Δ **32.9.2.8** Portable feeder cables shall be permitted to temporarily penetrate fire-rated walls, floors, or ceilings provided that all of the following apply:

(1) The opening is of noncombustible material.
(2) When in use, the penetration is sealed with a temporary seal of a listed firestop material.
(3) When not in use, the opening shall be capped with a material of equivalent fire rating.

[**70:**530.18(C)]

32.9.2.9 Where the penetration utilizes a conduit, metal-threaded caps shall be attached to the pipe by means of chain or cable and shall effectively cap the conduit when not in use. [**140:**4.8.9]

Δ **32.9.2.10** The lighting equipment used shall comply with UL 1573, *Stage and Studio Luminaires and Connector Strips*, and the provisions of Article 530 of *NFPA 70*. [**140:**4.8.10]

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32.9.3 Means of Egress.

32.9.3.1 Means of egress shall be in accordance with NFPA *101* unless otherwise modified by 32.9.3.2 through 32.9.3.6. [**140:**4.10.1]

32.9.3.2 The maximum travel distance to an exit within the soundstage shall be 150 ft (45 m). [**140:**4.10.2]

32.9.3.3 Soundstages and approved production facilities shall have an aisle along the perimeter of the soundstage or facility as approved by the AHJ unless otherwise provided in 32.9.3.3.2. [**140:**4.10.3]

32.9.3.3.1 A clear unobstructed aisle height of 7 ft (2.1 m) shall be maintained. [**140:**4.10.3.1]

32.9.3.3.2 A soundstage or approved production facility with a gross area not exceeding 1500 ft^2 (139 m^2) shall be exempt from the perimeter aisle requirement of 32.9.3.3 provided there is a minimum of two means of egress. [**140:**4.10.3.2]

32.9.3.4 Emergency lighting shall be provided for the means of egress in accordance with NFPA *101*. [**140:**4.10.4]

32.9.3.5 Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware. [**140:**4.10.5]

32.9.3.6 Means of egress shall be kept clear of obstructions and tripping hazards. [**140:**4.10.6]

32.9.3.7 When an audience is present, an announcement shall be made notifying the audience of the following:

(1) The location of exits to be used in case of fire or other emergency
(2) The means that will be used to notify the audience of fire or other emergency

[**140:**4.10.7]

32.9.4 Fire Protection.

32.9.4.1 Extinguishment Requirements.

32.9.4.1.1 Existing soundstages and existing approved production facilities equipped with automatic sprinkler systems shall maintain those systems in accordance with 13.3.3. [**140:**4.11.1.1]

32.9.4.1.2 A new soundstage or new approved production facility shall be equipped with an approved, supervised automatic sprinkler system. [**140:**4.11.1.2]

Δ **32.9.4.1.3** The automatic sprinkler system required by 32.9.4.1.2 shall be installed in accordance with Section 13.3 unless otherwise provided in 32.9.4.1.3.1 or 32.9.4.1.3.2. [**140:**4.11.1.3]

32.9.4.1.3.1* The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if approved mitigation is employed. [**140:**4.11.1.3.1]

32.9.4.1.3.2* The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if the building sprinkler system meets the design criteria for Extra Hazard, Group 2. [**140:**4.11.1.3.2]

32.9.4.1.4 The automatic sprinkler system required by 32.9.4.1.2 shall be maintained in accordance with 13.3.3. [**140:**4.11.1.4]

32.9.4.1.5 Portable fire extinguishers shall be installed and maintained in accordance with Section 13.6. [**140:**4.11.1.5]

32.9.4.2 Fire Alarm System. Fire alarm system notification appliances within soundstages and approved production facilities shall be permitted to be deactivated with the approval of the AHJ during videotaping, filming, or broadcasting of programs, provided the following conditions exist:

(1) In the event of alarm system activation, notification appliances shall activate at a location that is constantly attended during the videotaping, filming, or broadcasting of programs.
(2) The attendants of the location identified in 32.9.4.2(1) shall be provided with a means of communicating with the fire command center for the building, where one is provided, and with the occupants of the soundstage to initiate emergency action.
(3) Deactivation of notification appliances shall cause activation of a visual signal at an approved location, which shall remain illuminated while notification appliances on the soundstage are deactivated.
(4) The visual signal shall be identified by a sign that shall read, "When Illuminated, Soundstage Fire Alarm System Notification Appliances Are Deactivated."

