2.1 **Quantity limit.** Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons (19 L), whichever is less.

~~3104.18.2.2~~3107.15.2.2 **Inspection.** Fuel systems shall be inspected for leaks.

~~3104.18.2.3~~3107.15.2.3 **Closure.** Fuel tank openings shall be locked and sealed to prevent the escape of vapors.

~~3104.18.3~~3107.15.3 **Location.** The location of vehicles or equipment shall not obstruct means of egress.

~~3104.18.4~~3107.15.4 **Places of assembly.** When a compressed natural gas (CNG) or liquefied petroleum gas (LP-gas) powered vehicle is parked inside a place of assembly, all of the following conditions shall be met:

1. The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LP-gas container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors.

2. The hot lead of the battery shall be disconnected.

3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this section and Sections ~~3104.18.1~~3107.15.1 through ~~3104.18.5.3~~3107.15.3 for gasoline-powered vehicles.

~~3104.18.5~~3107.15.5 **Competitions and demonstrations.** Liquid- and gas-fueled vehicles and equipment used for competition or demonstration within a tent or membrane structure shall comply with Sections ~~3104.18.5.1~~3107.15.5.1 through ~~3104.18.5.3~~3107.15.5.3.

~~3104.18.5.1~~3107.15.5.1 **Fuel storage.** Fuel for vehicles or equipment shall be stored in approved containers in an approved location outside of the structure in accordance with Section ~~3104.17.2~~3107.14.2.

~~3104.18.5.2~~3107.15.5.2 **Fueling.** Refueling shall be performed outside of the structure in accordance with Section ~~3104.17.3~~3107.14.3.

~~3104.18.5.3~~3104.15.5.3 **Spills.** Fuel spills shall be cleaned up immediately.

(~~19~~) ~~3104.19~~3107.16 **Separation of generators.** Generators and other internal combustion power sources shall be separated from tents or membrane structures by not less than 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other approved means.

(~~20~~) ~~3104.20~~3107.17 **Standby personnel.** Where, in the opinion of the fire code official, it is essential for public safety in a tent or membrane structure used as a place of assembly or any other use where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall employ one

or more qualified persons, as required and approved, to remain on duty during the times such places are open to the public, or when such activity is being conducted.

~~3104.20.1~~3107.17.1 Duties. Before each performance or the start of such activity, standby personnel shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that occur and assist in the evacuation of the public from the structure.

~~3104.20.2~~3107.17.2 Crowd managers. There shall be trained crowd managers or trained crowd ~~managers/~~supervisors at a ratio of one crowd manager~~/~~ or supervisor for every 250 occupants, as approved.

(~~21~~) **~~3104.21~~3107.18 Combustible vegetation.** Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a tent or membrane structure, and from areas within 30 feet (9144 mm) of such structures.

(~~22~~) **~~3104.22~~3107.19 Combustible waste material.** The floor surface inside tents or membrane structures and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept free ~~of~~from combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in approved containers and removed from the premises not less than once a day during the period the structure is occupied by the public.

1301:7-7-32 High-piled combustible storage.

Section 3201 General

3201.1 Scope. High-piled combustible storage shall be in accordance with this chapter. In addition to the requirements of this chapter, the following material-specific requirements shall apply:

1. Aerosols shall be in accordance with Chapter 51.
2. Flammable and combustible liquids shall be in accordance with Chapter 57.
3. Hazardous materials shall be in accordance with Chapter 50.
4. Storage of combustible paper records shall be in accordance with NFPA 13.
5. Storage of combustible fibers shall be in accordance with Chapter 37.
6. General storage of combustible material shall be in accordance with Chapter 3.

3201.2 Permits. A permit shall be required as set forth in *Chapter 1*.

3201.3 Construction documents. At the time of building permit application for new structures designed to accommodate high-piled storage or for requesting a change of occupancy/use, and at the time of application for a storage permit, plans and specifications shall be submitted for review and approval. In addition to the information required by the *building code*, the storage permit submittal shall include the information specified in this section. ~~Following approval of the plans, a copy of the approved plans shall be maintained on the premises in an approved location.~~ The ~~plans~~construction documents shall include all of the following:

1. Floor plan of the building showing locations and dimensions of high-piled storage areas.
2. Usable storage height for each storage area.
3. Number of tiers within each rack, if applicable.
4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement.
5. Aisle dimensions between each storage array.
6. Maximum pile volume for each storage array.
7. Location and classification of commodities in accordance with Section 3203.
8. Location of commodities that are banded or encapsulated.
9. Location of required fire department access doors.
10. Type of fire ~~suppression and fire detection~~protection systems.

11. Location of valves controlling the water supply of ceiling and in-rack sprinklers.

12. Type, location and specifications of smoke removal and curtain board systems.

13. Dimension and location of transverse and longitudinal flue spaces.

14. Additional information regarding required design features, commodities, storage arrangement and fire protection features within the high-piled storage area shall be provided at the time of permit, ~~when~~ where required by the fire code official.

3201.3.1 Approved construction documents. Following approval of the construction documents, a copy of the approved plans shall be maintained on the premises in an approved location.

3201.3.2 Approved storage layout. A floor plan, of legible size, shall be provided, mounted on a wall and protected from damage. The floor plan shall be mounted in an approved location and show the following:

1. Locations, dimensions and rack layout of high-piled storage areas.
2. Design storage height for each storage area.
3. Types of commodities.
4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement.
5. Aisle dimensions between each storage array.
6. For palletized and solid-piled storage, the maximum pile volume for each storage array.
7. Location and classification of commodities in accordance with Section 3203.
8. Location of required fire department access doors.
9. Location of valves controlling the water supply of ceiling and in-rack sprinklers.

3201.4 ~~E~~Fire safety and evacuation plan. Where required by ~~the fire code official~~ Section 403, ~~an~~a fire safety and evacuation plan ~~for public accessible areas and a separate set of plans indicating location and width of aisles, location of exits, exit access doors, exit signs, height of storage, and locations of hazardous materials~~ shall be submitted at the time of permit application for review and approval. ~~Following approval of the plans, a~~ A copy of the approved fire safety and evacuation plan~~s~~ shall be maintained on the premises in an approved location.

Section 3202 Definitions

3202.1 Definitions. The following terms are defined in Chapter 2.

"Array."

"Array, closed."

"Automated rack storage."

"Bin box."

"Commodity."

"Early suppression fast-response (ESFR) sprinkler."

"Expanded plastic."

"Extra-high rack combustible storage."

"High-piled combustible storage."

"High-piled storage area."

"Longitudinal flue space."

"Manual stocking methods."

"Mechanical stocking methods."

"Shelf storage."

"Solid shelving."

"Transverse flue space."

Section 3203 Commodity classification

3203.1 Classification of commodities. Commodities shall be classified as Class I, II, III, IV or high hazard in accordance with ~~this *paragraph*~~ Sections 3203.2 through 3203.10.3. Materials listed within each commodity classification are assumed to be unmodified for improved combustibility characteristics. Use of flame-retarding modifiers or the physical form of the material could change the classification. ~~See *paragraph* (C)(7)(3203.7) *of this rule* for classification of Group A, B and C plastics.~~

3203.2 Class I commodities. Class I commodities are ~~essentially~~ noncombustible products ~~on wooden pallets,~~ in ordinary corrugated cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without wood pallets. ~~Class I commodities are allowed to contain a limited~~ The amount of Group A plastics ~~in accordance with *paragraph* (C)(7)(d)(3203.7.4) *of this rule*. Examples of Class I commodities include, but are not limited to, the following:~~shall be limited in accordance with Section 3203.9.

~~Alcoholic beverages not exceeding 20 *per cent* alcohol~~
~~Appliances noncombustible, electrical~~
~~Cement in bags~~
~~Ceramics~~
~~Dairy products in nonwax-coated containers (excluding bottles)~~

~~Dry insecticides~~
~~Foods in noncombustible containers~~
~~Fresh fruits and vegetables in nonplastic trays or containers~~
~~Frozen foods~~
~~Glass~~
~~Glycol in metal cans~~
~~Gypsum board~~
~~Inert materials, bagged~~
~~Insulation, noncombustible~~
~~Noncombustible liquids in plastic containers having less than a 5-gallon (19 L) capacity~~
~~Noncombustible metal products~~

3203.3 Class II commodities. Class II commodities are Class I products in slatted wooden crates, solid wooden boxes, multiple-thickness paperboard cartons or equivalent combustible packaging material with or without wood pallets. ~~Class II commodities are allowed to contain a limited~~ The amount of Group A plastics ~~in accordance with *paragraph* (C)(7)(d)(3203.7.4) *of this rule*. Examples of Class II commodities include, but are not limited to, the following:~~shall be limited in accordance with Section 3203.9.

~~Alcoholic beverages not exceeding 20-*per cent* alcohol, in combustible containers~~
~~Foods in combustible containers~~
~~Incandescent or fluorescent light bulbs in cartons~~
~~Thinly coated fine wire on reels or in cartons~~

3203.4 Class III commodities. Class III commodities are ~~commodities~~products of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without wood pallets. ~~Products are allowed to contain limited amounts of Group A or B plastics, such as metal bicycles with plastic handles, pedals, seats and tires.~~ The amount of Group A plastics shall be limited in accordance with Section ~~3203.7.4~~ 3203.9. ~~Examples of Class III commodities include, but are not limited to, the following:~~

~~Aerosol, Level 1 (see *rule 1301:7-7-51 of the Administrative Code*)~~
~~Biomass briquettes, bagged, and static piles~~
~~Biomass pellets, bagged, and static piles~~
~~Charcoal~~
~~Combustible fiberboard~~
~~Cork, baled~~
~~Corn cobs, static piles~~
~~Corn stover, baled and chopped~~
~~Feed, bagged~~
~~Fertilizers, bagged~~
~~Firewood~~
~~Food in plastic containers~~
~~Forest residue, round wood or chipped (branches, bark, cross-cut ends, edgings and treetops)~~
~~Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic-padded and covered arm rests~~
~~Glycol in combustible containers not exceeding 25 *per cent*~~
~~Lubricating or hydraulic fluid in metal cans~~
~~Lumber~~
~~Mattresses, excluding foam rubber and foam plastics~~
~~Noncombustible liquids in plastic containers having a capacity of more than 5 gallons (19 L)~~

~~Paints, oil base, in metal cans~~
~~Paper, waste, baled~~
~~Paper and pulp, horizontal storage, or vertical storage that is banded or protected with approved wrap~~
~~Paper in cardboard boxes~~
~~Peanut hulls, bagged, and static piles~~
~~Pillows, excluding foam rubber and foam plastics~~
~~Plastic-coated paper food containers~~
~~Plywood~~
~~Rags, baled~~
~~Recovered construction wood~~
~~Rice hulls, bagged, and static piles~~
~~Rugs, without foam backing~~
~~Seasonal grasses, baled and chopped~~
~~Straw, baled~~
~~Sugar, bagged~~
~~Wood, baled~~
~~Wood chips, bagged, and static piles~~
~~Woody biomass, round wood or chipped (vase-shaped stubby bushes, bamboo, willows; branches, bark and stem wood)~~
~~Wood doors, frames and cabinets~~
~~Wood pellets, bagged, and static piles~~
~~Yarns of natural fiber and viscose~~

3203.5 Class IV commodities. Class IV commodities are Class I, II or III products containing Group A plastics in ordinary corrugated cartons~~;~~ ~~and~~ Class I, II and III products with Group A plastic packaging~~;~~ ~~, with or without pallets.~~ Group B plastics~~;~~ and free-flowing Group A plastics ~~are also included in this class~~with or without wood pallets. The total amount of nonfree-flowing Group A plastics shall be limited in accordance with Section ~~3203.7.4~~ 3203.9. ~~Examples of Class IV commodities include, but are not limited to, the following:~~

~~Aerosol, Level 2 (see *rule 1301:7-7-51 of the Administrative Code*)~~
~~Alcoholic beverages, exceeding 20 *per cent* but less than 80 per cent alcohol, in cans or bottles in cartons~~
~~Clothing, synthetic or nonviscose~~
~~Combustible metal products (solid)~~
~~Furniture, plastic upholstered~~
~~Furniture, wood or metal with plastic covering and padding~~
~~Glycol in combustible containers (greater than 25 *per cent* and less than 50 *per cent*)~~
~~Linoleum products~~
~~Paints, oil base in combustible containers~~
~~Pharmaceutical, alcoholic elixirs, tonics, etc.~~
~~Rugs, foam back~~
~~Shingles, asphalt~~
~~Thread or yarn, synthetic or nonviscose~~

3203.6 High-hazard commodities. High-hazard commodities are ~~high-hazard~~ products presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastics not otherwise classified are included in this class. ~~Examples of high-hazard commodities include, but are not limited to, the following:~~

~~Aerosol, Level 3 (see *rule 1301:7-7-51 of the Administrative Code*)~~
~~Alcoholic beverages, exceeding 80 *per cent* alcohol, in bottles or cartons~~
~~Commodities of any class in plastic containers in carousel storage~~
~~Flammable solids (except solid combustible metals)~~
~~Glycol in combustible containers (50 *per cent* or greater)~~
~~Lacquers that dry by solvent evaporation, in metal cans or cartons~~
~~Lubricating or hydraulic fluid in plastic containers~~
~~Mattresses, foam rubber or foam plastics~~
~~Pallets and flats that are idle combustible~~
~~Paper and pulp, rolled, in vertical storage that is unbanded or not protected with an approved wrap~~
~~Paper, asphalt, rolled, horizontal storage~~
~~Paper, asphalt, rolled, vertical storage~~
~~Pillows, foam rubber and foam plastics~~
~~Pyroxylin~~
~~Rubber tires~~
~~Vegetable oil and butter in plastic containers~~

3203.7 Classification of plastics. Plastics shall be designated as Group A, B or C in accordance with Sections 3203.7.1 through ~~3203.7.4~~ 3203.7.3.

3203.7.1 Group A plastics. Group A plastics are plastic materials having a heat of combustion that is much higher than that of ordinary combustibles, and a burning rate higher than that of Group B plastics. ~~Examples of Group A plastics include, but are not limited to, the following:~~

~~ABS (acrylonitrile-butadiene-styrene copolymer)~~
~~Acetal (polyformaldehyde)~~
~~Acrylic (polymethyl methacrylate)~~
~~Butyl rubber~~
~~EPDM (ethylene propylene rubber)~~
~~FRP (fiberglass-reinforced polyester)~~
~~Natural rubber (expanded)~~
~~Nitrile rubber (acrylonitrile butadiene rubber)~~
~~PET or PETE (polyethylene terephthalate)~~
~~Polybutadiene~~
~~Polycarbonate~~
~~Polyester elastomer~~
~~Polythylene~~
~~Polypropylene~~
~~Polystyrene (expanded and unexpanded)~~
~~Polyurethane (expanded and unexpanded)~~
~~PVC (polyvinyl chloride greater than 15 *per cent* plasticized, e.g., coated fabric unsupported film)~~
~~SAN (styrene acrylonitrile)~~
~~SBR (styrene butadiene rubber)~~

3203.7.2 Group B plastics. Group B plastics are plastic materials having a heat of combustion and a burning rate higher than that of ordinary combustibles, but not as high as those of Group A plastics. ~~Examples of Group B plastics include, but are not limited to, the following:~~

~~Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)~~
~~Chloroprene rubber~~
~~Fluoroplastics (ECTFE, ethylene-chlorotrifluoroethylene copolymer; ETFE, ethylene-tetrafluoroethylene copolymer; FEP, fluorinated ethylene-propylene copolymer)~~
~~Natural rubber (nonexpanded)~~
~~Nylon (Nylon 6, Nylon 6/6)~~
~~PVC (polyvinyl chloride greater than 5 *per cent*, but not exceeding 15 *per cent* plasticized)~~
~~Silicone rubber~~

3203.7.3 Group C plastics. Group C plastics are plastic materials having a heat of combustion and a burning rate similar to those of ordinary combustibles. ~~Examples of Group C plastics include, but are not limited to, the following:~~

~~Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene)~~
~~Melamine (melamine formaldehyde)~~
~~Phenol~~
~~PVC (polyvinyl chloride, rigid or plasticized less than 5 *per cent*, e.g., pipe, pipe fittings)~~
~~PVDC (polyvinylidene chloride)~~
~~PVDF (polyvinylidene fluoride)~~
~~PVF (polyvinyl fluoride)~~
~~Urea (urea formaldehyde)~~

~~(d) **3203.7.4 Limited quantities of Group A plastics in mixed commodities.** Figure (C)(7)(d)(3203.7.4) *of this rule* shall be used to determine the quantity of Group A plastics allowed to be stored in a package or carton or on a pallet without increasing the commodity classification.~~

3203.8 Examples of commodity classification. Table 3203.8 shall be used to determine the commodity classification for various products and materials. Products not found in the list shall be classified based on the classification descriptions in Sections 3203.2 through 3203.6 and the products they most nearly represent in Table 3203.8. Table 3203.8 considers the product and the packaging if listed with the item. Products with additional packaging consisting of Group A plastics shall be classified in accordance with Section 3203.9.

