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2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE

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CHAPTER 23
HIGH-PILED COMBUSTIBLE STORAGE

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2301 GENERAL

SECTION 2301
GENERAL

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2301 GENERAL / 2301.1 Scope.

2301.1 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 28.
2. Flammable and combustible liquids shall be in accordance with Chapter 34.
3. Hazardous materials shall be in accordance with Chapter 27.
4. Storage of combustible paper records shall be in accordance with NFPA 13 and NFPA 230.
5. Storage of combustible fibers shall be in accordance with Chapter 29.
6. Storage of miscellaneous combustible material shall be in accordance with Chapter 3.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2301 GENERAL / 2301.2 Permits.

2301.2 Permits.

A permit shall be required as set forth in Section 105.6.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE

STORAGE / SECTION 2301 GENERAL / 2301.3 Construction documents.

2301.3 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 *International 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 shall include 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 2303.
8. Location of commodities which are banded or encapsulated.
9. Location of required fire department access doors.
10. Type of fire suppression and fire detection 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 required by the fire code official.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2301 GENERAL / 2301.4 Evacuation plan.

2301.4 Evacuation plan.

When required by the fire code official, an 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 copy of the approved plans shall be maintained on the premises in an approved location.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2302 DEFINITIONS

**SECTION 2302
DEFINITIONS**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2302 DEFINITIONS / 2302.1 Definitions.

2302.1 Definitions.

The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ARRAY. The configuration of storage. Characteristics considered in defining an array include the type of packaging, flue spaces, height of storage and compactness of storage.

ARRAY, CLOSED. A storage configuration having a 6-inch (152 mm) or smaller width vertical flue space that restricts air movement through the stored commodity.

BIN BOX. A five-sided container with the open side facing an aisle. Bin boxes are self-supporting or supported by a structure designed so that little or no horizontal or vertical space exists around the boxes.

COMMODITY. A combination of products, packing materials and containers.

DRAFT CURTAIN. A structure arranged to limit the spread of smoke and heat along the underside of the ceiling or roof.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER. A sprinkler listed for early suppression fast-response performance.

EXPANDED PLASTIC. A foam or cellular plastic material having a reduced density based on the presence of numerous small cavities or cells dispersed throughout the material.

EXTRA-HIGH-RACK COMBUSTIBLE STORAGE. Storage on racks of Class I, II, III or IV commodities which exceed 40 feet (12 192 mm) in height and storage on racks of high-hazard commodities which exceed 30 feet (9144 mm) in height.

HIGH-PILED COMBUSTIBLE STORAGE. Storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3658 mm) in height. When required by the fire code official, high-piled combustible storage also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is

less than 12' but we are not high piled - req. do not apply

greater than 6 feet (1829 mm) in height.

HIGH-PILED STORAGE AREA. An area within a building which is designated, intended, proposed or actually used for high-piled combustible storage.

LONGITUDINAL FLUE SPACE. The flue space between rows of storage perpendicular to the direction of loading.

MANUAL STOCKING METHODS. Stocking methods utilizing ladders or other nonmechanical equipment to move stock.

MECHANICAL STOCKING METHODS. Stocking methods utilizing motorized vehicles or hydraulic jacks to move stock.

SHELF STORAGE. Storage on shelves less than 30 inches (762 mm) deep with the distance between shelves not exceeding 3 feet (914 mm) vertically. For other shelving arrangements, see the requirements for rack storage.

SOLID SHELVING. Shelving that is solid, slatted or of other construction located in racks and which obstructs sprinkler discharge down into the racks.

TRANSVERSE FLUE SPACE. The space between rows of storage parallel to the direction of loading.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION

**SECTION 2303
COMMODITY CLASSIFICATION**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.1 Classification of commodities.

2303.1 Classification of commodities.

Commodities shall be classified as Class I, II, III, IV or high hazard in accordance with this section. 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 Section 2303.7 for classification of Group A, B and C plastics.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.2 Class I commodities.

2303.2 Class I commodities.

Class I commodities are essentially noncombustible products on wooden or nonexpanded polyethylene solid deck pallets, in ordinary corrugated cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without pallets. Class I commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 2303.7.4. Examples of Class I commodities include, but are not limited to, the following:

- Alcoholic beverages not exceeding 20-percent 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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.3 Class II commodities.