[**140:**4.11.2]

32.9.5 Air Conditioning, Heating, and Ventilating. Air-conditioning, heating, and ventilating ductwork and related equipment shall be in good working order and in compliance with the requirements of the AHJ. [**140:**4.12]

32.10 Production Locations.

32.10.1 Electrical Requirements.

32.10.1.1 Electrical power connections made to the site electrical service shall be made by an approved electrician under permit from the AHJ. [**140:**5.8.1]

32.10.1.2 Portable cables shall be positioned to allow for emergency egress as approved by the AHJ. [**140:**5.8.2]

32.10.1.3* Auxiliary power cables supplied from mobile generators or adjacent buildings shall be permitted to be routed through fire-rated windows and doors with the approval of the AHJ. [**140:**5.8.3]

32.10.1.4 Where power from both mobile generators and site electrical services are used to energize equipment in the same proximate location at production locations, grounds for the two systems shall be bonded in accordance with *NFPA 70*. [**140:**5.8.4]

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32.10.2* Means of Egress. The production location shall be provided with means of egress appropriate for the intended use as approved by the AHJ. [**140:**5.10]

32.10.3 Fire Protection.

32.10.3.1* Building areas used as production locations shall be designed, constructed, and maintained to protect the occupants not intimate with the initial fire development for the time needed to evacuate, relocate, or defend in place. [**140:**5.11.1]

Δ **32.10.3.2** Where an automatic sprinkler system is provided for compliance with 32.10.3.1, the automatic sprinkler system shall be installed in accordance with Section 13.3 unless otherwise provided in 32.10.3.4 or 32.10.3.5. [**140:**5.11.2]

32.10.3.3 In any production location building protected by an existing automatic sprinkler system, where solid- or hard-ceiling sets or platforms are introduced and create an obstruction to sprinkler discharge, the provisions of 32.10.3.4 or 32.10.3.5 shall be met. [**140:**5.11.3]

32.10.3.4* The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if approved mitigation is employed. [**140:**5.11.4]

32.10.3.5* The requirements of NFPA 13 prohibiting obstructions to sprinkler discharge shall not be applicable if the building sprinkler system meets the design criteria for Extra Hazard, Group 2. [**140:**5.11.5]

32.10.3.6 Automatic sprinkler systems, where provided, shall be maintained in accordance with 13.3.3. [**140:**5.11.6]

32.10.3.7 Portable fire extinguishers shall be provided as required by the AHJ. [**140:**5.11.7]

32.10.3.8 Fire Hydrants and Fire Appliances. Hydrants, standpipes, and fire department connections (FDCs) shall not be obstructed, blocked, or rendered inoperable unless approved by the AHJ. [**140:**5.11.8]

32.10.4 Operating Features.

32.10.4.1 Waste or Refuse. Waste or refuse shall not be allowed to accumulate in any area or in any manner that creates a fire hazard. [**140:**6.1]

32.10.4.2 Flammable or Combustible Liquids.

Δ **32.10.4.2.1** The use, mixing, dispensing, and storage of flammable or combustible liquids shall be in accordance with this *Code* and Chapter 66 and Chapter 69, as applicable, unless otherwise permitted by 32.10.4.2.2.[**140:**6.2.1]

32.10.4.2.2 Approved flammable or combustible liquids and liquefied petroleum gases used for special effects shall be permitted. [**140:**6.2.2]

Δ **32.10.4.3 Welding.** Welding shall be in accordance with NFPA 51 and Chapter 41. [**140:**6.3]

32.10.4.4* Audience Life Safety. When an audience is present during productions, provisions for life safety and means of egress shall be subject to the approval of the AHJ. [**140:**6.4]

32.10.4.5 Emergency Services Notification. The production company shall provide a procedure acceptable to the AHJ for notifying the public emergency services of emergency incidents. [**140:**6.5]

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Chapter 33 Outside Storage of Tires

33.1* General.

33.1.1 Facilities storing more than 500 tires outside shall be in accordance with Chapter 33.

33.1.2 Permits. Permits, where required, shall comply with Section 1.12.

33.1.3 Fire apparatus access roads to separate tire piles and for effective fire-fighting operations shall be in accordance with Table 33.1.3.

33.1.4 Separation of yard storage from buildings, vehicles, flammable materials, and other exposures shall be in accordance with Table 33.1.3.

33.1.5 Trees, plants, and vegetation within the separation areas shall be managed in accordance with Section 10.13.

33.1.6 Ignition Sources.

33.1.6.1 Smoking shall be prohibited within the tire storage area.

33.1.6.2 Sources of ignition such as cutting and welding, heating devices, and open fires shall be prohibited within the tire storage area.