The commodity classifications are based on products with, or without, wood pallets. Where plastic pallets are used, the commodity classification shall be modified in accordance with Section 3203.10.

Table 3203.8
Examples of commodity classification

PRODUCT CATEGORY	PRODUCT	CLASSIFICATION
Aerosols	Level 1	Class III (See Chapter 51)
	Level 2	Class IV (See Chapter 51)

	Level 3	High-hazard (See Chapter 51)
Batteries	Dry cells (excludes lithium, lithium-ion and other similar exotic metals or combustible electrolyte); without blister packing (if blister packed, refer to the commodity classification definitions)	Class I
	Dry cells (nonlithium or similar exotic metals); in blister packing; cartoned	Class II
	Vehicle; any size (for example, automobile or truck); empty plastic casing	High-hazard (Group A unexpanded)
	Vehicle; large (in other words, truck or larger); dry or wet cells (excludes lithium-ion and other cells containing combustible electrolytes)	High-hazard (Group A unexpanded)
	Vehicle; small (for example, automobile); wet cells (excludes lithium-ion and other cells containing combustible electrolytes)	Class I
	Lithium-ion	High-hazard
Biomass	Circular baled corn stover	Class IV
	Rectangular baled corn stover	Class III
	Rectangular baled switchgrass	High-hazard
Empty containers	Noncombustible	Class I
	PET	Class IV
	Rigid plastic (not including PET)	High-hazard (Group A unexpanded)
	Wood; solid sided (such as crates, boxes)	Class II
Film rolls, including photographic	Polypropylene, polyester, polyethylene; rolled on any reel type	High-hazard (Group A unexpanded)
	35 mm metal film cartridges in polyethylene cans; cartoned	Class III
	Motion picture or bulk rolls in polycarbonate, polyethylene or in metal cans; polyethylene bagged; cartoned	Class II
	Rolls in polycarbonate plastic cassettes; cartoned	Class IV
	Photographic paper; sheets; bagged in polyethylene; cartoned	Class III
	Glycol in combustible containers (50 percent or greater)	High-hazard

Flammable and combustible liquids	Lacquers, which dry by solvent evaporation, in metal cans or cartons	High-hazard
	Lighters; butane; blister-packed; cartoned	High-hazard (Group A unexpanded)
	Over 20- and up to 50-percent alcohol (such as alcoholic beverages, hair spray); up to 1-gallon glass bottles or jars; in racks; cartoned	Class III
	Over 20- and up to 50-percent alcohol (such as alcoholic beverages, hair spray); up to 1-gallon glass bottles or jars; palletized; cartoned	Class IV
	Over 20- and up to 50-percent alcohol (such as alcoholic beverages, hair spray); up to 1-gallon plastic bottles or jars; cartoned	Class IV
	Up to 20-percent alcohol (such as alcoholic beverages, flavoring extracts); greater than 5-gallon plastic containers with wall thickness greater than 0.25 inch	High-hazard (Group A unexpanded)
	Up to 20-percent alcohol (such as alcoholic beverages, flavoring extracts); metal, glass or ceramic containers	Class I
	Up to 20-percent alcohol (such as alcoholic beverages, flavoring extracts): plastic containers greater than 5 gallons and wall thickness up to 1/4 inch	Class II
PRODUCT CATEGORY	**PRODUCT**	**CLASSIFICATION**
Flammable and combustible liquids (continued)	Up to 20-percent alcohol (such as alcoholic beverages, flavoring extracts); up to 5-gallon plastic bottles or jars	Class I
	Up to 20-percent alcohol (such as alcoholic beverages, flavoring extracts); wood containers	Class II
	Lubricating or hydraulic fluid in plastic containers	High-hazard
	Nail polish; up to 2-ounce glass bottles or jars; cartoned	Class IV
	Nail polish; up to 2-ounce plastic bottles or jars; cartoned	High-hazard (Group A unexpanded)
Flammable solids	Except solid combustible metals	High-hazard
Food products, frozen	In nonwaxed or nonplastic packaging	Class I
	In plastic trays	Class III
	In waxed or plastic-coated paper packaging	Class II
Food products, nonfrozen	Butter (stick or whipped spread) or margarine (up to 50-percent oil)	Class III

	Butter; whipped spread	Class III
	Dry foods (such as baked goods, candy, cereals, cheese, chocolate, cocoa, coffee, grains, granular sugar, nuts); bagged or cartoned	Class III
	Foods (such as coffee, fish products, fruit, meat products, nuts, poultry); metal cans	Class I
	Fruits and vegetables (noncombustible semiliquid); crushed; plastic containers up to 5 gallons	Class I
	Fruits and vegetables; fresh; wood spacers, nonplastic trays or containers	Class I
	Margarine; over 50- and up to 80-percent oil	High-hazard (Group A unexpanded)
	Meat; fresh; no plastic packaging; uncartoned	Class I
	Meat; fresh; no plastic packaging; cartoned	Class II
	Meat; fresh; plastic tray	Class III
	Milk; any container; stored in solid plastic crates	High-hazard (Group A unexpanded)
	Milk; paper containers, or plastic bottles or jars up to 5 gallons	Class I
	Salt; bagged	Class I
	Salt; cartoned	Class II
	Snack foods (such as potato chips); plasticized aluminum bags; cartoned	High-hazard (Group A unexpanded)
	Syrup; wooden container	Class II
Furniture and bedding	Box spring; standard (minimal plastic materials)	Class III
	Box spring; wrapped in plastic cover	Class IV
	Furniture and bedding; with foam cushioning	High-hazard (Group A expanded)
	Furniture; metal (such as file cabinets or desks with minimal plastic trim); cartoned	Class I
	Furniture; wood (such as doors, windows, cabinets); no plastic coverings or foam cushioning	Class III
	Furniture; wood; plastic coverings; nonexpanded plastic trim	Class IV

	Mattress; foam (in finished form)	High-hazard (Group A expanded)
	Pillows, foam rubber and foam plastics	High-hazard (Group A expanded)
PRODUCT CATEGORY	**PRODUCT**	**CLASSIFICATION**
Housing materials and appliances	Appliances; major (for example, stoves, refrigerators); no appreciable plastic interior or exterior trim; cartoned	Class II
	Appliances; major (for example, stoves, refrigerators); no appreciable plastic interior or exterior trim; uncartoned	Class I
	Appliances; no appreciable plastic exterior trim (interior of unit can have appreciable plastic)	Class III
	Carpet tiles; cartoned	High-hazard (Group A unexpanded)
	Fiberglass insulation; paper-backed rolls; bagged or unbagged	Class IV
	Floor coverings; vinyl, stacked tiles	Class IV
	Floor coverings; vinyl; rolled	High-hazard (Group A unexpanded)
	Gypsum board	Class I
	Housing materials (such as sinks, countertops); noncombustible, cartoned or crated	Class II
	Light fixtures; nonplastic; cartoned	Class II
	Paint; oil-based; friction-top metal containers; cartoned	Class IV
	Paint; water-based (latex); friction-top metal containers; cartoned	Class I
	Paper; asphalt; rolled, horizontal or vertical storage	High-hazard
	Roofing shingles; asphalt-coated fiberglass	Class III
	Roofing shingles; asphalt-impregnated felt	Class IV
Miscellaneous	Ammunition; small arms and shotgun; cartoned	Class IV
	Charcoal; mineral-spirit impregnated; bagged	High-hazard (Group A expanded)
	Charcoal; standard (nonmineral-spirit impregnated); bagged	Class III
	Fertilizers; nitrates; bagged	Class II

	Fertilizers; phosphates; bagged	Class I
	Leather hides; baled	Class II
	Leather; finished products (such as shoes, jackets, gloves, bags, luggage, belts)	Class III
	Motors; electric	Class I
	Pallets and flats that are idle; combustible	High-hazard
	Shock absorbers; metal dust cover	Class II
	Shock absorbers; plastic dust cover	Class III
	Skis; wood	Class III
	Skis; composite materials (such as plastic, fiberglass, foam)	Class IV
	Tobacco products; cartoned	Class III
	Toys; stuffed; foam or synthetic	High-hazard (Group A expanded)
	Transformer; dry or empty (in other words, void of oil)	Class I
Noncombustible liquids	Liquids or semiliquids; PET containers greater than 5 gallons having a nominal wall thickness greater than 1/4 inch	Class IV
	Liquids or semiliquids; PET containers up to 5 gallons having a nominal wall thickness less than 1/4 inch	Class I
	Liquids or semiliquids (such as crushed fruits and vegetables); plastic containers up to 5-gallon capacity	Class I
	Liquids or semiliquids; plastic (except PET) containers greater than 5-gallon capacity having a nominal wall thickness greater than 1/4 inch	High-hazard (Group A unexpanded)
PRODUCT CATEGORY	**PRODUCT**	**CLASSIFICATION**
Noncombustible liquids (continued)	Liquids or semiliquids; plastic (except PET) containers greater than 5-gallon capacity having a nominal wall thickness up to 1/4 inch	Class II
	Liquids; cardboard drink boxes, plastic coated, wax coated, and/or aluminum lined; uncartoned or on corrugated carton trays with plastic sheeting	Class I
	Liquids; cardboard drink boxes, plastic coated, wax coated, and/or aluminum lined; stored in plastic containers	High-hazard (Group A unexpanded)
	Liquids; glass bottles or jars; cartoned	Class I
	Liquids; less than 5-gallon plastic containers	Class I

	Liquids; pharmaceuticals (nonflammable); glass bottles or jars; cartoned	Class II
	Liquids; plastic bottles or jars; stored in open or solid plastic crates	High-hazard (Group A unexpanded)
Paper products	Book signatures (paper part of book without hard cover)	Class II
	Cartons (such as cardboard flats); corrugated; partially assembled	Class IV
	Cartons (such as cardboard flats); corrugated; unassembled in neat piles	Class III
	Cartons; wax coated, single-walled corrugated	High-hazard (Group A unexpanded)
	Cellulosic paper products; nonwax coated (such as books, cardboard games, cartoned tissue products, magazines, newspapers, paper cups, paper plates, paper towels, plastic-coated paper food containers, stationary)	Class III
	Cellulosic paper products; wax coated (such as paper plates, cups); loosely packed; cartoned	High-hazard (Group A unexpanded)
	Cellulosic paper products; wax coated (such as paper plates, cups); nested; cartoned	Class IV
	Matches; paper-type; cartoned	Class IV
	Matches; wooden; cartoned	High-hazard (Group A unexpanded)
	Rolled; lightweight; in storage racks	Class IV
	Rolled; medium or heavyweight; in storage racks or onside	Class III
	Rolled; in horizontal storage or vertical storage that is banded or protected with an approved wrap	Class III
	Rolled; in vertical storage that is unbanded or not protected with an approved wrap	High-hazard
	Tissue products; plastic wrapped; cartoned	Class III
	Tissue products; plastic wrapped; uncartoned	High-hazard (Group A unexpanded)
Plastic, rubber	ABS (Acrylonitrile-butadiene-styrene copolymer)	High-hazard (Group A unexpanded)

	Acetal (polyformaldehyde)	High-hazard (Group A unexpanded)
	Acrylic (polymethyl methacrylate)	High-hazard (Group A unexpanded)
	Automobile bumpers and dashboards	High-hazard (Group A expanded)
	Butyl rubber	High-hazard (Group A unexpanded)
	Cellulose acetate	Class IV (Group B plastic)
	Cellulose acetate butyrate	High-hazard (Group A unexpanded)
PRODUCT CATEGORY	**PRODUCT**	**CLASSIFICATION**
Plastic, rubber (continued)	Chloroprene rubber	Class IV (Group B plastic)
	Containers; Nonexpanded plastic gridded or solid; collapsed or nested with no air spaces	High-hazard (Group A unexpanded)
	ECTFE (ethylene-chlorotrifluoro-ethylene copolymer)	Class IV (Group B plastic)
	EPDM (ethylene-propylene rubber)	High-hazard (Group A unexpanded)
	ETFE (ethylene-tetrafluoroethylene copolymer)	Class IV (Group B plastic)
	Ethyl cellulose	High-hazard (Group A unexpanded)
	FEP (fluorinated ethylene-propylene copolymer)	Class IV (Group B plastic)
	FRP (fiberglass-reinforced polyester)	High-hazard (Group A unexpanded)
	Melamine (melamine formaldehyde)	Class III (Group C plastic)

Nitrile rubber (acrylonitrile-butadiene rubber)	High-hazard (Group A unexpanded)
Nylon (nylon 6, nylon 6/6)	High-hazard (Group A unexpanded)
PCTFE (polychlorotrifluoroethylene)	Class III (Group C plastic)
PET (Polyethylene terephthalate-thermoplastic polyester)	High-hazard (Group A unexpanded)
Phenolic	Class III (Group C plastic)
Plastics; stored in fully closed and solid (no openings) metal containers	Class I
Polybutadiene	High-hazard (Group A unexpanded)
Polycarbonate	High-hazard (Group A unexpanded)
Polyester elastomer	High-hazard (Group A unexpanded)
Polyethylene	High-hazard (Group A unexpanded)
Polypropylene	High-hazard (Group A unexpanded)
Polystyrene; foam products (such as plates, cups)	High-hazard (Group A expanded)
Polystyrene; rigid products	High-hazard (Group A unexpanded)
Polyurethane	High-hazard (Group A expanded)
PTFE (polytetrafluoroethylene)	Class III (Group C plastic)
PVC (polyvinyl chloride) products; plasticizer content 20 percent or less	Class III (Group C plastic)

PRODUCT CATEGORY	PRODUCT	CLASSIFICATION
Plastic, rubber (continued)	PVC (polyvinyl chloride) products; plasticizer content greater than 20 percent	High-hazard (Group A unexpanded)
	PVC resins; bagged	Class III (Group C plastic)
	PVDC (polyvinylidene chloride)	Class III (Group C plastic)
	PVDF (polyvinylidene fluoride)	Class III (Group C plastic)
	PVF (polyvinyl fluoride)	High-hazard (Group A unexpanded)
	Pyroxylin	High-hazard
	Rubber; natural in blocks; cartoned	High-hazard (Group A unexpanded)
	Rubber; natural; expanded	High-hazard (Group A expanded)
	Rubber; natural; Nonexpanded	High-hazard (Group A unexpanded)
	Rubber; synthetic (santoprene)	High-hazard (Group A unexpanded)
	Rubber tires	High-hazard
	SAN (styrene acrylonitrile)	High-hazard (Group A unexpanded)
	SBR (styrene-butadiene rubber)	High-hazard (Group A unexpanded)
	Silicone rubber	Class IV (Group B plastic)
	Urea (urea formaldehyde)	Class III (Group C plastic)
Plastic containers	Bottles or jars greater than 1 gallon containing noncombustible solids	High-hazard (Group A unexpanded)