2303.3 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 pallets. Class II commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 2303.7.4. Examples of Class II commodities include, but are not

limited to, the following:

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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.4 Class III commodities.

2303.4 Class III commodities.

Class III commodities are commodities of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without 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. Group A plastics shall be limited in accordance with Section 2303.7.4. Examples of Class III commodities include, but are not limited to, the following:

- Aerosol, Level 1 (see Chapter 28)
- Combustible fiberboard
- Cork, baled
- Feed, bagged
- Fertilizers, bagged
- Food in plastic containers
- Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic-padded and covered arm rests
- Glycol in combustible containers not exceeding 25 percent
- 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

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Paper and pulp, horizontal storage, or vertical storage that is banded or protected with approved wrap

Paper in cardboard boxes

Pillows, excluding foam rubber and foam plastics

Plastic-coated paper food containers

Plywood

Rags, baled

Rugs, without foam backing

Sugar, bagged

Wood, baled

Wood doors, frames and cabinets

Yarns of natural fiber and viscose

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.5 Class IV commodities.

2303.5 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. The total amount of nonfree-flowing Group A plastics shall be in accordance with Section 2303.7.4. Examples of Class IV commodities include, but are not limited to, the following:

Aerosol, Level 2 (see Chapter 28)

Alcoholic beverages, exceeding 20-percent but less than 80-percent 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 percent and less than 50 percent)

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Linoleum products
Paints, oil base in combustible containers
Pharmaceutical, alcoholic elixirs, tonics, etc.
Rugs, foam back
Shingles, asphalt
Thread or yarn, synthetic or nonviscose

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.6 High-hazard commodities.

2303.6 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 Chapter 28)
Alcoholic beverages, exceeding 80-percent 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 percent or greater)
Lacquers, which 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 which are idle combustible
Paper, asphalt, rolled, horizontal storage
Paper, asphalt, rolled, vertical storage
Paper and pulp, rolled, in vertical storage which is unbanded or not protected with an approved wrap
Pillows, foam rubber and foam plastics
Pyroxylin

next page - tires

Rubber tires

Vegetable oil and butter in plastic containers

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics.

2303.7 Classification of plastics.

Plastics shall be designated as Group A, B or C in accordance with this section.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics. / 2303.7.1 Group A plastics.

2303.7.1 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

Polyethylene

Polypropylene

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Polystyrene (expanded and unexpanded)

Polyurethane (expanded and unexpanded)

PVC (polyvinyl chloride greater than 15 percent plasticized, e.g., coated fabric unsupported film)

SAN (styrene acrylonitrile)

SBR (styrene butadiene rubber)

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics. / 2303.7.2 Group B plastics.

2303.7.2 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-percent, but not exceeding 15-percent plasticized)

Silicone rubber

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics. / 2303.7.3 Group C plastics.

2303.7.3 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)

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Phenol

PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings)

PVDC (polyvinylidene chloride)

PVDF (polyvinylidene fluoride)

PVF (polyvinyl fluoride)

Urea (urea formaldehyde)

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics. / 2303.7.4 Limited quantities of Group A plastics in mixed commodities.