33.1.6.3 Safeguards shall be provided to minimize the hazard of sparks from equipment such as refuse burners, boiler stacks,

Table 33.1.3 Representative Minimum Exposure Separation Distances in Feet (Meters) for Tire Storage

Exposed Face Dimension		Pile Height													
ft	m	8 ft	2.4 m	10 ft	3 m	12 ft	3.7 m	14 ft	4.3 m	16 ft	4.9 m	18 ft	5.5 m	20 ft	6.1 m
25	7.6	56	17	62	19	67	20	73	22	77	23	82	25	85	26
50	15.2	75	23	84	26	93	28	100	30	107	33	113	34	118	36
100	30	100	30	116	35	128	39	137	42	146	44	155	47	164	50
150	45	100	30	116	35	128	39	137	42	146	44	155	47	164	50
200	61	100	30	116	35	128	39	137	42	146	44	155	47	164	50
250	75	100	30	116	35	128	39	137	42	146	44	155	47	164	50

and vehicle exhaust when such hazards are located near the tire storage area.

33.1.7 Piles of tires or altered tire material shall not be located beneath power lines or structures.

33.1.8 Piles of tires or altered tire material shall be at least 50 ft (15 m) from the perimeter fence.

33.1.9 Provisions for surface water drainage and measures to provide protection of pyrolytic oil runoff shall be directed around and away from the outdoor tire storage site to an approved location.

33.1.10 Tires shall be removed from rims immediately upon arrival at the storage site.

33.1.11 Tires shall not be stored on wetlands, flood plains, ravines, canyons, or steeply graded surfaces.

33.2 Individual Piles.

33.2.1 New Outside Tire Storage Sites and Piles.

33.2.1.1 New individual outside tire storage piles containing more than 500 tires shall be limited in volume to 125,000 ft^3 (3540 m^3).

33.2.1.2 The dimensions of new tire storage piles shall not exceed 10 ft (3 m) in height, 50 ft (15 m) in width, and 250 ft (75 m) in length.

33.2.1.3 Individual piles shall be separated in accordance with Table 33.1.3.

33.2.2 Existing Individual Piles.

33.2.2.1 Existing outside tire storage piles shall be in accordance with the provisions of 33.2.1 within 5 years of the adoption of this *Code*.

33.2.2.2 Existing individual outside tire storage piles containing more than 500 tires shall be limited in volume to 250,000 ft^3 (7080 m^3).

33.2.2.3 Existing pile dimensions shall not exceed 20 ft (6 m) in height, 50 ft (15 m) in width, and 250 ft (75 m) in length.

33.2.2.4 Individual piles shall be separated in accordance with Table 33.1.3.

33.3 Emergency Response Plan.

33.3.1 The operator of the outside tire storage facility shall develop an emergency response plan and submit it for approval by the AHJ.

33.3.2 The AHJ shall retain a copy of the approved emergency response plan.

33.3.3 The operator of the outside tire storage facility shall keep a copy of the approved emergency response plan at the facility.

33.3.4 The AHJ shall be immediately notified of and approve any proposed changes to the emergency response plan.

33.4 Fire Control Measures. Measures to aid in the control of fire shall be in accordance with Section 33.4.

33.4.1 Manual Fire-Fighting Equipment.

33.4.1.1 At a minimum, the following items shall be maintained on site and in working order:

(1) One 2-A:10-B:C fire extinguisher
(2) One 2.5 gal (10 L) water extinguisher
(3) One 10 ft (3 m) long pike pole
(4) One rigid rake
(5) One round point shovel
(6) One square point shovel

33.4.1.2 One dry chemical fire extinguisher with a minimum rating of 4-A:40-B:C shall be carried on each piece of fuel-powered equipment used to handle scrap tires.

33.4.1.3 On-site personnel shall be trained in the use and function of this equipment to mitigate tire pile ignition.

33.4.2 An approved water supply capable of supplying the required fire flow to protect exposures and perform fire suppression and overhaul operations shall be provided.

33.4.3* The AHJ shall be permitted to require additional tools and equipment for fire control and the protection of life and property.

33.5 Site Access.

33.5.1 Access to the site and each tire storage yard and pile shall be in accordance with Section 18.2 and this section.

33.5.2 Accesses shall be maintained clear of combustible waste or vegetation and shall remain accessible to the fire department at all times.

33.6 Signs and Security. Access by unauthorized persons and security of the site shall be in accordance with Section 33.6.