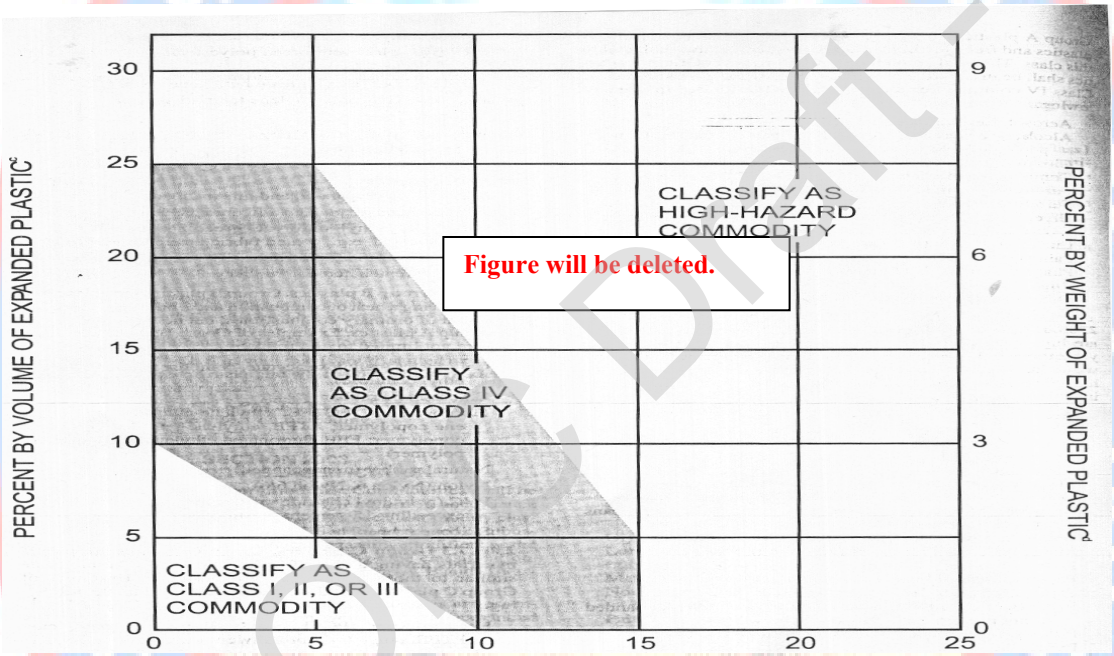
	Bottles or jars up to 1 gallon containing noncombustible solids	High-hazard (Group A unexpanded)
Powders, pills	Pharmaceutical pills; glass bottles or jars; cartoned	Class II
	Pharmaceuticals pills; plastic bottles or jars; cartoned	Class IV
	Polyvinyl alcohol (PVA) resins; bagged	Class IV
	Powders; combustible (ordinary—such as sugar or flour); free-flowing; bagged	Class II
	Powders; noncombustible free-flowing powdered or granular materials (such as cement, calcium chloride, clay, iron oxide, sodium chloride, sodium silicate); bagged	Class I
	Powders; noncombustible; glass bottles or jars; cartoned	Class I
	Powders; noncombustible; PET bottles or jars	Class II
	Powders; noncombustible; plastic (other than PET) bottles or jars; uncartoned	High-hazard (Group A unexpanded)
	Powders; noncombustible; plastic bottles or jars greater than 1-gallon capacity	High-hazard (Group A unexpanded)
	Powders; noncombustible; plastic bottles or jars up to 1-gallon capacity; cartoned	Class IV
PRODUCT CATEGORY	**PRODUCT**	**CLASSIFICATION**
Textile materials and products	Cloth; natural fibers; baled	Class III
	Cloth; synthetic cloth	Class IV
	Clothing; natural fibers (such as wool, cotton) and viscose	Class III
	Cotton; cartoned	Class III
	Diapers; cotton or linen	Class III
	Diapers; plastic or nonwoven fabric; cartoned	Class IV
	Diapers; plastic or nonwoven fabric; plastic-wrapped; uncartoned	High-hazard (Group A unexpanded)
	Fabric; rayon and nylon	Class IV
	Fabric; synthetic (except rayon and nylon); greater than 50/50 blend	High-hazard (Group A unexpanded)
	Fabric; synthetic (except rayon and nylon); up to 50/50 blend	Class III

	Fabric; vinyl-coated (such as tablecloth); cartoned	High-hazard (Group A unexpanded)
	Fibers; rayon and nylon; baled	Class IV
	Fibers; synthetic (except rayon and nylon); baled	High-hazard (Group A unexpanded)
	Thread or yarn; rayon and nylon; wood or paper spools	Class IV
	Thread or yarn; rayon or nylon; plastic spools	High-hazard (Group A unexpanded)
	Thread or yarn; synthetic (except rayon and nylon); greater than 50/50 blend; paper or wood spools	Class IV
	Thread or yarn; synthetic (except rayon and nylon); greater than 50/50 blend; plastic spools	High-hazard (Group A unexpanded)
	Thread or yarn; synthetic (except rayon and nylon); up to 50/50 blend; plastic spools	High-hazard (Group A unexpanded)
	Thread or yarn; synthetic (except rayon and nylon); up to 50/50 blend; wood or paper spools	Class III
Wax products	Candles	High-hazard (Group A expanded)
	Paraffin or petroleum wax; blocks	High-hazard (Group A expanded)
Wire, cable, spools	Spools; plastic; empty	High-hazard (Group A unexpanded)
	Spools; wood; empty	Class III
	Wire or cable; PVC insulated; metal or wood spools	Class II
	Wire or cable; PVC insulated; plastic spools	Class IV
	Wire; bare; metal spools; uncartoned	Class I
	Wire; bare; metal spools; cartoned	Class II
	Wire; bare; plastic spools; cartoned	Class IV
	Wire; bare; plastic spools; uncartoned	High-hazard (Group A unexpanded)
	Wire; bare; wood or cardboard spools	Class II
Wood products	Wood patterns	Class IV

	Wood products (such as fiberboard, lumber, particle board, plywood, pressboard with smooth ends and edges); bundled solid blocks	Class II
	Wood products (such as fiberboard, lumber, particle board, plywood, pressboard with smooth ends and edges); unbundled or nonsolid blocks	Class III
	Wood products (such as toothpicks, clothespins and hangers)	Class III

For SI: 1 inch = 25.4 mm, 1 gallon = 3.8 L, 1 ounce = 29.57 ml.

~~**Figure 3203.7.4**~~
~~**Mixed commodities**[a,b]~~



~~*Per cent* of weight of unexpanded plastic[d]~~

~~a. This figure is intended to determine the commodity classification of a mixed commodity in a package, carton or on a pallet where plastics are involved.~~

~~b. The following is an example of how to apply the figure: A package containing a Class III commodity has 12 *per cent* Group A expanded plastic by volume. The weight of the unexpanded Group A plastic is 10 *per cent*. This commodity is classified as a Class IV commodity. If the weight of the unexpanded plastic is increased to 14 *per cent*, the classification changes to a high hazard commodity.~~

~~c. *Per cent* by volume = Volume of plastic in pallet load / Total volume of pallet load, including pallet~~

~~d. *Per cent* by weight = Weight of plastic in pallet load / Total weight of pallet load, including pallet~~

3203.9 Limited quantities of Group A plastics in mixed commodities. Figures 3203.9(1) and 3203.9(2) shall be used to determine the commodity classification based on the quantity of Group A plastics in the following situations:

1. The product is not listed in Table 3203.8 and contains Group A plastics.

2. The commodity contains Group A plastics and is not classified as high-hazard in Table 3203.8.

3. The product listing in Table 3203.8 does not specifically include packaging, and the packaging material includes Group A plastics.

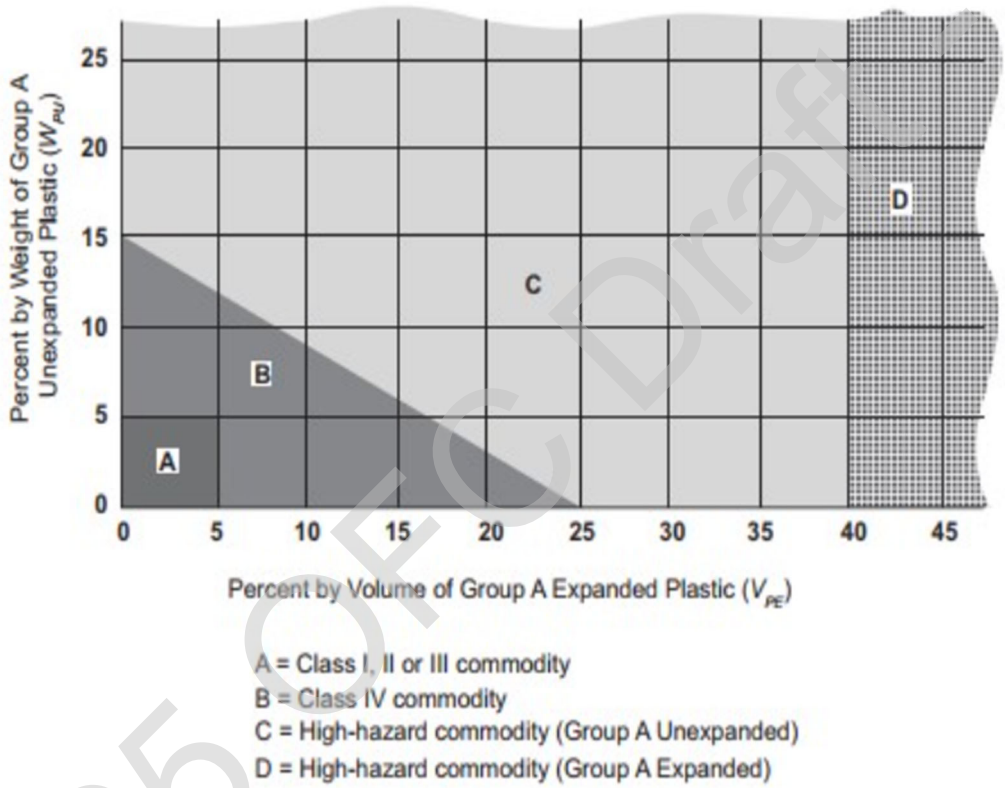


Figure 3203.9(1)
Evaluation of cartooned commodities~~by volume of~~ containing Group A ~~expanded~~ plastics ~~in mixed commodities~~[a,b]

a. This figure is used to determine the commodity classification of a mixed commodity with Group A plastics in a package~~, carton,~~ or crate.

b. The following is an example of how to apply Figure 3203.9(1): A pallet load consists of a Class III commodity in cardboard boxes with components of unexpanded Group A plastic and packing material of expanded Group A plastic. Using Equation 32-1, the weight of unexpanded Group A plastic is 5 percent. Using Equation 32-2, the volume of expanded Group A plastic is 15 percent. This commodity is classified as a Class IV commodity. If the volume of the expanded Group A plastic is increased to 20 percent, the classification changes to a high-hazard (Group A unexpanded) commodity. Where the load is stored on a plastic pallet, the requirements in Section 3203.10 also apply.

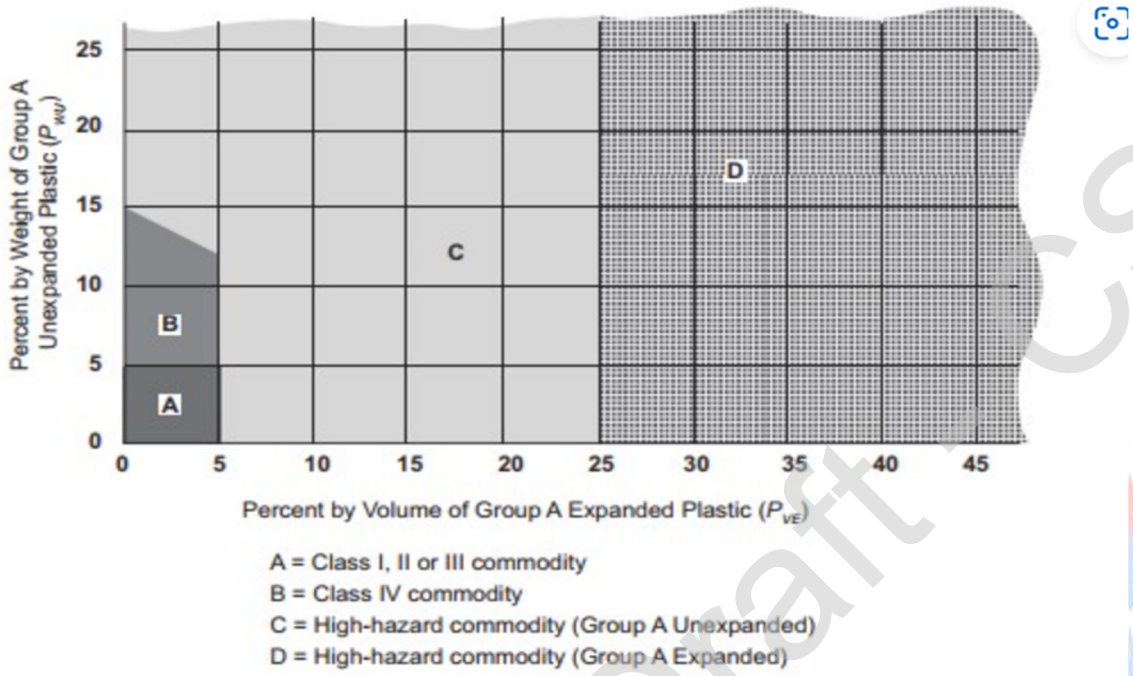


Figure 3203.9(2)
Evaluation ~~by weight of~~of exposed commodities containing Group A ~~expanded~~ plastics ~~in mixed commodities~~[a,b,~~c~~]

a. This figure is used to determine the commodity classification of a mixed commodity with Group A plastics where the products are exposed.
b. The following is an example of how to apply Figure 3203.9(2): A pallet load consists of an exposed Class III commodity with components of unexpanded Group A plastic and packing material of expanded Group A plastic. Using Equation 32-1, the weight of unexpanded Group A plastic is 5 percent. Using Equation 32-2, the volume of expanded Group A plastic is 6 percent. This commodity is classified as a high-hazard (Group A unexpanded) commodity. Where the load is stored on a plastic pallet, the requirements ~~in Section~~*in Section* 3203.10 also apply.

3203.9.1 Classifying mixed commodities with limited Group A plastics. The percentage of Group A plastics determined in accordance with Section 3203.9.2 shall be used in Figures 3203.9(1) and 3203.9(2). Results from Figure 3203.9(1) must be compared to results from Figure 3203.9(2) and the commodity will be classified with the highest commodity classification.

Figures 3203.9(1) and 3203.9(2) shall not be used to reduce the commodity classification shown in Table 3203.8.

3203.9.2 Percentage of Group A plastics. The pallet, if any, shall not be included when measuring the weight of the commodity (W_{PU} or W_{PE}) or the volume of the commodity (V_{PE}). The pallet, if any, shall be included when measuring the weight of the entire load (W_L) or the volume of the entire load (V_L).

Exception: Where noncombustible pallets are used, the pallets shall not be included in the volume and weight calculations.

The percentage by weight of Group A unexpanded plastics in the load shall be calculated in accordance with Equation 32-1.

The percentage by volume of Group A expanded plastics in the load shall be calculated in accordance with Equation 32-2.

The percentage by weight of Group A expanded plastics in the load shall be calculated in accordance with Equation 32-3.