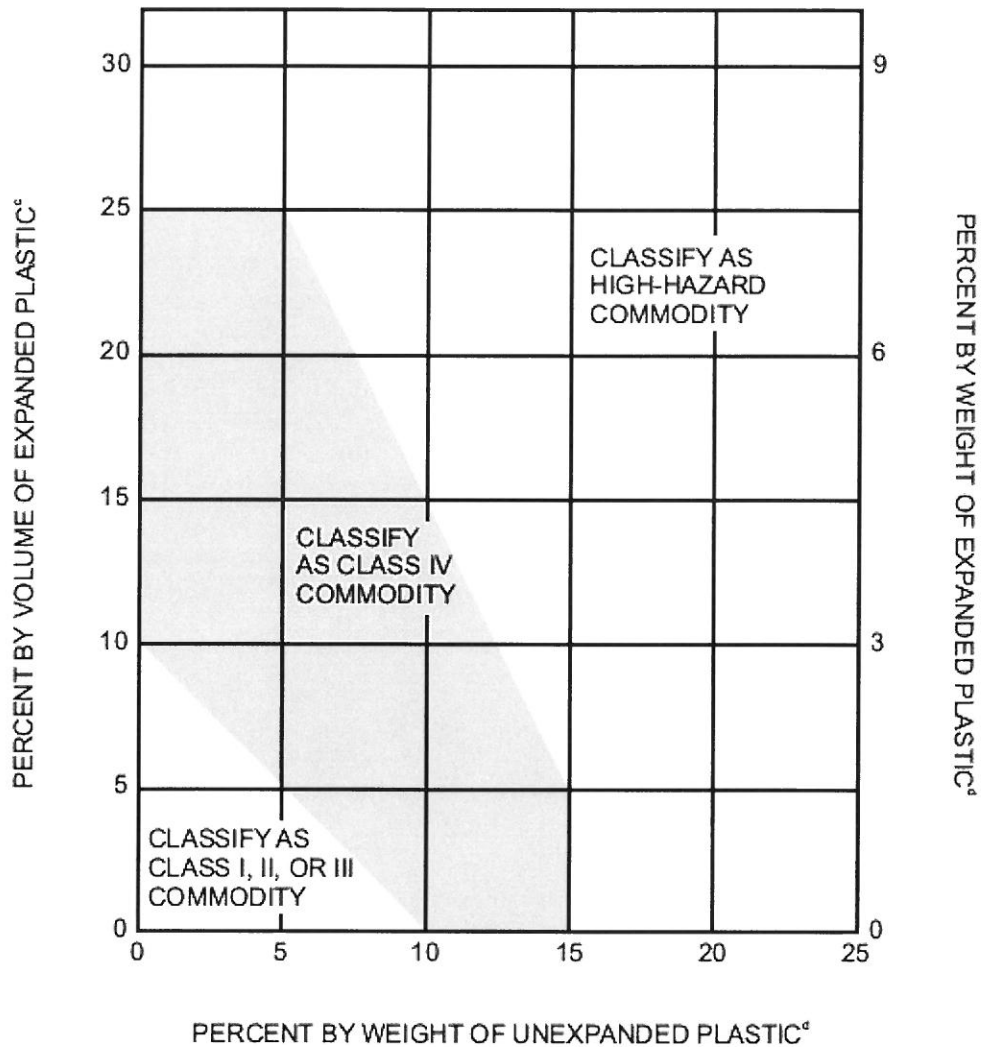
2303.7.4 Limited quantities of Group A plastics in mixed commodities.

Figure 2303.7.4 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2303 COMMODITY CLASSIFICATION / 2303.7 Classification of plastics. / FIGURE 2303.7.4 MIXED COMMODITIES^{a, b}

**FIGURE 2303.7.4
MIXED COMMODITIES^{a, b}**

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- a. This figure is intended to determine the commodity classification of a mixed commodity in a package, carton or on a pallet where plastic are involved.
- b. The following is an example of how to apply the figure: A package containing a Class III commodity has 12-percent Group A expanded plastic by volume. The weight of the unexpanded Group A plastic is 10 percent. This commodity is classified as a Class IV commodity. If the weight of the unexpanded plastic is increased to 14 percent, the classification changes to a high-hazard commodity.
- c. Percent by volume = $\frac{\text{Volume of plastic in pallet load}}{\text{Total volume of pallet load, including pallet}}$
- d. Percent by weight = $\frac{\text{Weight of plastic in pallet load}}{\text{Total weight of pallet load, including pallet}}$

Total weight of pallet load, including pallet

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2304 DESIGNATION OF HIGH-PILED STORAGE AREAS

**SECTION 2304
DESIGNATION OF HIGH-PILED STORAGE AREAS**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2304 DESIGNATION OF HIGH-PILED STORAGE AREAS / 2304.1 General.

2304.1 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 2304.2.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2304 DESIGNATION OF HIGH-PILED STORAGE AREAS / 2304.2 Designation based on engineering analysis.

2304.2 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 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 (111 m²) 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 m²) for wet pipe systems and 1,200 square feet (111 m²) for dry pipe systems. The shape of the design area shall be in accordance with Section 903.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE

**SECTION 2305
HOUSEKEEPING AND MAINTENANCE**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.1 Rack structures.

2305.1 Rack structures.

The structural integrity of racks shall be maintained.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.2 Ignition sources.