33.6.1 Signs bearing the name of the operator, the operating hours, emergency telephone numbers, and site rules shall be posted at site entrances.

33.6.2 The facility shall have noncombustible fencing at least 10 ft (3 m) high with intruder controls on top, in accordance with local laws, around the entire perimeter of the property.

33.6.3 Access.

33.6.3.1 Access to the facility shall be in accordance with Section 18.2.

33.6.3.2 An attendant shall be on site at all times when the site is open.

33.7 Outdoor Storage of Altered Tire Material. Outdoor storage of altered tire material in the form of chunks, chips, or crumbs shall be protected in accordance with 33.7.1 through 33.7.5.

33.7.1 A 10 ft (3 m) fence shall be maintained around the altered tire material storage area.

33.7.2 Altered tire material piles shall be kept 50 ft (15 m) from perimeter fencing.

33.7.3 Potential ignition sources such as welding, smoking, or other open flame uses shall not be allowed within 20 ft (6 m) of the altered tire pile.

33.7.4 Individual altered tire material piles shall not be located on site in excess of 90 days.

33.7.5* Individual altered tire material piles shall be kept sheltered from precipitation.

Chapter 34 General Storage

34.1 General.

34.1.1 Application. This chapter shall apply to the indoor and outdoor storage of materials representing the broad range of combustibles, including plastics, rubber tires, and roll paper.

34.1.1.1 Storage configurations shall include palletized storage, solid-piled storage, and storage in bin boxes, on shelves, or on racks.

34.1.1.2 Chapter 34 shall not apply to the following:

(1) Storage of commodities that, with their packaging and storage aids, would be classified as noncombustible
(2) Unpackaged bulk materials such as grain, coal, or similar commodities but excluding wood chips and sawdust, which are addressed in Chapter 31
(3) Inside or outside storage of commodities covered by this *Code*, except where specifically mentioned herein (e.g., pyroxylin plastics)
(4) Storage of high-hazard materials covered by this *Code*, except where specifically mentioned herein
(5) Storage on plastic shelves on racks
(6)* Miscellaneous tire storage
(7) Combustible fiber storage, which is covered in Chapter 45

34.1.2 Permits. Permits, where required, shall comply with Section 1.12.

N **34.1.3* Approved Storage Floor Plan.** An approved storage floor plan that documents the permissible use of the storage area, based on the occupancy classification and the design basis of the automatic sprinkler system, shall be provided and mounted in an approved location.

34.2 Classification of Commodities.

34.2.1* Commodity classification and the corresponding protection requirements shall be determined based on the makeup of individual storage units. [**13:**20.3.1]

34.2.1.1 The type and amount of materials used as part of the product and its primary packaging as well as the storage pallet shall be considered in the classification of the commodity. [**13:**20.3.1.1]

34.2.1.2 When specific test data of commodity classification by a nationally recognized testing agency are available, the data shall be permitted to be used in determining classification of commodities. [**13:**20.3.1.2]

34.2.2 Pallet Types.

34.2.2.1 General. When loads are palletized, the use of wood or metal pallets, or listed pallets equivalent to wood, shall be assumed in the classification of commodities. [**13:**20.3.2.1]

• N **34.2.2.2 Plastic Pallet.** A pallet having any portion of its construction consisting of a plastic material that has not been listed as equivalent to wood shall increase the class of commodity determined for a storage load in accordance with NFPA 13. [**13:**20.3.2.2]

34.3* Commodity Classes.

34.3.1* Class I. A Class I commodity shall be defined as a noncombustible product that meets one of the following criteria:

(1) Placed directly on wood pallets
(2) Placed in single-layer corrugated cartons, with or without single-thickness cardboard dividers, with or without pallets
(3) Shrink-wrapped or paper-wrapped as a unit load with or without pallets [**13:**20.4.1]

34.3.2* Class II. A Class II commodity shall be defined as a noncombustible product that is in slatted wooden crates, solid wood boxes, multiple-layered corrugated cartons, or equivalent combustible packaging material, with or without pallets. [**13:**20.4.2]

34.3.3* Class III.