(Equation 32-1)

$P_{WU} = W_{PU}/W_L$

where:

PWU = Percentage by weight of Group A unexpanded plastic.
W_{PU} = Weight of Group A unexpanded plastic in the commodity, not including the weight of the pallet, if any.
W_L = Weight of the entire load, including the weight of the pallet, if any.

(Equation 32-2)

$P_{VE} = V_{PE}/V_L$

where:

P_{VE} = Percentage of volume of Group A expanded plastic.
V_{PE} = Volume of Group A expanded plastic in the commodity, not including the volume of the pallet, if any.
V_L = Volume of the entire load, including the volume of the pallet, if any.

(Equation 32-3)

$P_{WE} = W_{PE}/W_L$

where:

P_{WE} = Percentage by weight of Group A expanded plastic.
W_{PE} = Weight of Group A expanded plastic in the commodity, not including the weight of the pallet, if any.
W_L = Weight of the entire load, including the weight of the pallet, if any.

3203.10 Plastic pallets. The commodity classification determined in Section 3203.8 or 3203.9 shall be modified in accordance with Sections 3203.10.1 through 3203.10.3 where plastic pallets are used.

Exception: The commodity classification is not modified where any of the following conditions occur:

1. Group A plastic commodities are stored on plastic pallets.

2. Sprinkler protection consists of sprinklers at the ceiling only, using sprinklers with a minimum K-factor of K-16.8 (240).

3. The plastic pallets are listed and labeled in accordance with Section 3206.4.1.1.

3203.10.1 Unreinforced plastic pallets. For Class I through IV commodities, where unreinforced polypropylene or unreinforced high-density polyethylene plastic pallets are used, the commodity classification shall be increased one class. To be considered unreinforced plastic pallets, the pallets shall be marked with a permanent symbol indicating the pallet is unreinforced.

3203.10.2 Reinforced plastic pallets. For Class I through IV commodities, where reinforced polypropylene or reinforced high-density polyethylene plastic pallets are used, the commodity classification shall be increased two classes except for Class IV commodities, which shall be increased to a high-hazard (Group A plastic, cartoned, unexpanded) commodity.

3203.10.3 Other pallets. For Class I through IV commodities stored on plastic pallets other than polypropylene or high-density polyethylene plastic pallets, the commodity classification shall be increased two classes unless specific testing is conducted by a testing laboratory.

Section 3204 Designation of high-piled storage areas

3204.1 General. High-piled storage areas, and portions of high-piled storage areas intended for storage of a different commodity class than adjacent areas, shall be designed and specifically designated to contain Class I, Class II, Class III, Class IV or high-hazard commodities. The designation of a high-piled ~~combustible~~ storage area, or portion thereof intended for storage of a different commodity class, shall be based on the highest hazard commodity class stored except as provided in Section 3204.2.

3204.2 Designation based on engineering analysis. The designation of a high-piled combustible storage area, or portion thereof, is allowed to be based on a lower hazard class than that of the highest class of commodity stored ~~when~~where a limited quantity of the higher hazard commodity has been demonstrated by engineering analysis to be adequately protected by the automatic sprinkler system provided. The engineering analysis shall consider the ability of the sprinkler system to deliver the higher density required by the higher hazard commodity. The higher density shall be based on the actual storage height of the pile or rack and the minimum allowable design area for sprinkler operation as set forth in the density/area figures provided in NFPA 13. The contiguous area occupied by the higher hazard commodity shall not exceed 120 square feet (11 m^2) and additional areas of higher hazard commodity shall be separated from other such areas by 25 feet (7620 mm) or more. The sprinkler system shall be capable of delivering the higher density over a minimum area of 900 square feet (84 m^2) for wet pipe systems and 1,200 square feet (111 m^2) for dry pipe systems. The shape of the design area shall be in accordance with Section 903.

Section 3205 Housekeeping and maintenance

3205.1 Storage layout plan maintenance. The approved storage layout shall be verified and evaluated annually in accordance with Section 3201.3.2. Modifications or changes to the provisions of the approved storage layout shall not be made without the prior approval of the fire code official.

~~3205.1~~3205.2 **Rack structures.** The structural integrity of racks shall be maintained.

~~3205.2~~3205.3 **Ignition sources.** Clearance from ignition sources shall be provided in accordance with Section 305.

~~3205.3~~3205.4 **Smoking.** Smoking shall be prohibited. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

~~3205.4~~3205.5 **Aisle maintenance.** When restocking is not being conducted, aisles shall be kept clear of storage, waste material and debris. Fire department access doors, aisles and exit doors shall not be obstructed. During restocking operations using manual stocking methods, a minimum unobstructed aisle width of 24 inches (610 mm) shall be maintained in 48-inch (1219 mm) or smaller aisles, and a minimum unobstructed aisle width of one-half of the required aisle width shall be maintained in aisles greater than 48 inches (1219 mm). During mechanical stocking operations, a minimum unobstructed aisle width of 44 inches (1118 mm) shall be maintained in accordance with Section ~~3206.9~~ 3206.10.

Exception: In high-piled single- and double-row rack storage of combustible materials protected by automatic sprinkler systems designed and installed in accordance with the requirements of NFPA 13 governing the use of K-25.2 (360) sprinklers, displays and wing stacks not exceeding 48 inches (1219 mm) in height provided that they do not obstruct or reduce the clear width of the aisle to less than 48 inches (1219 mm).

~~3205.5~~ 3205.6 **Pile dimension and height limitations.** Pile dimensions and height limitations shall comply with Section 3207.3.

~~3205.6~~3205.7 **Designation of storage heights.** Where required by the fire code official, a visual method of indicating the maximum allowable storage height shall be provided.

~~3205.7~~3205.8 **Arrays.** Arrays shall comply with Section 3207.4.

~~3205.8~~3205.9 **Flue spaces.** Flue spaces shall comply with Section 3208.3.

Section 3206 General fire protection and life safety features

3206.1 General. Fire protection and life safety features for high-piled storage areas shall be in accordance with Sections 3206.2 through ~~3206.10~~ 3206.11.

3206.2 ~~Extent and t~~Type of protection. Where required by Table 3206.2, fire detection systems, smoke and heat removal and automatic sprinkler design densities shall be provided to protect the high-piled storage area.

3206.2.1 Extent of protection. The fire safety features required in Table 3206.2 shall extend to the lesser of 15 feet (4572 mm) beyond the high-piled storage area or ~~to~~ a ~~permanent partition~~full height wall. Where portions of high-piled storage areas have different fire protection requirements because of commodity, method of storage or storage height, the fire protection features required by Table 3206.2 within this area shall be based on the most restrictive design requirements.

Table 3206.2
General fire protection and life safety requirements

Commodity class	Size of high-piled storage area[a] (square feet) (see Sections 3206.2 and ~~3206.4~~ 3206.3)	All storage areas (see Sections 3206, 3207 and 3208)[b]				Solid-piled storage, shelf storage and palletized storage (see Section 3207.3)		
		Automatic fire extinguishing system (see Section 3206.4	Fire detection system (see Section 3206.5)	~~Building~~Fire department access doors (see Section ~~3206.6~~ 3206.7)	Smoke and heat removal (see Section ~~3206.7~~3206.8)	Maximum pile dimension[c] (feet)	Maximum permissible storage height[d] (feet)	Maximum pile volume (cubic feet)
I-IV	0-500	Not required[a]	Not required	Not required[e]	Not required	Not required	Not required	Not required
	501-2,500	Not required[a]	Yes[ig]	Not required[e]	Not required	~~100~~120	40	100,000
	2,501-12,000 ~~Public accessible~~Open to the public	Yes	Not required	Not required[e]	Not required	~~100~~120	40	400,000
	2,501-12,000 ~~Nonpublic accessible~~Not open to the public (Option 1)	Yes	Not required	Not required[e]	Not required	~~100~~120	40	400,000
	2,501-12,000 ~~Nonpublic accessible~~Not open to the public (Option 2)	Not required[a]	Yes	Yes	Yes[jh,i]	~~100~~120	30[fe]	200,000
	12,001-~~20,000~~500,000	Yes	Not required	Yes	Yes[jh,i]	~~100~~120	40	400,000

	~~20,001-500,000~~	~~Yes~~	~~Not required~~	~~Yes~~	~~Yes[i]~~	~~100~~	~~40~~	~~400,000~~
	Greater than 500,000~~[gf]~~	Yes	Not required	Yes	Yes[jh,i]	~~100~~120	40	400,000
High Hazard	0-500	Not required[a]	Not required	Not required[e]	Not required	~~50~~60	Not required	Not required
	501-2,500 ~~Public accessible~~Open to the public	Yes	Not required	Not required[e]	Not required	~~50~~60	30	75,000
	501-2,500 ~~Nonpublic accessible~~Not open to the public (Option 1)	Yes	Not required	Not required[e]	Not required	~~50~~60	30	75,000
	501-2,500 ~~Nonpublic accessible~~Not open to the public (Option 2)	Not required[a]	Yes[q]	Yes	Yes[jh,i]	~~50~~60	20	50,000
	2,501-300,000	Yes	Not required	Yes	Yes[jh,i]	~~50~~60	30	75,000
	~~300,001-500,000[g,h]~~Greater than 300,000[f]	Yes	Not required	Yes	Yes[jh,i]	~~50~~60	30	75,000

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m^3; 1 square foot = 0.0929 m^2.

a. Where automatic sprinklers are required for reasons other than those in Chapter 32, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with Sections 3207 and 3208.

b. For aisles, see Section ~~3206.9~~ 3206.10.

c. Piles shall be separated by aisles complying with Section 3206.10.

d. For storage in excess of the height indicated, special fire protection shall be provided in accordance with Note ~~g~~f where required by the fire code official. See ~~also~~ Chapters 51 and 57 for special limitations for aerosols and flammable and combustible liquids, respectively.

~~e. *Paragraph* (C)(503) *of rule 1301:7-7-05 of the Administrative Code* shall apply for fire apparatus access.~~

~~f.~~e. For storage exceeding 30 feet in height, Option 1 shall be used.

~~g.~~f. Special fire protection provisions including, but not limited to, fire protection of exposed steel columns; increased sprinkler density; additional in-rack sprinklers, without associated reductions in ceiling sprinkler density; or fire department hose connections shall be provided where required by the fire code official.

~~h. High-piled storage areas shall not exceed 500,000 square feet. A 2-hour fire wall constructed in accordance with section 706 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall be used to divide high-piled storage areas exceeding 500,000 square feet in area.~~

~~i.~~g. Not required where an automatic fire-extinguishing system is designed and installed to protect the high-piled storage area in accordance with Sections 3207 and 3208.

h. Not required where storage areas are protected by either early suppression fast response (ESFR) sprinkler systems or control mode special application sprinklers with a response time index of 50 ~~(m · s)~~(meters-seconds)$^{1/2}$ or less that are listed to control a fire in the stored commodities with 12 or fewer sprinklers, installed in accordance with NFPA 13.

~~j.~~i. Not required in frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.

3206.3 ~~Separation of h~~High-piled storage areas. For the application of Table 3206.2, the size of the ~~H~~high-piled storage areas shall be ~~separated from other portions of the building where required by~~determined in accordance with Sections 3206.3.1 through ~~3206.3.2.2~~ 3206.3.2.1.

3206.3.1 ~~Separation from other uses.~~ ~~Mixed occupancies shall be separated in accordance with the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.~~**Size of high-piled storage area.** The size of each high-piled storage area shall include the footprint of the actual high-piled storage racks, shelves or piles and the following aisles:

1. Interior aisles within the footprint of the storage area.

2. An aisle around the perimeter of the footprint with a minimum width as required in Section 3206.10.1 or the dimension to a full height wall, whichever is less.

3206.3.2 Multiple high-piled storage areas. Where a building contains ~~M~~multiple high-piled storage areas, ~~shall be in accordance with *paragraph* (F)(3)(b)(i)(3206.3.2.1) or (F)(3)(b)(ii)(3206.3.2.2) *of this rule*.~~

~~(i)~~ **~~3206.3.2.1 Aggregate area.~~** ~~T~~the aggregate of all high-piled storage areas ~~within a building~~ shall be used for the application of Table 3206.2 unless ~~such areas~~the high-piled storage areas are separated ~~from each other by 1-hour fire barriers constructed in accordance with section 707 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*. Openings in such fire barriers shall be protected by opening protectives having a 1-hour fire protection rating.~~in accordance with one of the following:

1. High-piled storage areas separated by fire barriers with a minimum fire-resistance-rating of 1 hour constructed in accordance with Section 707 of the *building code*.

2. In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, high-piled storage areas separated by 100 feet (30 480 mm) or more. The area providing the separation shall not contain high-piled combustible storage.

~~3206.3.2.2~~3206.3.2.1 ~~Multiclass~~Multiple class high-piled storage areas. High-piled storage areas classified as Class I through IV not separated from high-piled storage areas classified as high hazard shall utilize the aggregate of all high-piled storage areas as high hazard for the purposes of the application of Table 3206.2 ~~*of this rule*~~. ~~To be considered as separated, 1-hour fire barriers shall be constructed in accordance with section 707 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*. Openings in such fire barriers shall be protected by opening protectives having a 1-hour fire protection rating.~~Multiple class high-piled storage areas meeting the separation requirements in Section 3206.3.2 shall be considered as separated. The fire safety features in Table 3206.2 shall be extended beyond the higher-hazard storage area in accordance with Section 3206.2.1.

Exception: ~~As provided for in~~ Multiple class high-piled storage areas do not need to be separated where in accordance with Section 3204.2.

3206.4 Automatic sprinklers. Automatic sprinkler systems shall be provided in accordance with Sections 3207, 3208 and 3209.

3206.4.1 Pallets. Automatic sprinkler system requirements based on the presence of pallets shall be in accordance with NFPA 13.

3206.4.1.1 Plastic pallets. Plastic pallets listed and labeled in accordance with FM 4996 or UL 2335 shall be treated as wood pallets for determining required sprinkler protection.

3206.5 Fire detection. Where fire detection is required by Table 3206.2, an approved automatic fire detection system shall be installed throughout the high-piled storage area. The system shall be monitored and be in accordance with Section 907.

3206.6 Building access. ~~Where building access is required by Table 3206.2 *of this rule*, f~~Fire apparatus access roads in accordance with Section 503 shall be provided within 150 feet (45 720 mm) of all portions of the exterior walls of buildings used for high-piled storage.

Exception: Where fire apparatus access roads cannot be installed because of topography, railways, waterways, nonnegotiable grades or other similar conditions, the fire code official is authorized to require additional fire protection.

~~**3206.6.1**~~**3206.7 Fire department** ~~**A**~~**access doors.** Where ~~building~~fire department access doors ~~is~~ are required by Table 3206.2, fire department access doors shall be provided in accordance with ~~this *paragraph*. Access doors shall be accessible without the use of a ladder.~~Sections 3206.7.1 through 3206.7.8.

3206.7.1 Exterior walls without fire department access doors. Fire department access doors are not required in an exterior wall that does not face a fire apparatus access road provided that all of the following conditions occur:

1. The opposite exterior wall faces a fire apparatus access road.
2. The opposite exterior wall is provided with fire department access doors.
3. The entire interior surface of the exterior wall is less than 150 feet (45 720 mm) away from a fire department access door.
4. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3206.7.2 Where located. Where exterior walls surrounding high-piled storage areas face fire apparatus access roads, such walls shall be provided with fire department access doors.

3206.7.3 Access to doors. Fire department access doors shall be able to be accessed without the use of a ladder.

3206.7.4 Marking on fire department access doors. Fire department access doors shall be labeled on the exterior side with the following sign or other approved sign:

FIRE DEPARTMENT ACCESS DOOR
DO NOT BLOCK

The lettering shall be in a contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of 3/8 inch (10 mm).