2305.2 Ignition sources.

Clearance from ignition sources shall be provided in accordance with Section 305.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.3 Smoking.

2305.3 Smoking.

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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.4 Aisle maintenance.

2305.4 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 2306.9.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE

STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.5 Pile dimension and height limitations.

2305.5 Pile dimension and height limitations.

Pile dimensions and height limitations shall comply with Section 2307.3.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.6 Arrays.

2305.6 Arrays.

Arrays shall comply with Section 2307.4.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2305 HOUSEKEEPING AND MAINTENANCE / 2305.7 Flue spaces.

2305.7 Flue spaces.

Flue spaces shall comply with Section 2308.3.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES

**SECTION 2306
GENERAL FIRE PROTECTION AND
LIFE SAFETY FEATURES**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.1 General.

2306.1 General.

Fire protection and life safety features for high-piled storage areas shall be in accordance with Sections 2306.2 through 2306.10.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.2 Extent and type of protection.

2306.2 Extent and type of protection.

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Where required by Table 2306.2, fire detection systems, smoke and heat removal, draft curtains and automatic sprinkler design densities shall extend the lesser of 15 feet (4572 mm) beyond the high-piled storage area or to a permanent partition. 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 2306.2 within this area shall be based on the most restrictive design requirements.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.2 Extent and type of protection. / TABLE 2306.2 GENERAL FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

**TABLE 2306.2
GENERAL FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS**

COMMODITY CLASS	SIZE OF HIGH-PILED STORAGE AREA ^a (square feet) (see Sections 2306.2 and 2306.4)	ALL STORAGE AREAS (See Sections 2306, 2307 and 2308) ^b					§ STOI
		Automatic fire-extinguishing system (see Section 2306.4)	Fire detection system (see Section 2306.5)	Building access (see Section 2306.6)	Smoke and heat removal (see Section 2306.7)	Draft curtains (see Section 2306.7)	Maxi pi dimer (fe
I-IV	0-500	Not Required ^a	Not Required	Not Required ^e	Not Required	Not Required	N Req
	501-2,500	Not Required ^a	Yes ^f	Not Required ^e	Not Required	Not Required	1(
	2,501-12,000 Public accessible	Yes	Not Required	Not Required ^e	Not Required	Not Required	1(
	2,501-12,000 Nonpublic accessible (Option 1)	Yes	Not Required	Not Required ^e	Not Required	Not Required	1(
	2,501-12,000 Nonpublic accessible (Option 2)	Not Required ^a	Yes	Yes	Yes ^f	Yes ^f	1(
	12,001-20,000	Yes	Not Required	Yes	Yes ^f	Not Required	1(
	20,001-500,000	Yes	Not Required	Yes	Yes ^f	Not Required	1(
	Greater than 500,000 ^g	Yes	Not Required	Yes	Yes ^f	Not Required	1(
	0-500	Not Required ^a	Not Required	Not Required ^e	Not Required	Not Required	5
	501-2,500	Yes	Not Required	Not	Not Required	Not	5

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COMMODITY CLASS	SIZE OF HIGH-PILED STORAGE AREA ^a (square feet) (see Sections 2306.2 and 2306.4)	ALL STORAGE AREAS (See Sections 2306, 2307 and 2308) ^b					§ STOI
		Automatic fire-extinguishing system (see Section 2306.4)	Fire detection system (see Section 2306.5)	Building access (see Section 2306.6)	Smoke and heat removal (see Section 2306.7)	Draft curtains (see Section 2306.7)	Maximum height (feet)
High hazard	Public accessible			Required ^e		Required	
	501-2,500 Nonpublic accessible (Option 1)	Yes	Not Required	Not Required ^e	Not Required	Not Required	5
	501-2,500 Nonpublic accessible (Option 2)	Not Required ^a	Yes	Yes	Yes ^j	Yes ^j	5
	2,501-300,000	Yes	Not Required	Yes	Yes ^j	Not Required	5
	300,001-500,000 ^{g,h}	Yes	Not Required	Yes	Yes ^j	Not Required	5

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m³, 1 square foot = 0.0929 m².