34.3.3.1 A Class III commodity shall be defined as a product fashioned from wood, paper, natural fibers, or Group C plastics with or without cartons, boxes, or crates and with or without pallets. [**13:**20.4.3.1]

34.3.3.2 A Class III commodity shall be permitted to contain a limited amount (5 percent or less by weight of nonexpanded plastic or 5 percent or less by volume of expanded plastic) of Group A or Group B plastics. [**13:**20.4.3.2]

Δ **34.3.3.3** Class III commodities containing a mix of both Group A expanded and nonexpanded plastics shall comply with Figure 34.3.3.3(a) where they are within cartons, boxes, or crates or with Figure 34.3.3.3(b) where they are exposed. [**13:**20.4.3.3]

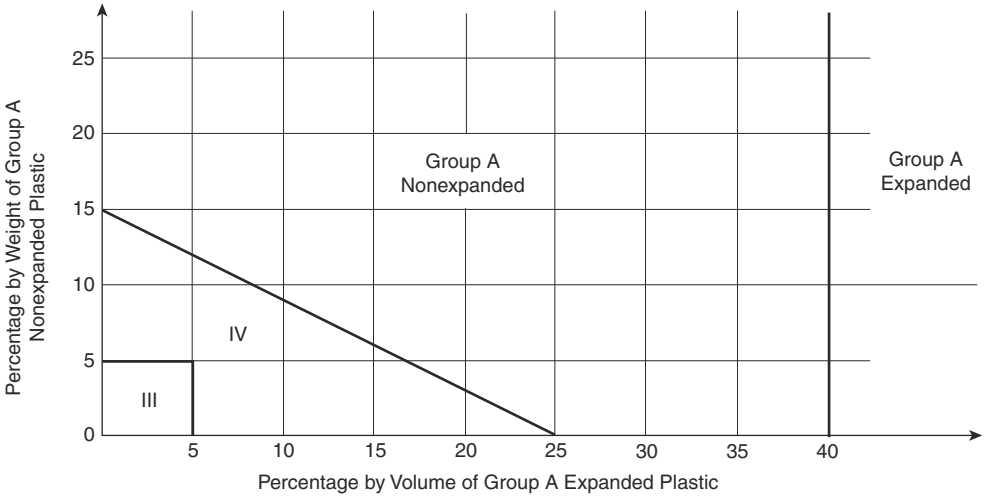
34.3.4* Class IV.

34.3.4.1 A Class IV commodity shall be defined as a product, with or without pallets, that meets one of the following criteria:

(1) Constructed partially or totally of Group B plastics
(2) Consists of free-flowing Group A plastic materials
(3) Cartoned, or within a wooden container, that contains greater than 5 percent and up to 15 percent by weight of Group A nonexpanded plastic
(4) Cartoned, or within a wooden container, that contains greater than 5 percent and up to 25 percent by volume of expanded Group A plastics
(5) Cartoned, or within a wooden container, that contains a mix of Group A expanded and nonexpanded plastics and complies with Figure 34.3.3.3(a)
(6) Exposed, that contains greater than 5 percent and up to 15 percent by weight of Group A nonexpanded plastic
(7) Exposed, that contains a mix of Group A expanded and nonexpanded plastics and complies with Figure 34.3.3.3(b)

[**13:**20.4.4.1]

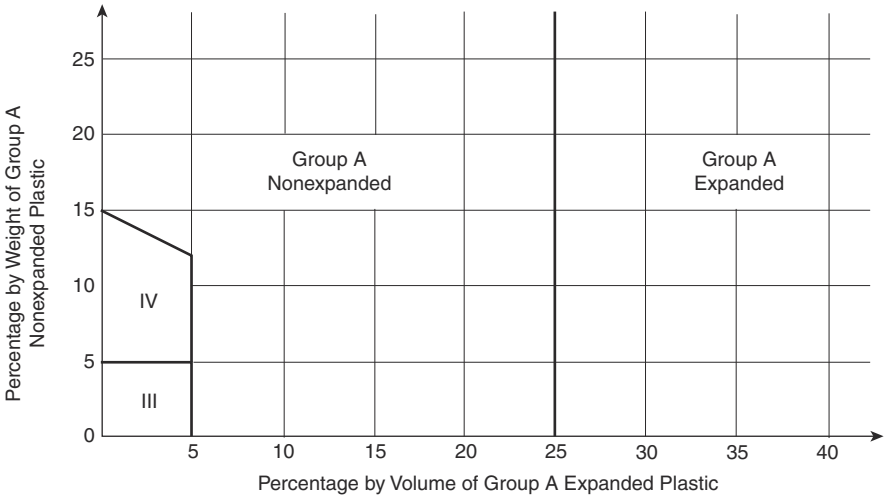
• Δ **34.3.4.2** The remaining materials shall be permitted to be noncombustible, wood, paper, natural fibers, or Group B or Group C plastics. [**13:**20.4.4.2]



III - Class III Commodity. Refer to 20.3.2 if a plastic pallet is used.