~~(i) 3206.6.1.1~~3206.7.5 **Number of doors required.** ~~Not less than one~~ The required fire department access doors shall be ~~provided in each 100 linear feet (30 480 mm), or fraction thereof, of the exterior walls that face required fire apparatus access roads. The required access doors shall be distributed such that the lineal distance between adjacent access doors does not exceed 100 feet (30 480 mm).~~distributed such that the lineal distance between adjacent fire department access doors does not exceed 125 feet (38 100 mm) measured center to center.

Exception: The linear distance between adjacent access doors ~~is allowed to~~shall not exceed ~~100~~200 feet (~~30 480~~60 960 mm) in existing buildings where ~~no~~ change in occupancy is not proposed. ~~The number and distribution of access doors in existing buildings shall be approved.~~

~~3206.6.1.2~~3206.7.6 **Door size and type.** Fire department ~~A~~access doors shall be not less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be ~~used~~ considered fire department access doors unless approved.

~~3206.6.1.3~~3206.7.7 **Locking devices.** ~~Only approved locking devices shall be used.~~Locking devices on fire department access doors shall be approved.

3206.7.8 Key box. Where fire department access doors are required, a key box shall be installed in accordance with Section 506.1. The key box shall contain keys or devices to allow for entry through the fire department access doors.

~~3206.7~~3206.8 **Smoke and heat removal.** Where smoke and heat removal is required by Table 3206.2 it shall be provided in accordance with Section 910.

~~3206.8~~3206.9 **Fire department hose connections.** Where exit passageways are required by the *building code* for egress, a Class I standpipe system shall be provided in accordance with Section 905.

~~3206.9~~3206.10 **Aisles.** Aisles providing access to exits and fire department access doors shall be provided in high-piled storage areas exceeding 500 square feet (46 m^2), in accordance with Sections ~~3206.9.1~~ 3206.10.1 through ~~3206.9.3~~ 3206.10.3. Aisles separating storage piles or racks shall comply with NFPA 13. Aisles shall ~~also~~ comply with Chapter 10.

Exception: Where aisles are precluded by rack storage systems, alternate methods of access and protection are allowed ~~when~~where approved.

~~3206.9.1~~3206.10.1 **Width.** Aisle width shall be in accordance with Sections ~~3206.9.1.1~~ 3206.10.1.1 and ~~3206.9.1.2~~ 3206.10.1.2.

Exceptions:

1. Aisles crossing rack structures or storage piles, that are used only for employee access, shall be not less than 24 inches (610 mm) wide.

2. Aisles separating shelves classified as shelf storage shall be not less than 30 inches (762 mm) wide.

~~3206.9.1.1~~3206.10.1.1 **Sprinklered buildings.** Aisles in sprinklered buildings shall be not less than 44 inches (1118 mm) wide. Aisles shall be not less than 96 inches (2438 mm) wide in high-piled storage areas exceeding 2,500 square feet (232 m^2) in area, that are accessible to the public and designated to contain high-hazard commodities.

Aisles shall be not less than 96 inches (2438 mm) wide in areas ~~accessible~~ open to the public where mechanical stocking methods are used.

Exceptions:

1. Aisles in high-piled storage areas exceeding 2,500 square feet (232 m^2) in area, that are ~~accessible~~open to the public and designated to contain high-hazard commodities, and that are protected by a sprinkler system designed for multiple-row racks of high-hazard commodities shall be not less than 44 inches (1118 mm) wide.

2. Aisles that are in high-piled storage areas exceeding 2,500 square feet (232 m^2) in area, not open to the public and protected by a sprinkler system designed for multiple-row racks, shall be not less than 24 inches (610 mm) wide.

~~Aisles shall be not less than 96 inches (2438 mm) wide in areas accessible to the public where mechanical stocking methods are used.~~

~~3206.9.1.2~~3206.10.1.2 **Nonsprinklered buildings.** Aisles in nonsprinklered buildings shall be not less than 96 inches (2438 mm) wide.

~~3206.9.2~~3206.10.2 **Clear height.** The required aisle width shall extend from floor to ceiling. Rack structural supports and catwalks are allowed to cross aisles at a minimum height of 6 feet 8 inches (2032 mm) above the finished floor level, provided that such supports do not interfere with fire department hose stream trajectory.

~~3206.9.3~~3206.10.3 **Dead-end aisles.** Dead-end aisles shall not exceed 20 feet (6096 mm) in length in Group M occupancies. Dead-end aisles shall not exceed 50 feet (15 240 mm) in length in all other occupancies.

Exception: Dead-end aisles are not limited where the length of the dead-end aisle is less than 2.5 times the least width of the dead-end aisle.

~~3206.10~~3206.11 **Portable fire extinguishers.** Portable fire extinguishers shall be provided in accordance with Section 906.

Section 3207 Solid-piled and shelf storage

3207.1 General. Shelf storage and storage in solid piles, solid piles on pallets and bin box storage in bin boxes not exceeding 5 feet (1524 mm) in any dimension, shall be in accordance with Section 3206 and this section.

3207.2 Fire protection. Where automatic sprinklers are required by Table 3206.2, an approved automatic sprinkler system shall be installed throughout the building or to 1-hour fire barriers constructed in accordance with Section 707 of the *building code*. Openings in such fire barriers

shall be protected by opening protectives having a 1-hour fire protection rating. The design and installation of the automatic sprinkler system and other applicable fire protection shall be in accordance with the *building code* and NFPA 13.

3207.2.1 Shelf storage. Shelf storage greater than 12 feet (3658 mm) but less than 15 feet (4572 mm) in height shall be in accordance with the fire protection requirements set forth in NFPA 13. Shelf storage 15 feet (4572 mm) or more in height shall be protected in an approved manner with special fire protection, such as in-rack sprinklers.

3207.3 Pile dimension and height limitations. Pile dimensions, the maximum permissible storage height and pile volume shall be in accordance with Table 3206.2.

3207.4 Arrays. Where an automatic sprinkler system design utilizes protection based on a closed array, array clearances shall be provided and maintained as specified by the standard used.

Section 3208 Rack storage

3208.1 General. Rack storage shall be in accordance with Section 3206 and this section. Bin boxes exceeding 5 feet (1524 mm) in any dimension shall be regulated as rack storage.

3208.1.1 Storage racks. The design and installation of storage racks shall be in accordance with the *building code*.

3208.2 Fire protection. Where automatic sprinklers are required by Table 3206.2, an approved automatic sprinkler system shall be installed throughout the building or to 1-hour fire barriers constructed in accordance with Section 707 of the *building code*. Openings in such fire barriers shall be protected by opening protectives having a 1-hour fire protection rating. The design and installation of the automatic sprinkler system and other applicable fire protection shall be in accordance with Section 903.3.1.1 and the *building code*.

3208.2.1 Plastic shelves. Storage on plastic shelves shall be protected by approved specially engineered fire protection systems.

3208.2.2 Racks with solid shelving. Racks with solid shelving having an area greater than 20 square feet (1.9 m^2), measured between approved flue spaces at all four edges of the shelf, shall be in accordance with this section.

Exceptions:

1. Racks with mesh, grated, slatted or similar shelves having uniform openings not more than 6 inches (152 mm) apart, comprising not less than 50 percent of the overall shelf area, and with approved flue spaces are allowed to be treated as racks without solid shelves.

2. Racks used for the storage of combustible paper records, with solid shelving, shall be in accordance with NFPA 13.

3208.2.2.1 Fire protection. Fire protection for racks with solid shelving shall be in accordance with NFPA 13.

3208.3 Flue spaces. ~~Flue spaces~~Rack storage areas protected with an automatic sprinkler system shall be provided with flue spaces in accordance with Table 3208.3. Required flue spaces shall be maintained.

3208.3.1 Flue space protection. ~~Where required by the fire code official, f~~Flue spaces required by Table 3208.3 above the first tier of storage in single-, double- or multiple-row rack storage installations shall, where required by the fire code official, be equipped with approved protection devices. ~~to protect the required flue spaces.~~ Such devices shall not be removed or modified.

Table 3208.3
Required flue spaces for rack storage

Rack configuration	Flue design		Automatic sprinkler protection: Sprinklers at the ceiling with or without minimum in-rack sprinklers: Storage height ≤ 25 feet	Automatic sprinkler protection: Sprinklers at the ceiling with or without minimum in-rack sprinklers: Storage height > 25 feet	Automatic sprinkler protection: In-rack sprinklers at every tier: Any height
Single-row rack	Transverse flue space	Size[b]	3 inches	3 inches	Not required
		Vertically aligned	Not required	Yes	Not required
	Longitudinal flue space		Not required	Not required	Not required
Double-row rack (Option 1)	Transverse flue space	Size[b]	6 inches[a]	3 inches	Not required
		Vertically aligned	Not required	Yes	Not required
	Longitudinal flue space		Not required	6 inches	Not required
Double-row rack (Option 2)	Transverse flue space	Size[b]	3 inches	6 inches	Not required
		Vertically aligned	Not required	Yes	Not required
	Longitudinal flue space		6 inches	Not required	Not required
Multiple-row rack	Transverse flue space	Size[b]	6 inches	6 inches	Not required
		Vertically aligned	Not required	Yes	Not required
	Longitudinal flue space		Not required	Not required	Not required

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Three-inch transverse flue spaces shall be provided ~~at least~~not less than every 10 feet where ESFR sprinkler protection is provided.
b. Random variations are allowed, provided that the configuration does not obstruct water penetration.

3208.4 Column protection. Steel building columns shall be protected in accordance with NFPA 13.

3208.5 Extra-high-rack storage systems. Approval of the fire code official shall be obtained prior to installing extra-high-rack combustible storage.

3208.5.1 Fire protection. Buildings with extra-high-rack combustible storage shall be protected with a specially engineered automatic sprinkler system. Extra-high-rack combustible storage shall be provided with additional special fire protection, such as separation from other buildings and additional built-in fire protection features and fire department access, where required by the fire code official.

Section 3209 Automated storage

3209.1 General. Automated storage shall be in accordance with this section.

3209.2 Automatic sprinklers. Where automatic sprinklers are required by Table 3206.2, the building shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

3209.3 Carousel storage. High-piled storage areas having greater than 500 square feet (46 m^2) of carousel storage shall be provided with automatic shutdown in accordance with one of the following:

1. An automatic smoke detection system installed in accordance with Section 907, with coverage extending 15 feet (4575 mm) in all directions beyond unenclosed carousel storage systems and that sounds a local alarm at the operator's station and stops the carousel storage system upon the activation of a single detector.

2. An automatic smoke detection system installed in accordance with Section 907 and within enclosed carousel storage systems, that sounds a local alarm at the operator's station and stops the carousel storage system upon the activation of a single detector.

3. A single dead-man-type control switch that allows the operation of the carousel storage system only when the operator is present. The switch shall be in the same room as the carousel storage system and located to provide for observation of the carousel system.

3209.4 Automated rack storage. High-piled storage areas with automated rack storage shall be provided with a manually activated emergency shutdown switch ~~for use by emergency personnel~~ and automatic shutdown in accordance with Sections 3209.4.1 and 3209.4.2.

3209.4.1 Manual activated shutdown. A manually activated switch shall be provided to initiate the approved automatic shutdown process. The switch shall be clearly identified and shall be in a location approved by the fire code official.

3209.4.2 Automatic shutdown. Automatic shutdown shall be required for high-piled combustible storage areas greater than 500 square feet (46 m^2). The approved automatic shutdown process shall commence upon any of the following events:

1. Water flow is detected in the automatic sprinkler system, if present.

2. Activation of the fire detection system, if present.

Section 3210 Specialty storage

3210.1 General. Records storage facilities used for the rack or shelf storage of combustible paper records greater than 12 feet (3658 mm) in height shall be in accordance with Sections 3206 and 3208 ~~and NFPA 13~~. Palletized storage of records shall be in accordance with Section 3207.

3210.1.1 Alternative fire protection. The design and installation of automatic fire-extinguishing systems in archives, vaults and record storage rooms shall be in accordance with NFPA 232.

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1301:7-7-33 Fire safety during construction and demolition.

Section 3301 General

3301.1 Scope. This chapter shall apply to structures in the course of construction, alteration or demolition, including those in underground locations. Compliance with NFPA 241 is required for items not specifically addressed herein.

3301.2 Purpose. This chapter prescribes minimum safeguards for construction, alteration and demolition operations to provide reasonable safety to life and property from fire during such operations.

Section 3302 Definitions

3302.1 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 3303 Owner's responsibility for fire protection

3303.1 Program development and maintenance. The owner or owner's authorized agent shall be responsible for the development, implementation and maintenance of an approved, written site safety plan establishing a fire prevention program at the project site applicable throughout all phases of the construction, repair, alteration or demolition work. The plan shall be submitted and approved before a building permit is issued, any changes to the plan shall address the requirements of this chapter and other applicable portions of this code, the duties of staff and staff training requirements. The plan shall be submitted for approval.

3303.1.1 Components of site safety plans. Site safety plans shall include the following as applicable:

1. Name and contact information of site safety director.
2. Documentation of the training of the site safety director and fire watch personnel.
3. Procedures for reporting emergencies.
4. Fire department vehicle access routes.
5. Location of fire protection equipment, including portable fire extinguishers, standpipes, fire department connections and fire hydrants.
6. Smoking and cooking policies, designated areas to be used where approved, and signage locations in accordance with Section 3305.8.
7. Location and safety considerations for temporary heating equipment.
8. Hot work permit plan.
9. Plans for control of combustible waste material.

10. Locations and methods for storage and use of flammable and combustible liquids and other hazardous materials.

11. Provisions for site security.

12. Changes that affect this plan.

13. Other site-specific information required by the fire code official.

3303.2 Site safety director. The owner shall designate a person to be the site safety director. The site safety director shall be responsible for ensuring compliance with the site safety plan. The site safety director shall have the authority to enforce the provisions of this chapter and other provisions as necessary to secure the intent of this chapter. Where guard service is provided in accordance with NFPA 241, the site safety director shall be responsible for the guard service.

3303.3 Daily fire safety inspection. The site safety director shall be responsible for completion of a daily fire safety inspection at the project site. Each day, all building and outdoor areas shall be inspected to ensure compliance with the inspection list in this section. The results of each inspection shall be documented and maintained on-site until a certificate of occupancy has been issued. Documentation shall be immediately available on-site for presentation to the fire code official upon request.

1. Any contractors entering the site to perform hot work each day have been instructed in the hot work safety requirements in Chapter 35, and hot work is performed only in areas approved by the site safety director.

2. Temporary heating equipment is maintained away from combustible materials in accordance with the equipment manufacturer's instructions.

3. Combustible debris, rubbish and waste material is removed from the building in areas where work is not being performed.

4. Temporary wiring does not have exposed conductors.

5. Flammable liquids and other hazardous materials are stored in locations that have been approved by the site safety director when not involved in work that is being performed.

6. Fire apparatus access roads required by Section 3311 are maintained clear of obstructions that reduce the width of the usable roadway to less than 20 feet (6096 mm).

7. Fire hydrants are clearly visible from access roads and are not obstructed.

8. The location of fire department connections to standpipe and in-service sprinkler systems are clearly identifiable from the access road and such connections are not obstructed.

9. Standpipe systems are in service and continuous to the highest work floor, as specified in Section 3313.1.

10. Portable fire extinguishers are available in locations required by Sections 3316 and 3318.3.

3303.3.1 Violations. Failure to properly conduct, document and maintain documentation required by this section shall constitute an unlawful act in accordance with Section 112.1 ~~and shall result in the issuance of a notice of violation to the site safety director in accordance with Section 112.3. Upon the third offense, the~~ *and the responsible person shall be subject to enforcement actions authorized by Chapter 3737. of the Revised Code and Section 112. The* fire code official is authorized to issue a stop work order in accordance with Section 113, and work shall not resume until ~~satisfactory assurances of future compliance have been presented to and approved by~~ *the violations noted in the stop work order are adequately remedied in the opinion of* the fire code official.