- a. When automatic sprinklers are required for reasons other than those in Chapter 23, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with Sections 2307 and 2308.
- b. For aisles, see Section 2306.9.
- c. Piles shall be separated by aisles complying with Section 2306.9.
- d. For storage in excess of the height indicated, special fire protection shall be provided in accordance with Note g when required by the fire code official. See also Chapters 28 and 34 for special limitations for aerosols and flammable and combustible liquids, respectively.
- e. Section 503 shall apply for fire apparatus access.
- f. For storage exceeding 30 feet in height, Option 1 shall be used.
- g. Special fire protection provisions including, 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 additional fire department hose connections shall be provided when 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 the *International Building Code* shall be used to divide high-piled storage exceeding 500,000 square feet in area.
- i. Not required when an automatic fire-extinguishing system is designed and installed to protect the high-piled storage area in accordance with Sections 2307 and 2308.
- j. Not required when storage areas are protected by early suppression fast response (ESFR) sprinkler systems installed in accordance with NFPA 13.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.3 Separation of high-piled storage areas.

2306.3 Separation of high-piled storage areas.

High-piled storage areas shall be separated from other portions of the building where required by Sections 2306.3.1 through 2306.3.2.2.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.3 Separation of high-piled storage areas. / 2306.3.1 Separation from other uses.

2306.3.1 Separation from other uses.

Mixed occupancies shall be separated in accordance with the *International Building Code*.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.3 Separation of high-piled storage areas. / 2306.3.2 Multiple high-piled storage areas.

2306.3.2 Multiple high-piled storage areas.

Multiple high-piled storage areas shall be in accordance with Section 2306.3.2.1 or 2306.3.2.2.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.3 Separation of high-piled storage areas. / 2306.3.2 Multiple high-piled storage areas. / 2306.3.2.1 Aggregate area.

2306.3.2.1 Aggregate area.

The aggregate of all high-piled storage areas within a building shall be used for the application of Table 2306.2 unless such areas are separated from each other by 1-hour fire barrier walls constructed in accordance with the *International Building Code*.

Openings in such walls shall be protected by opening protective assemblies having a 1-hour fire protection rating.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.3 Separation of high-piled storage areas. / 2306.3.2 Multiple high-piled storage areas. / 2306.3.2.2 Multiclass high-piled storage areas.

2306.3.2.2 Multiclass 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 2306.2. To be considered as separated, 1-hour fire barrier walls shall be constructed in accordance with the *International Building Code*. Openings in such walls shall be protected by opening protective assemblies having a 1-hour fire protection rating.

Exception: As provided for in Section 2304.2.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.4 Automatic sprinklers.

2306.4 Automatic sprinklers.

Automatic sprinkler systems shall be provided in accordance with Sections 2307, 2308 and 2309.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.5 Fire detection.

2306.5 Fire detection.

Where fire detection is required by Table 2306.2, 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.6 Building access.

2306.6 Building access.

Where building access is required by Table 2306.2, 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, non-negotiable grades or other similar conditions, the fire code official is authorized to require additional fire protection.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.6 Building access. / 2306.6.1 Access doors.

2306.6.1 Access doors.

Where building access is required by Table 2306.2, fire department access doors shall be provided in accordance with this section. Access doors shall be accessible without the use of a ladder.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.6 Building access. / 2306.6.1 Access doors. / 2306.6.1.1 Number of doors required.

2306.6.1.1 Number of doors required.

A minimum of one access door shall be provided in each 100 lineal feet (30 480 mm), or fraction thereof, of the exterior walls which face required fire apparatus access roads.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.6 Building access. / 2306.6.1 Access doors. / 2306.6.1.2 Door size and type.

2306.6.1.2 Door size and type.

Access doors shall not be less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be used unless approved.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.6 Building access. / 2306.6.1 Access doors. / 2306.6.1.3 Locking devices.

2306.6.1.3 Locking devices.

Only approved locking devices shall be used.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.7 Smoke and heat removal.

2306.7 Smoke and heat removal.

Where smoke and heat removal are required by Table 2306.2, smoke and heat vents shall be provided in accordance with Section 910. Where draft curtains are required by Table 2306.2, they shall be provided in accordance with Section 910.3.4.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.8 Fire department hose connections.