3303.4 Qualifications. Site safety directors shall acquire training specific to their roles and responsibilities. Upon request, the training and qualifications of the site safety director shall be submitted to the fire code official for approval.

3303.5 Fire safety requirements for buildings of Types IV-A, IV-B and IV-C construction. Buildings of Types IV-A, IV-B and IV-C construction designed to be greater than six stories above grade plane shall comply with the following requirements during construction unless otherwise approved by the fire code official:

1. Standpipes shall be provided in accordance with Section 3313.

2. A water supply for fire department operations, as approved by the fire code official and the fire chief.

3. Where building construction exceeds six stories above grade plane and noncombustible protection is required by Section 602.4 of the *building code*, at least one layer of noncombustible protection shall be installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

   Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

4. Where building construction exceeds six stories above grade plane, required exterior wall coverings shall be installed on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

   Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

3303.6 Training. Training of fire watch and other responsible personnel in the use of fire protection equipment shall be the responsibility of the site safety director. Records of training shall be kept and made a part of the written plan for the site safety plan.

3303.7 Fire protection devices. The site safety director shall ensure that all fire protection equipment is maintained and serviced in accordance with this code. Fire protection equipment shall be inspected in accordance with the fire protection program.

3303.8 Hot work operations. The site safety director shall ensure hot work operations and permit procedures are in accordance with Chapter 35.

3303.9 Impairment of fire protection systems. The site safety director shall ensure impairments to any fire protection system are in accordance with Section 901.

3303.9.1 Smoke detectors and smoke alarms. Smoke detectors and smoke alarms located in an area where airborne construction dust is expected shall be covered to prevent exposure to dust or shall be temporarily removed. Smoke detectors and alarms that were removed shall be replaced upon conclusion of dust-producing work. Smoke detectors and smoke alarms that were covered shall be inspected and cleaned, as necessary, upon conclusion of dust-producing work.

330~~8~~3.10 **Temporary covering of fire protection devices.** Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

Section ~~3303~~3304 Temporary heating equipment

~~3303.1~~3304.1 **Listed.** Temporary heating devices shall be listed and labeled ~~in accordance with the *mechanical code* or the International Fuel Gas Code~~. The ~~i~~installation, maintenance and use of temporary heating devices shall be in accordance with the ~~terms of the~~ listing and the manufacturer's instructions.

~~3303.2~~3304.2 **Oil-fired heaters.** Oil-fired heaters shall comply with Section ~~603~~ 605.

~~3303.3~~3304.3 **LP-gas heaters.** Fuel supplies for liquefied-petroleum gas-fired heaters shall comply with Chapter 61 and the International Fuel Gas Code.

~~3303.4~~3304.4 **Refueling.** Refueling operations for liquid-fueled equipment or appliances shall be conducted in accordance with Section 5705. The equipment or appliance shall be allowed to cool prior to refueling.

~~3303.5~~3304.5 **Installation.** Clearance to combustibles from temporary heating devices shall be maintained in accordance with the labeled equipment. When in operation, temporary heating devices shall be fixed in place and protected from damage, dislodgement or overturning in accordance with the manufacturer's instructions.

~~3303.6~~3304.6 **Supervision.** The use of temporary heating devices shall be supervised and maintained only by competent personnel.

Section ~~3304~~3305 Precautions against fire

~~3304.1~~3305.1 **Smoking.** Smoking shall be prohibited except in approved areas. Signs shall be posted in accordance with Section 310. In approved areas where smoking is permitted, approved ashtrays shall be provided in accordance with Section 310.

~~3304.2~~3305.2 **Combustible debris, rubbish and waste.** Combustible debris, rubbish and waste material shall comply with the requirements of Sections ~~3304.2.1~~ 3305.2.1 through ~~3304.2.4~~ 3305.2.4.

~~3304.2.1~~3305.2.1 **Combustible waste material accumulation.** Combustible debris, rubbish and waste material shall not be accumulated within buildings.

~~3304.2.2~~3305.2.2 **Combustible waste material removal.** Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work.

~~3304.2.3~~3305.2.3 **Rubbish containers.** Where rubbish containers with a capacity exceeding 5.33 cubic feet (40 gallons) (0.15 m^3) are used for temporary storage of combustible debris, rubbish and waste material, they shall have tight-fitting or self-closing lids. Such rubbish containers shall be constructed entirely of materials that comply with either of the following:

1. Noncombustible materials.

2. Materials that meet a peak rate of heat release not exceeding 300 kW/m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation.

~~3304.2.4~~3305.2.4 **Spontaneous ignition.** Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container.

~~3304.3~~3305.3 **Burning of combustible debris, rubbish and waste.** Combustible debris, rubbish and waste material shall not be disposed of by burning on the site unless approved.

~~3304.4~~3305.4 **Open burning.** Open burning shall comply with Section 307.

~~3304.5~~3305.5 **Fire watch.** Where required by the fire code official ~~for building demolition, or building construction during working hours that is hazardous in nature, qualified personnel shall be provided to serve as an on-site fire watch. Fire watch personnel shall be provided with not less than one approved means for notification of the fire department and their sole duty shall be to perform constant patrols and watch for the occurrence of fire.~~ or the site safety plan established in accordance with Section 3303.1, a fire watch shall be provided for building demolition and for building construction.

3305.5.1 Fire watch during construction. A fire watch shall be provided during nonworking hours for new construction that exceeds 40 feet (12 192 mm) in height above the lowest adjacent grade at any point along the building perimeter, for new multistory construction with an aggregate area exceeding 50,000 square feet (4645 m^2) per story or as required by the fire code official.

3305.5.2 Fire watch personnel. Fire watch personnel shall be provided in accordance with this section.

3305.5.2.1 Duties. The primary duty of fire watch personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable.

3305.5.2.2 Training. Personnel shall be trained to serve as an on-site fire watch. Training shall include the use of portable fire extinguishers. Fire extinguishers and fire reporting shall be in accordance with Section 3310.

3305.5.2.3 Means of notification. Fire watch personnel shall be provided with not fewer than one approved means for notifying the fire department.

3305.5.3 Fire watch location and records. The fire watch shall include areas specified by the site safety plan established in accordance with Section 3303.

3305.5.4 Fire watch records. Fire watch personnel shall keep a record of all time periods of duty, including the log entry for each time the site was patrolled and each time a structure was entered and inspected. Records shall be made available for review by the fire code official upon request.

~~3304.6~~3305.6 **Cutting and welding.** ~~Operations involving the use of cutting and w~~Welding, cutting, open torches and other hot work operations and equipment shall ~~be done in accordance~~comply with Chapter 35.

~~3304.7~~3305.7 **Electrical.** Temporary wiring for electrical power and lighting installations used in connection with the construction, alteration or demolition of buildings, structures, equipment or similar activities shall comply with NFPA 70.

3305.8 **Cooking.** Cooking shall be prohibited except in approved designated cooking areas separated from combustible materials by a minimum of 10 feet (3048 mm). Signs with a minimum letter height of 3 inches (76 mm) and a minimum brush stroke of ½ inch (13 mm) shall be posted in conspicuous locations in designated cooking areas and state:

DESIGNATED COOKING AREA
COOKING OUTSIDE OF A DESIGNATED
COOKING AREA IS PROHIBITED

3305.9 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following:

1. Noncombustible materials.
2. Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.
3. Materials exhibiting a peak heat release rate not exceeding 300 kW/m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation on specimens at the thickness intended for use.

Section ~~3305~~3306 Flammable and combustible liquids

~~3305.1~~3306.1 **Storage of flammable and combustible liquids.** Storage of flammable and combustible liquids shall be in accordance with Section 5704.

~~3305.2~~3306.2 **Class I and Class II liquids.** The storage, use and handling of flammable and combustible liquids at construction sites shall be in accordance with Section 5706.2. Ventilation shall be provided for operations involving the application of materials containing flammable solvents.

~~3305.3~~3306.3 **Housekeeping.** Flammable and combustible liquid storage areas shall be maintained clear of combustible vegetation and waste materials. Such storage areas shall not be used for the storage of combustible materials.

~~3305.4~~3306.4 **Precautions against fire.** Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with Section 310.

~~3305.5~~3306.5 **Handling at point of final use.** Class I and II liquids shall be kept in approved safety containers.

~~3305.6~~3306.6 **Leakage and spills.** Leaking vessels shall be immediately repaired or taken out of service and spills shall be cleaned up and disposed of properly.

Section ~~3306~~3307 Flammable gases

~~3306.1~~3307.1 **Storage and handling.** The storage, use and handling of flammable gases shall comply with Chapter 58.

~~3306.2~~3307.2 **Cleaning with flammable gas.** Flammable gases shall not be used to clean or remove debris from piping open to the atmosphere.

~~3306.2.1~~3307.2.1 **Pipe cleaning and purging.** The cleaning and purging of flammable gas piping systems, including cleaning new or existing piping systems, purging piping systems into service and purging piping systems out of service, shall comply with NFPA 56.

Exceptions:

1. Compressed gas piping systems other than fuel gas piping systems where in accordance with Chapter 53.
2. Piping systems regulated by the International Fuel Gas Code.
3. Liquefied petroleum gas systems in accordance with Chapter 61.

Section ~~3307~~3308 Explosive materials

~~3307.1~~3308.1 **Storage and handling.** Explosive materials shall be stored, used and handled in accordance with Chapter 56.

~~3307.2~~3308.2 **Supervision.** Blasting operations shall be conducted in accordance with Chapter 56.

~~3307.3~~3308.3 **Demolition using explosives.** Approved fire hoses for use by demolition personnel shall be maintained at the demolition site ~~whenever~~wherever explosives are used for demolition. Such fire hoses shall be connected to an approved water supply and shall be capable of being brought to bear on post-detonation fires anywhere on the site of the demolition operation.

~~(H) **Section 3308 Owner's responsibility for fire protection**~~

~~(1) **3308.1 Program superintendent.** The owner shall designate a person to be the fire prevention program superintendent who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project. The fire prevention program superintendent shall have the authority to enforce the provisions of this *rule* and other provisions as necessary to secure the intent of this *rule*. Where guard service is provided, the superintendent shall be responsible for the guard service.~~

~~(2) **3308.2 Prefire plans.** The fire prevention program superintendent shall develop and maintain an approved prefire plan in cooperation with the fire chief. The fire chief and the fire code official shall be notified of changes affecting the utilization of information contained in such prefire plans.~~

~~(3) **3308.3 Training.** Training of responsible personnel in the use of fire protection equipment shall be the responsibility of the fire prevention program superintendent.~~

~~(4) **3308.4 Fire protection devices.** The fire prevention program superintendent shall determine that all fire protection equipment is maintained and serviced in accordance with this code. The quantity and type of fire protection equipment shall be approved.~~

~~(5) **3308.5 Hot work operations.** The fire prevention program superintendent shall be responsible for supervising the permit system for hot work operations in accordance with *rule 1301:7-7-35 of the Administrative Code*.~~

~~(6) **3308.6 Impairment of fire protection systems.** Impairments to any fire protection system shall be in accordance with *paragraph* (A)(901) *of rule 1301:7-7-09 of the Administrative Code*.~~

~~(a) **3308.7.1 Smoke detectors and smoke alarms.** Smoke detectors and smoke alarms located in an area where airborne construction dust is expected shall be covered to prevent exposure to dust or shall be temporarily removed. Smoke detectors and alarms that were removed shall be replaced upon conclusion of dust-producing work. Smoke detectors and smoke alarms that were covered shall be inspected and cleaned, as necessary, upon conclusion of dust-producing work.~~

~~(7)~~8) ~~**3308.7**~~**3308.8 ~~Temporary covering of fire protection devices.~~** ~~Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.~~

Section 3309 Portable generators

3309.1 General. Portable generators used at construction and demolition sites shall comply with Section 1204.

Section ~~3309~~3310 Fire reporting

~~**3309.1**~~**3310.1 Emergency telephone.** ~~Readily accessible e~~Emergency telephone facilities with ready access shall be provided in an approved location at the construction site, or an approved equivalent means of communication shall be provided. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone. Alternatively, where an equivalent means of communication has been approved, the site address and fire department emergency telephone number shall be posted at the main entrance to the site, in guard shacks and in the construction site office.

Section ~~3310~~3311 Access for fire fighting

~~**3310.1**~~**3311.1 Required access.** Approved vehicle access for fire fighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather

conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

~~3310.2~~3311.2 **Key boxes.** Key boxes shall be provided as required by Chapter 5.

Section ~~3311~~3312 Means of egress

[BE] ~~3311.1~~3312.1 Stairways required. Where ~~a~~ building ~~has been constructed to a building height of~~construction exceeds ~~50~~40 feet (~~15 240~~12 192 mm) ~~or four stories, or where an existing building exceeding 50 feet (15 240 mm) in building height is altered, not less than one~~in height above the lowest level of fire department vehicle access, a temporary ~~lighted~~or permanent stairway shall be provided ~~unless one or more of the permanent stairways are erected as the construction progresses~~. As construction progresses, such stairway shall be extended to within one floor of the highest point of construction having secured decking or flooring.

~~3311.2~~3312.2 **Maintenance.** Required means of egress and required accessible means of egress shall be maintained during construction and demolition, remodeling or alterations and additions to any building.

Exception: Approved temporary means of egress and accessible means of egress systems and facilities.

3312.3 Storage. Combustible materials associated with construction, demolition, remodeling or alterations to an occupied structure shall not be stored in exits, enclosures for stairways and ramps, or exit access corridors serving an occupant load of 30 or more.

Exceptions:

1. Where the only occupants are construction workers.
2. Combustible materials that are temporarily accumulated to support work being performed when workers are present.

Section ~~3312~~3313 Water supply for fire protection

~~3312.1~~3313.1 **When required.** An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible ~~material arrives on the site~~ building materials arrive on the site, on commencement of vertical combustible construction and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.

Exception: The fire code official 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.

3313.2 Combustible building materials. When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire-flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an approved fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within

500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

3313.3 Vertical construction of Types III, IV and V construction. Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections 3313.3.1 through 3313.3.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.

3313.3.1 Fire separation up to 30 feet. Where a building of Type III, IV or V construction has a fire separation distance of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide either a minimum of 500 gallons per minute (1893 L/m) or the entire fire flow required for the building when constructed, whichever is greater.

3313.3.2 Fire separation of 30 feet up to 60 feet. Where a building of Type III, IV or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m) or 50 percent of the fire flow required for the building when constructed, whichever is greater.

3313.3.3 Fire separation of 60 feet or greater. Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.

3313.4 Vertical construction, Type I and II construction. If combustible building materials are delivered to the construction site, water supply in accordance with Section 3313.2 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.

3313.5 Standpipe supply. Regardless of the presence of combustible building materials, the construction type or the fire separation distance, where a standpipe is required in accordance with Section 3314, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.

Section ~~3313~~3314 Standpipes

~~3313.1~~3314.1 **Where required.** In buildings required to have standpipes by Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at ~~accessible~~ locations adjacent to ~~usable~~ stairways complying with Section 3312.1. ~~Such standpipes shall be extended a~~As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.

~~3313.2~~3314.2 **Buildings being demolished.** Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

~~3313.3~~3314.3 **Detailed requirements.** Standpipes shall be installed in accordance with the provisions of Section 905.

Exception: Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of Section 905 as to capacity, outlets and materials.

Section ~~3314~~3315 Automatic sprinkler system

~~3314.1~~3315.1 **Completion before occupancy.** In buildings where an automatic sprinkler system is required by this code or the *building code*, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved, except as provided in Section 105.3.4.

~~3314.2~~3315.2 **Operation of valves.** Operation of sprinkler control valves shall be allowed only by properly authorized personnel and shall be accompanied by notification of duly designated parties. Where the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

Section ~~3315~~3316 Portable fire extinguishers

~~3315.1~~3316.1 **Where required.** Structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and combustible liquids.

Section ~~3316~~3317 Motorized construction equipment

~~3316.1~~3317.1 **Conditions of use.** Internal-combustion-powered construction equipment shall be used in accordance with all of the following conditions:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outside of the building.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an approved area outside of the building.

Section ~~3317~~3318 Safeguarding roofing operations

~~3317.1~~3318.1 **General.** Roofing operations utilizing heat-producing systems or other ignition sources shall be conducted in accordance with Sections ~~3317.2~~ 3318.2 and ~~3317.3~~ 3318.3 and Chapter 35.

~~3317.2~~3318.2 **Asphalt and tar kettles.** Asphalt and tar kettles shall be operated in accordance with Section 303.

~~3317.3~~3318.3 **Fire extinguishers for roofing operations.** Fire extinguishers shall comply with Section 906. There shall be not less than one ~~multipurpose~~multiple-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

1301:7-7-34 Tire rebuilding and tire storage.

Section 3401 General

3401.1 Scope. Tire rebuilding plants, tire storage and tire byproduct facilities shall comply with this chapter, other applicable requirements of this code and NFPA 13. Tire storage in buildings shall also comply with Chapter 32.

3401.2 Permit required. Permits shall be required as set forth in *Chapter 1*.

Section 3402 Definitions

3402.1 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 3403 Tire rebuilding

3403.1 Construction. Tire rebuilding plants shall comply with the requirements of the *building code*, as to construction, separation from other buildings or other portions of the same building, and protection.

3403.2 Location. Buffing operations shall be located in a room separated from the remainder of the building housing the tire rebuilding or tire recapping operations by a 1-hour fire barrier.

Exception: Buffing operations are not required to be separated where all of the following conditions are met:

1. Buffing operations are equipped with an approved continuous automatic water-spray system directed at the point of cutting action.
2. Buffing machines are connected to particle-collecting systems providing a minimum air movement of 1,500 cubic feet per minute (cfm) (0.71 m^3/s) in volume and 4,500 feet per minute (fpm) (23 m/s) in-line velocity.
3. The collecting system shall discharge the rubber particles to an approved outdoor noncombustible or fire-resistant container that is emptied at frequent intervals to prevent overflow.

3403.3 Cleaning. The buffing area shall be cleaned at frequent intervals to prevent the accumulation of rubber particles.

3403.4 Spray rooms and booths. Each spray room or spray booth where flammable or combustible solvents are applied, shall comply with Chapter 24.

Section 3404 Precautions against fire

3404.1 Open burning. Open burning is prohibited in tire storage yards.

3404.2 Sources of heat. Cutting, welding or heating devices shall not be operated in tire storage yards.

3404.3 Smoking prohibited. Smoking is prohibited in tire storage yards, except in designated areas.

3404.4 Power lines. Tire storage piles shall not be located beneath electrical power lines having a voltage in excess of 750 volts or that supply power to fire emergency systems.

3404.5 Fire safety plan. The owner or individual in charge of the tire storage yard shall be required to prepare and submit to the fire code official a fire safety plan for review and approval. The fire safety plan shall include provisions for fire department vehicle access. Not less than one copy of the fire safety plan shall be prominently posted and maintained at the storage yard.

3404.6 Telephone number. The telephone number of the fire department and location of the nearest telephone shall be posted conspicuously in attended locations.

Section 3405 Outdoor storage

3405.1 Individual piles. Tire storage shall be restricted to individual piles not exceeding *2,500* square feet (*232* m^2) of continuous area *unless a larger area is specifically authorized in accordance with Chapter 3734. of the Revised Code*. Piles shall not exceed *20,000* cubic feet (*566* m^3) in volume or *8* feet (*2438* mm) in height *unless a larger area is specifically authorized in accordance with Chapter 3734. of the Revised Code*.

3405.2 Separation of piles. Individual tire storage piles shall be separated from other piles by a clear space of not less than *56* feet (*17 069* mm).

> ***Exception:*** *If the total number of tires in the pile is 500 or less, the individual storage piles shall be separated from other piles of salvage by a clear space of at least 25 feet (7620 mm).*

3405.3 Distance between piles of other stored products. Tire storage piles shall be separated by a clear space of not less than *56* feet (*17 069* mm) from piles of other stored product.

> ***Exception:*** *If the total number of tires in the pile is 500 or less, the tire storage piles shall be separated by a clear space of at least 25 feet (7620 mm) from piles of other stored product.*

3405.4 Distance from lot lines and buildings. Tire storage piles shall be located not less than *56* feet (*17 069* mm) from lot lines and buildings.

> ***Exception:*** *If the total number of tires in the pile is 500 or less, the tire storage piles shall be located at least 25 feet (7620 mm) from lot lines and buildings.*

3405.5 Fire breaks. Storage yards shall be maintained free from combustible ground vegetation for a distance of *56* feet (*17 069* mm) from the stored material to grass and weeds, ~~and for a distance of 100 feet (30 480 mm) from the stored product to~~ brush and forested areas.

> ***Exception:*** *If the total number of tires in the pile is 500 or less, a clear space of 25 feet (7620 mm) is sufficient.*

3405.6 Volume more than 150,000 cubic feet. Where the bulk volume of stored product is more than 150,000 cubic feet (4248 m^3), storage arrangement shall be in accordance with *Chapter 3734. of the Revised Code and* the following:

1. Individual storage piles shall comply with size and separation requirements in Sections 3405.1 through 3405.5.

2. Adjacent storage piles shall be considered to be a group, and the aggregate volume of storage piles in a group shall not exceed 150,000 cubic feet (4248 m^3).

Separation between groups shall be not less than 75 feet (22 860 mm) wide.

3405.7 Location of storage. Outdoor waste tire storage shall not be located under bridges, elevated trestles, elevated roadways or elevated railroads.

Section 3406 Fire department access

3406.1 Required access. New tire storage yards shall be provided with fire apparatus access roads in accordance with Section 503 and Section 3406.2. Existing tire storage yards shall be provided with fire apparatus access roads where required in Chapter 11.

3406.2 Location. Fire apparatus access roads shall be located within all pile clearances identified in Section 3405.4 and within all fire breaks required in Section 3405.5. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located, not less than 20 feet (6096 mm) from any storage pile.

Section 3407 Fencing

3407.1 Where required. Where the bulk volume of stored material is more than 20,000 cubic feet (566 m^3), a firmly anchored fence or other approved method of security that controls unauthorized access to the storage yard shall surround the storage yard.

3407.2 Construction. The fence shall be constructed of approved materials and shall be not less than 6 feet (1829 mm) high and provided with gates ~~at least~~not less than 20 feet (6096 mm) wide.

3407.3 Locking. Gates to the storage yard shall be locked when the storage yard is not staffed.

3407.4 Unobstructed. Gateways shall be kept clear of obstructions and be fully openable at all times.

Section 3408 Fire protection

3408.1 Water supply. A public or private fire protection water supply shall be provided in accordance with Section 508. The water supply shall be arranged such that any part of the storage yard can be reached by using not more than 500 feet (152 m) of hose.

3408.2 Fire extinguishers. Buildings or structures shall be provided with portable fire extinguishers in accordance with Section 906. Fuel-fired vehicles operating in the storage yard shall be equipped with a minimum 2-A:20-B:C rated portable fire extinguisher.

Section 3409 Indoor storage arrangement

3409.1 Pile dimensions. Where tires are stored on-tread, the dimension of the pile in the direction of the wheel hole shall be not more than 50 feet (15 240 mm). Tires stored adjacent to or along

one wall shall not extend more than 25 feet (7620 mm) from that wall. Other piles shall ~~not be~~be not more than 50 feet (15 240 mm) in width.

1301:7-7-35 Welding and other hot work.

Section 3501 General

3501.1 Scope. Welding, cutting, open torches and other hot work operations and equipment shall comply with this chapter.

3501.2 Permits. Permits shall be required as set forth in *Chapter 1*.

3501.3 Restricted areas. Hot work shall only be conducted in areas designed or authorized for that purpose by the personnel responsible for a hot work program. Hot work shall not be conducted in the following areas unless approval has been obtained from the fire code official:

1. Areas where the sprinkler system is impaired.
2. Areas where there exists the potential of an explosive atmosphere, such as locations where flammable gases, liquids or vapors are present.
3. Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur, baled paper, cotton, lint, dust or loose combustible materials.
4. On board ships at dock or ships under construction or repair.
5. At other locations as specified by the fire code official.

3501.4 Cylinders and containers. Compressed gas cylinders and fuel containers shall comply with this chapter and Chapter 53.

3501.5 Design and installation of oxygen-fuel gas systems. An oxygen-fuel gas system with two or more manifolded cylinders of oxygen shall be in accordance with NFPA 51.

Section 3502 Definitions

3502.1 Definitions. The following terms are defined in Chapter 2.

"Hot work."

"Hot work area."

"Hot work equipment."

"Hot work permits."

"Hot work program."

"Responsible *manager*."

~~**"Torch-applied roof system."**~~

Section 3503 General requirements

3503.1 General. Hot work conditions and operations shall comply with this chapter.

3503.2 Temporary and fixed hot work areas. Temporary and fixed hot work areas shall comply with this section.

3503.3 Hot work program permit. Hot work permits, issued by an approved responsible *manager* under a hot work program, shall be available for review by the fire code official at the time the work is conducted and for 48 hours after work is complete.

3503.4 Qualifications of operators. A permit for hot work operations shall not be issued unless the individuals in charge of performing such operations are capable of performing such operations safely. Demonstration of a working knowledge of the provisions of this chapter shall constitute acceptable evidence of compliance with this requirement.

3503.5 Records. The individual responsible for the hot work area shall maintain "prework check" reports in accordance with Section 3504.3.1. Such reports shall be maintained on the premises for not less than 48 hours after work is complete.

3503.6 Signage. Visible hazard identification signs shall be provided where required by Chapter 50. Where the hot work area is ~~accessible~~open to persons other than the operator of the hot work equipment, conspicuous signs shall be posted to warn others before they enter the hot work area. Such signs shall display the following warning:

"CAUTION
HOT WORK IN PROGRESS
STAY CLEAR"

Section 3504 Fire safety requirements

3504.1 Protection of combustibles. Protection of combustibles shall be in accordance with Sections 3504.1.1 through 3504.1.9.

3504.1.1 Combustibles. Hot work areas shall not contain combustibles or shall be provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.

3504.1.2 Openings. Openings or cracks in walls, floors, ducts or shafts within the hot work area shall be tightly covered to prevent the passage of sparks to adjacent combustible areas, or shielded by metal fire-resistant guards, or curtains shall be provided to prevent passage of sparks or slag.

3504.1.3 Housekeeping. Floors shall be kept clean within the hot work area.

3504.1.4 Conveyor systems. Conveyor systems that are capable of carrying sparks to distant combustibles shall be shielded or shut down.

3504.1.5 Partitions. Partitions segregating hot work areas from other areas of the building shall be noncombustible. In fixed hot work areas, the partitions shall be securely connected to the floor such that ~~no~~ gaps do not exist between the floor and the partition. Partitions shall prevent the passage of sparks, slag, and heat from the hot work area.

3504.1.6 Floors. Fixed hot work areas shall have floors with noncombustible surfaces.

3504.1.7 Precautions in hot work. Hot work shall not be performed on containers or equipment that contain or have contained flammable liquids, gases or solids until the containers and equipment have been thoroughly cleaned, inerted or purged; except that hot tapping shall be allowed on tanks and pipe lines where such work is to be conducted by approved personnel. Hot work on flammable and combustible liquid storage tanks shall be conducted in accordance with Section 3510.

3504.1.8 Sprinkler protection. Automatic sprinkler protection shall not be shut off while hot work is performed. Where hot work is performed close to automatic sprinklers, noncombustible barriers or damp cloth guards shall shield the individual sprinkler heads and shall be removed when the work is completed. If the work extends over several days, the shields shall be removed at the end of each workday. The fire code official shall approve hot work where sprinkler protection is impaired.

3504.1.9 Fire detection systems. Approved special precautions shall be taken to avoid accidental operation of automatic fire detection systems.

3504.2 Fire watch. Fire watches shall be established and conducted in accordance with Sections 3504.2.1 through 3504.2.6.

3504.2.1 When required. A fire watch shall be provided during hot work activities and shall continue for not less than 30 minutes after the conclusion of the work. The fire code official, or the responsible manager under a hot work program, is authorized to extend the fire watch based on the hazards or work being performed.

Exception: Where the hot work area has no fire hazards or combustible exposures.

3504.2.2 Location. The fire watch shall include the entire hot work area. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to fire watches to ensure that exposed areas are monitored.

3504.2.3 Duties. Individuals designated to fire watch duty shall have fire-extinguishing equipment readily available and shall be trained in the use of such equipment. Individuals assigned to fire watch duty shall be responsible for extinguishing spot fires and communicating an alarm.

3504.2.4 Fire training. The individuals responsible for performing the hot work and individuals responsible for providing the fire watch shall be trained in the use of portable fire extinguishers.

3504.2.5 Fire hoses. Where hoselines are required, they shall be connected, charged and ready for operation.

3504.2.6 Fire extinguisher. Not less than one portable fire extinguisher complying with Section 906 and with a minimum 2-A:20-B:C rating shall be ~~readily accessible~~provided with ready access within 30 feet (9144 mm) of the location where hot work is performed.

3504.3 Area reviews. Before hot work is permitted and not less than once per day while the permit is in effect, the area shall be inspected by the individual responsible for authorizing hot

work operations to ensure that it is a fire safe area. Information shown on the permit shall be verified prior to signing the permit in accordance with *Chapter 1*.

3504.3.1 Pre-hot-work check. A pre-hot-work check shall be conducted prior to work to ensure that all equipment is safe and hazards are recognized and protected. A report of the check shall be kept at the work site during the work and available upon request. The pre-hot-work check shall determine all of the following:

1. Hot work equipment to be used shall be in satisfactory operating condition and in good repair.

2. Hot work site is clear of combustibles or combustibles are protected.

3. Exposed construction is of noncombustible materials or, if combustible, then protected.

4. Openings are protected.

5. Floors are kept clean.

6. (vi) ~~No e~~Exposed combustibles are not located on the opposite side of partitions, walls, ceilings or floors.

7. Fire watches, where required, are assigned.

8. Approved actions have been taken to prevent accidental activation of ~~suppression and detection~~fire protection system equipment in accordance with Sections 3504.1.8 and 3504.1.9.

9. Fire extinguishers and fire hoses (where provided) are operable and available.

Section 3505 Gas welding and cutting

3505.1 General. Devices or attachments mixing air or oxygen with combustible gases prior to consumption, except at the burner or in a standard torch or blow pipe, shall not be allowed unless approved.

3505.2 Cylinder and container storage, handling and use. Storage, handling and use of compressed gas cylinders, containers and tanks shall be in accordance with this section and Chapter 53.

3505.2.1 Cylinders connected for use. The storage or use of a single cylinder of oxygen and a single cylinder of fuel gas located on a cart shall be allowed without requiring the cylinders to be separated in accordance with Section 5003.9.8 or 5003.10.3.6 when the cylinders are connected to regulators, ready for service, equipped with apparatus designed for cutting or welding and all of the following:

1. Carts shall be kept away from the cutting or welding operation in accordance with Section 3505.5 or fire-resistant shields shall be provided.

2. Cylinders shall be secured to the cart to resist movement.

3. Carts shall be in accordance with Section 5003.10.3.

4. Cylinder valves not having fixed hand wheels shall have keys, handles or nonadjustable wrenches on valve stems while the cylinders are in service.

5. Cylinder valve outlet connections shall conform to the requirements of CGA V-1.

6. Cylinder valves shall be closed when work is finished.

7. Cylinder valves shall be closed before moving the cart.

3505.2.1.1 Individual cart separation. Individual carts shall be separated from each other in accordance with Section 5003.9.8.