2306.8 Fire department hose connections.

Where exit passageways are required by the *International Building Code* for egress, a Class I standpipe system shall be provided in accordance with Section 905.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles.

2306.9 Aisles.

Aisles providing access to exits and fire department access doors shall be provided in high-piled storage areas exceeding 500 square feet (46 m²), in accordance with Sections 2306.9.1 through 2306.9.3. 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 approved.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles. / 2306.9.1 Width.

2306.9.1 Width.

Aisle width shall be in accordance with Sections 2306.9.1.1 and 2306.9.1.2.

Exceptions:

1. Aisles crossing rack structures or storage piles, which are used only for employee access, shall be a minimum of 24 inches (610 mm) wide.
2. Aisles separating shelves classified as shelf storage shall be a minimum of 30 inches (762 mm) wide.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles. / 2306.9.1 Width. / 2306.9.1.1 Sprinklered buildings.

2306.9.1.1 Sprinklered buildings.

Aisles in sprinklered buildings shall be a minimum of 44 inches (1118 mm) wide. Aisles shall be a minimum of 96 inches (2438 mm) wide in high-piled storage areas exceeding 2,500 square feet (232 m²) in area, that are accessible to the public and designated to contain high-hazard commodities.

Exception: Aisles in high-piled storage areas exceeding 2,500 square feet (232 m²)

in area, that are accessible to the public and designated to contain high-hazard commodities, are protected by a sprinkler system designed for multiple-row racks of high-hazard commodities shall be a minimum of 44 inches (1118 mm) wide.

Aisles shall be a minimum of 96 inches (2438 mm) wide in areas accessible to the public where mechanical stocking methods are used.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles. / 2306.9.1 Width. / 2306.9.1.2 Nonsprinklered buildings.

2306.9.1.2 Nonsprinklered buildings.

Aisles in nonsprinklered buildings shall be a minimum of 96 inches (2438 mm) wide.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles. / 2306.9.2 Clear height.

2306.9.2 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.9 Aisles. / 2306.9.3 Dead ends.

2306.9.3 Dead ends.

Dead-end aisles shall be in accordance with Chapter 10.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2306 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES / 2306.10 Portable fire extinguishers.

2306.10 Portable fire extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 906.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE

**SECTION 2307
SOLID-PILED AND SHELF STORAGE**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE / 2307.1 General.

2307.1 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 Sections 2306 and this section.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE / 2307.2 Fire protection.

2307.2 Fire protection.

Where automatic sprinklers are required by Table 2306.2, an approved automatic sprinkler system shall be installed throughout the building or to 1-hour fire barrier walls constructed in accordance with the *International Building Code*. Openings in such walls shall be protected by opening protective assemblies having 1-hour fire protection ratings. The design and installation of the automatic sprinkler system and other applicable fire protection shall be in accordance with the *International Building Code* and NFPA 13.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE / 2307.2 Fire protection. / 2307.2.1 Shelf storage.

2307.2.1 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE / 2307.3 Pile dimension and height limitations.

2307.3 Pile dimension and height limitations.

Pile dimensions, the maximum permissible storage height and pile volume shall be in accordance with Table 2306.2.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2307 SOLID-PILED AND SHELF STORAGE / 2307.4 Array.

2307.4 Array.

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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE

**SECTION 2308
RACK STORAGE**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.1 General.

2308.1 General.

Rack storage shall be in accordance with Section 2306 and this section. Bin boxes exceeding 5 feet (1524 mm) in any dimension shall be regulated as rack storage.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.2 Fire protection.

2308.2 Fire protection.

Where automatic sprinklers are required by Table 2306.2, an approved automatic sprinkler system shall be installed throughout the building or to 1-hour fire barrier walls constructed in accordance with the *International Building Code*. Openings in such walls shall be protected by opening protective assemblies having 1-hour fire protection ratings. 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 *International Building Code*.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.2 Fire protection. / 2308.2.1 Plastic pallets and shelves.

2308.2.1 Plastic pallets and shelves.

Storage on plastic pallets or plastic shelves shall be protected by approved specially engineered fire protection systems.