3505.3 Precautions. Cylinders, valves, regulators, hose and other apparatus and fittings for oxygen shall be kept free from oil or grease. Oxygen cylinders, apparatus and fittings shall not be handled with oily hands, oily gloves, or greasy tools or equipment.

3505.4 Acetylene gas. Acetylene gas shall not be piped except in approved cylinder manifolds and cylinder manifold connections, or utilized at a pressure exceeding 15 pounds per square inch gauge (psig) (103 kPa) unless dissolved in a suitable solvent in cylinders manufactured in accordance with DOTn 49 CFR Part 178. Acetylene gas shall not be brought in contact with unalloyed copper, except in a blowpipe or torch.

3505.5 Remote locations. Oxygen and fuel-gas cylinders and acetylene generators shall be located away from the hot work area to prevent such cylinders or generators from being heated by radiation from heated materials, sparks or slag, or misdirection of the torch flame.

3505.6 Cylinders shutoff. The torch valve shall be closed and the gas supply to the torch completely shut off when gas welding or cutting operations are discontinued for a period of 1 hour or more.

3505.7 Prohibited operation. Welding or cutting work shall not be held or supported on compressed gas cylinders or containers.

3505.8 Tests. Tests for leaks in piping systems and equipment shall be made with soapy water. The use of flames shall be prohibited for leak testing.

Section 3506 Electric arc hot work

3506.1 General. The frame or case of electric hot work machines, except internal-combustion-engine-driven machines, shall be grounded. Ground connections shall be mechanically strong and electrically adequate for the required current.

3506.2 Return circuits. Welding current return circuits from the work to the machine shall have proper electrical contact at joints. The electrical contact shall be periodically inspected.

3506.3 Disconnecting. Electrodes shall be removed from the holders when electric arc welding or cutting is discontinued for any period of 1 hour or more. The holders shall be located to prevent accidental contact and the machines shall be disconnected from the power source.

3506.4 Emergency disconnect. A switch or circuit breaker shall be provided so that fixed electric welders and control equipment can be disconnected from the supply circuit. The disconnect shall be installed in accordance with NFPA 70.

3506.5 Damaged cable. Damaged cable shall be removed from service until properly repaired or replaced.

Section 3507 Calcium carbide systems

3507.1 Calcium carbide storage. Storage and handling of calcium carbide shall comply with Chapter 50 of this code and Chapter 9 of NFPA 51.

Section 3508 Acetylene generators

3508.1 Use of acetylene generators. The use of acetylene generators shall comply with this section and Chapter ~~6~~15 of NFPA ~~51A~~55.

3508.2 Portable generators. The minimum volume of rooms containing portable generators shall be 35 times the total gas-generating capacity per charge of all generators in the room. The gas-generating capacity in cubic feet per charge shall be assumed to be 4.5 times the weight of carbide per charge in pounds. The minimum ceiling height of rooms containing generators shall be 10 feet (3048 mm). An acetylene generator shall not be moved by derrick, crane or hoist while charged.

3508.3 Protection against freezing. Generators shall be located where water will not freeze. Common salt such as sodium chloride or other corrosive chemicals shall not be utilized for protection against freezing.

Section 3509 Piping manifolds and hose systems for fuel gases and oxygen

3509.1 General. The use of piping manifolds and hose systems shall be in accordance with Sections 3509.2 through 3509.7, Chapter 53 and Chapter 5 of NFPA 51.

3509.2 Protection. Piping shall be protected against physical damage.

3509.3 Signage. Signage shall be provided for piping and hose systems as follows:

1. Above-ground piping systems shall be marked in accordance with ASME A13.1.
2. Station outlets shall be marked to indicate their intended usage.
3. Signs shall be posted, indicating clearly the location and identity of section shutoff valves.

3509.4 Manifolding of cylinders. Oxygen manifolds shall not be located in an acetylene generator room. Oxygen manifolds shall be located ~~at least~~not less than 20 feet (6096 mm) away from combustible material such as oil or grease, and gas cylinders containing flammable gases, unless the gas cylinders are separated by a fire partition.

3509.5 Identification of manifolds. Signs shall be posted for oxygen manifolds with service pressures not exceeding 200 psig (1379 kPa). Such signs shall include the words:

"LOW-PRESSURE MANIFOLD
DO NOT CONNECT HIGH-PRESSURE CYLINDERS
MAXIMUM PRESSURE 250 PSIG"

3509.6 Clamps. Hose connections shall be clamped or otherwise securely fastened.

3509.7 Inspection. Hoses shall be inspected frequently for leaks, burns, wear, loose connections or other defects rendering the hose unfit for service.

Section 3510 Hot work on flammable and combustible liquid storage tanks

3510.1 General. Hot work performed on the interior or exterior of tanks that hold or have held flammable or combustible liquids shall be in accordance with Section 3510.2 and Chapters 4, 5, 6, 7 and 10 of NFPA 326.

3510.2 Prevention. The following steps shall be taken to minimize hazards where hot work must be performed on a flammable or combustible liquid storage container:

1. Use alternative methods to avoid hot work where possible.
2. Analyze the hazards prior to performing hot work, identify the potential hazards and the methods of hazard control.
3. Hot work shall conform to the requirements of the code or standard to which the container was originally fabricated.
4. Test the immediate and surrounding work area with a combustible gas detector and provide for a means of continuing monitoring while conducting the hot work.
5. Qualified employees and contractors performing hot work shall use an industry-approved hot work permit system to control the work.
6. Personnel shall be properly trained on hot work policies and procedures regarding equipment, safety, hazard controls and job-specific requirements.
7. On-site safety supervision shall be present where hot work is in progress to protect the personnel conducting the hot work and provide additional overview of site-specific hazards.

1301:7-7-36 Marinas.

Section 3601 Scope

3601.1 Scope. Marina facilities shall be in accordance with this chapter.

3601.2 Plans and approvals. Plans for marina fire protection facilities shall be approved prior to installation. The work shall be subject to final inspection and approval after installation.

Section 3602 Definitions

3602.1 Definitions. The following terms are defined in Chapter 2.

Float.

Marina.

Pier.

Vessel.

Wharf.

Section 3603 General precautions

3603.1 Combustible debris. Combustible debris and rubbish shall not be deposited or accumulated on land beneath marina structures, piers or wharves.

3603.2 Sources of ignition. Open-flame devices used for lighting or decoration on the exterior of a vessel, float, pier or wharf shall be approved.

3603.3 Flammable or combustible liquid spills. Spills of flammable or combustible liquids at or ~~upon~~on the water shall be reported immediately to the fire department or jurisdictional authorities.

3603.4 Rubbish containers. Containers with tight-fitting or self-closing lids shall be provided for temporary storage of combustible debris, rubbish and waste material. The rubbish containers shall be constructed entirely of materials that comply with any one of the following:

1. Noncombustible materials.
2. Materials that meet a peak rate of heat release not exceeding 300 kW/m^2 where tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation.

3603.5 Electrical equipment. Electrical equipment shall be installed and used in accordance with its listing, Section ~~605~~ *603* of this code and Chapter 5 of NFPA 303 as required for wet, damp and hazardous locations.

3603.6 Berthing and storage. Berthing and storage shall be in accordance with Chapter 7 of NFPA 303.

3603.7 Slip identification. Slips and mooring spaces shall be individually identified by an approved numeric or alphabetic designator. Space designators shall be posted at the space. Signs indicating the space designators located on finger piers and floats shall be posted at the base of all piers, finger piers, floats and finger floats.

Section 3604 Fire protection equipment

3604.1 General. Piers, marinas and wharves with facilities for mooring or servicing five or more vessels, and marine motor fuel-dispensing facilities shall be equipped with fire protection equipment in accordance with Sections 3604.2 through 3604.6.

3604.2 Standpipes. Marinas and boatyards shall be equipped throughout with standpipe systems in accordance with NFPA 303. Systems shall be provided with hose connections located such that no point on the marina pier or float system exceeds 150 feet (15 240 mm) from a standpipe hose connection.

3604.2.1 Identification of standpipe outlets. Standpipe hose connection locations shall be clearly identified by a flag or other approved means designed to be readily visible from the pier accessing the float system.

3604.3 Access and water supply. Piers and wharves shall be provided with fire apparatus access roads and water-supply systems with on-site fire hydrants where required by the fire code official. Such roads and water systems shall be provided and maintained in accordance with Sections 503 and 507.

3604.4 Portable fire extinguishers. One portable fire extinguisher of the ordinary (moderate) hazard type shall be provided at each required standpipe hose connection. Additional portable fire extinguishers, suitable for the hazards involved, shall be provided and maintained in accordance with Section 906.

3604.5 Communications. A telephone not requiring a coin to operate or other approved, clearly identified means to notify the fire department shall be provided on the site in a location approved by the fire code official.

3604.6 Emergency operations staging areas. Space shall be provided on all float systems for the staging of emergency equipment. Emergency operation staging areas shall provide a minimum of 4 feet wide by 10 feet long (1219 mm by 3048 mm) clear area exclusive of walkways and shall be located at each standpipe hose connection. Emergency operation staging areas shall be provided with a curb or barrier having a minimum height of 4 inches (102 mm) and maximum space between the bottom edge and the surface of the staging area of 2 inches (51 mm) on the outboard sides of the staging area.

An approved sign reading “FIRE EQUIPMENT STAGING AREA-KEEP CLEAR” shall be provided at each staging area.

Section 3605 Marine motor fuel-dispensing facilities

3605.1 Fuel dispensing. Marine motor fuel-dispensing facilities shall be in accordance with Chapter 23.

Copyright Claim Information

Note: for copyright claim information, please see the notice on the last page of this rule.

1301:7-7-37 Combustible fibers.

Section 3701 General

3701.1 Scope. The equipment, processes and operations involving combustible fibers shall comply with this chapter.

3701.2 Applicability. Storage of combustible fibers in any quantity shall comply with this section.

3701.3 Permits. Permits shall be required as set forth in *Chapter 1*.

Section 3702 Definitions

3702.1 Definitions. The following terms are defined in Chapter 2.

Baled cotton.

Baled cotton, densely packed.

Combustible fibers.

Cotton.

Seed cotton.

Section 3703 General precautions

3703.1 Use of combustible receptacles. Ashes, waste, rubbish or sweepings shall not be placed in wood or other combustible receptacles and shall be removed daily from the structure.

3703.2 Vegetation. Grass or weeds shall not be allowed to accumulate at any point on the premises.

3703.3 Clearances. A minimum clearance of 3 feet (914 mm) shall be maintained between automatic sprinklers and the top of piles.

3703.4 Agricultural products. Hay, straw, seed cotton or similar agricultural products shall not be stored adjacent to structures or combustible materials unless a clear horizontal distance equal to the height of a pile is maintained between such storage and structures or combustible materials. Storage shall be limited to stacks of 100 tons (91 metric tons) each. Stacks shall be separated by not less than 20 feet (6096 mm) of clear space. Quantities of hay, straw, seed cotton and other agricultural products shall not be limited where stored in or near farm structures located outside closely built areas. A permit shall not be required for agricultural storage.

3703.5 Dust collection. Where located within a building, equipment or machinery that generates or emits combustible fibers shall be provided with an approved dust-collecting and exhaust system. Such systems shall comply with Chapter 22 of this code and Section 511 of the *mechanical code*.

3703.6 Portable fire extinguishers. Portable fire extinguishers shall be provided in accordance with Section 906 as required for extra-hazard occupancy protection as indicated in Table 906.3(1).

3703.7 Sources of ignition. Sources of ignition shall comply with Sections 3703.7.1 and 3703.7.2.

3703.7.1 Smoking. Smoking shall be prohibited and "No Smoking" signs provided as follows:

1. In rooms or areas where materials are stored or dispensed or used in open systems.

2. Within 25 feet (7620 mm) of outdoor storage or open use areas.

3. Facilities or areas within facilities that have been designated as totally "no smoking" shall have "No Smoking" signs placed at all entrances to the ~~facilities~~ facility or area. Designated areas within such facilities where smoking is permitted either permanently or temporarily shall be identified with signs designating that smoking is permitted in these areas only.

Signs required by this section shall be in English as a primary language or in symbols allowed by this code and shall comply with Section 310.

3703.7.2 Open flames. Open flames and high-temperature devices shall not be used in a manner that creates a hazardous condition ~~and shall be listed for use with the materials stored or used~~. High-temperature devices and those devices utilizing an open flame shall be listed for use with the materials stored or used.

Section 3704 Loose fiber storage

3704.1 General. Loose combustible fibers, not in suitable bales or packages and stored outdoors in the open, shall comply with Section 2808 of this code. Occupancies involving the indoor storage of loose combustible fibers in amounts exceeding the maximum allowable quantity per control area as set forth in Section 5003.1 shall comply with Sections 3704.2 through 3704.6.

3704.2 Storage of 100 cubic feet or less. Loose combustible fibers in quantities of not more than 100 cubic feet (3 m^3) located in a structure shall be stored in a metal or metal-lined bin equipped with a self-closing cover.

3704.3 Storage of more than 100 cubic feet to 500 cubic feet. Loose combustible fibers in quantities exceeding 100 cubic feet (3 m^3) but not exceeding 500 cubic feet (14 m^3) shall be stored in rooms enclosed with 1-hour fire barriers constructed in accordance with Section 707 of the *building code* or horizontal assemblies constructed in accordance with Section 711 of the *building code*, or both, with openings protected ~~with~~ by an approved opening protective assembly having a fire protection rating of ¾ hour in accordance with the *building code*.

3704.4 Storage of more than 500 cubic feet to 1,000 cubic feet. Loose combustible fibers in quantities exceeding 500 cubic feet (14 m^3) but not exceeding 1,000 cubic feet (28 m^3) shall be stored in rooms enclosed with 2-hour fire barriers constructed in accordance with Section 707 of the *building code* or horizontal assemblies constructed in accordance with Section 711 of the *building code*, or both, with openings protected ~~with~~ by an approved opening protective assembly having a fire protection rating of 1½ hours in accordance with the *building code*.

3704.5 Storage of more than 1,000 cubic feet. Loose combustible fibers in quantities exceeding 1,000 cubic feet (28 m^3) shall be stored in rooms enclosed with 2-hour fire barriers constructed in

accordance with Section 707 of the *building code* or horizontal assemblies constructed in accordance with Section 711 of the *building code*, or both, with openings protected by an approved opening protective assembly having a fire protection rating of 1½ hours in accordance with the *building code*. The storage room shall be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1.

3704.6 Detached storage structure. Not more than 2,500 cubic feet (70 m^3) of loose combustible fibers shall be stored in a detached structure suitably located, with openings protected against entrance of sparks. The structure shall not be occupied for any other purpose.

Section 3705 Baled storage

3705.1 Bale size and separation. Baled combustible fibers shall be limited to single blocks or piles not more than 25,000 cubic feet (700 m^3) in volume, not including aisles or clearances. Blocks or piles of baled fiber shall be separated from adjacent storage by aisles not less than 5 feet (1524 mm) wide, or by flash-fire barriers constructed of continuous sheets of noncombustible material extending from the floor to a minimum height of 1 foot (305 mm) above the highest point of the piles and projecting not less than 1 foot (305 mm) beyond the sides of the piles.

3705.2 Special baling conditions. Sisal and other fibers in bales bound with combustible tie ropes, jute and other fibers that swell when wet, shall be stored to allow for expansion in any direction without affecting building walls, ceilings or columns. A minimum clearance of 3 feet (914 mm) shall be required between walls and sides of piles, except that where the storage compartment is not more than 30 feet (9144 mm) wide, the minimum clearance at side walls shall be 1 foot (305 mm), provided that a center aisle not less than 5 feet (1524 mm) wide is maintained.