Exception: Plastic pallets listed and labeled in accordance with UL 2335 shall be

treated as wood pallets for determining required sprinkler protection.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.2 Fire protection. / 2308.2.2 Racks with solid shelving.

2308.2.2 Racks with solid shelving.

Racks with solid shelving having an area greater than 32 square feet (3 m²), measured between approved flue spaces at all four edges of the shelf, shall be in accordance with this section.

Exceptions:

1. Racks with mesh, grated, slatted or similar shelves having uniform openings not more than 6 inches (152 mm) apart, comprised of at least 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.2 Fire protection. / 2308.2.2 Racks with solid shelving. / 2308.2.2.1 Fire protection.

2308.2.2.1 Fire protection.

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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.3 Flue spaces.

2308.3 Flue spaces.

Flue spaces shall be provided in accordance with Table 2308.3. Required flue spaces shall be maintained.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.3 Flue spaces. / TABLE 2308.3 REQUIRED FLUE SPACES FOR RACK STORAGE

**TABLE 2308.3
REQUIRED FLUE SPACES FOR RACK STORAGE**

		SPRINKLER AT THE CEILING WITH OR	IN-RACK SPRINKLERS	
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maintained.

**TABLE 2308.3
REQUIRED FLUE SPACES FOR RACK STORAGE**

RACK CONFIGURATION	AUTOMATIC SPRINKLER PROTECTION		SPRINKLER AT THE CEILING WITH OR WITHOUT MINIMUM IN-RACK SPRINKLERS			IN-RACK SPRINKLERS AT EVERY TIER	NONSPRINK
			≤ 25 feet		> 25 feet	Any height	Any height
	Storage height		Option 1	Option 2			
Single-row rack	Transverse flue space	Size ^b	3 inches	Not Applicable	3 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Applicable	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	Not Applicable	Not Required	Not Required	Not Required
Double-row rack	Transverse flue space	Size ^b	6 inches ^a	3 inches	3 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Required	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	6 inches	6 inches	Not Required	Not Required
Multi-row rack	Transverse flue space	Size ^b	6 inches	Not Applicable	6 inches	Not Required	Not Required
		Vertically aligned	Not Required	Not Applicable	Yes	Not Applicable	Not Required
	Longitudinal flue space		Not Required	Not Applicable	Not Required	Not Required	Not Required

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

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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.4 Column protection.

2308.4 Column protection.

Steel building columns shall be protected in accordance with NFPA 230.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.5 Extra-high-rack storage systems.

2308.5 Extra-high-rack storage systems.

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

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2308 RACK STORAGE / 2308.5 Extra-high-rack storage systems. / 2308.5.1 Fire protection.

2308.5.1 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, when required by the fire code official.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2309 AUTOMATED STORAGE

**SECTION 2309
AUTOMATED STORAGE**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2309 AUTOMATED STORAGE / 2309.1 General.

2309.1 General.

Automated storage shall be in accordance with this section.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2309 AUTOMATED STORAGE / 2309.2 Automatic sprinklers.

2309.2 Automatic sprinklers.

Where automatic sprinklers are required by Table 2306.2, the building shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2309 AUTOMATED STORAGE / 2309.3 Carousel storage.

2309.3 Carousel storage.

High-piled storage areas having greater than 500 square feet (46 m²) 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 which sounds a local alarm at the operator's station and stops the

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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, which 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.

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2310 SPECIALTY STORAGE

**SECTION 2310
SPECIALTY STORAGE**

2006 International Fire Code® / CHAPTER 23 HIGH-PILED COMBUSTIBLE STORAGE / SECTION 2310 SPECIALTY STORAGE / 2310.1 General.

2310.1 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 2306 and 2308 and NFPA 13 and NFPA 230. Palletized storage of records shall be in accordance with Section 2307.

2006 International Fire Code® / CHAPTER 24 TENTS, CANOPIES AND OTHER MEMBRANE STRUCTURES

**CHAPTER 24
TENTS, CANOPIES AND OTHER MEMBRANE
STRUCTURES**

2006 International Fire Code® / CHAPTER 24 TENTS, CANOPIES AND OTHER MEMBRANE STRUCTURES / SECTION 2401 GENERAL

**SECTION 2401
GENERAL**