IV - Class IV Commodity. Refer to 20.3.2 if a plastic pallet is used.

Δ **FIGURE 34.3.3.3(a) Commodities, Cartoned or Within a Wooden Container, Containing a Mixture of Expanded and Nonexpanded Group A Plastics. [13:Figure 20.4.3.3(a)]**



III - Class III Commodity. Refer to 20.3.2 if a plastic pallet is used.

IV - Class IV Commodity. Refer to 20.3.2 if a plastic pallet is used.

N **FIGURE 34.3.3.3(b) Exposed Commodities Containing a Mixture of Expanded and Nonexpanded Group A Plastics. [13:Figure 20.4.3.3(b)]**

34.3.5* Classification of Plastics, Elastomers, and Rubber. Plastics, elastomers, and rubber shall be classified as Group A, Group B, or Group C. [**13:**20.4.5]

Δ **34.3.5.1 Group A.** The following materials shall be classified as Group A:

(1) ABS (acrylonitrile-butadiene-styrene copolymer)
(2) Acetal (polyformaldehyde)
(3) Acrylic (polymethyl methacrylate)
(4) Butyl rubber
(5) Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)
(6) EPDM (ethylene-propylene rubber)
(7) FRP (fiberglass-reinforced polyester)
(8) Natural rubber
(9) Nitrile-rubber (acrylonitrile-butadiene-rubber)
(10) Nylon (nylon 6, nylon 6/6)
(11) PET (thermoplastic polyester)
(12) Polybutadiene
(13) Polycarbonate
(14) Polyester elastomer
(15) Polyethylene
(16) Polypropylene
(17) Polystyrene
(18) Polyurethane

(19) PVC (polyvinyl chloride — highly plasticized, with plasticizer content greater than 20 percent) (rarely found)
(20) PVF (polyvinyl fluoride)
(21) SAN (styrene acrylonitrile)
(22) SBR (styrene-butadiene rubber)
[**13:**20.4.5.1]

34.3.5.2* Group A plastics shall be further subdivided as either expanded or nonexpanded. [**13:**20.4.5.2]

34.3.5.3 A Group A expanded plastic commodity shall be defined as a product, with or without pallets, that meets one of the following criteria:

(1) Cartoned, or within a wooden container, that contains greater than 40 percent by volume of Group A expanded plastic
(2) Exposed, that contains greater than 25 percent by volume of Group A expanded plastic
[**13:**20.4.5.3]

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N **34.3.5.4** A Group A nonexpanded plastic commodity shall be defined as a product, with or without pallets, that meets one of the following criteria:

(1) Cartoned, or within a wooden container, that contains greater than 15 percent by weight of Group A nonexpanded plastic
(2) Cartoned, or within a wooden container, that contains greater than 25 percent and up to 40 percent by volume of Group A expanded plastic
(3) Cartoned, or within a wooden container, that contains a mix of Group A nonexpanded and expanded plastics, in compliance with Figure 34.3.3.3(a)
(4) Exposed, that contains greater than 15 percent by weight of Group A nonexpanded plastic
(5) Exposed, that contains greater than 5 percent and up to 25 percent by volume of Group A expanded plastic
(6) Exposed, that contains a mix of Group A nonexpanded and expanded plastics, in compliance with Figure 34.3.3.3(b)
[**13:**20.4.5.4]

N **34.3.5.5** The remaining materials shall be permitted to be noncombustible, wood, paper, natural or synthetic fibers, or Group A, Group B, or Group C plastics. [**13:**20.4.5.5]

Δ **34.3.6 Group B.** The following materials shall be classified as Group B:

(1) Chloroprene rubber
(2) Fluoroplastics (ECTFE — ethylene-chlorotrifluoroethylene copolymer; ETFE — ethylene tetrafluoroethylene copolymer; FEP — fluorinated ethylene-tetrafluoroethylene-copolymer)
(3) Silicone rubber
[**13:**20.4.6]

Δ **34.3.7 Group C.** The following materials shall be classified as Group C:

(1) Fluoroplastics (PCTFE — polychlorotrifluoroethylene; PTFE — polytetrafluoroethylene)
(2) Melamine (melamine formaldehyde)
(3) Phenolic
(4) PVC (polyvinyl chloride — flexible — PVCs with plasticizer content up to 20 percent)
(5) PVDC (polyvinylidene chloride)
(6) PVDF (polyvinylidene fluoride)
(7) Urea (urea formaldehyde)
[**13:**20.4.7]

N **34.3.8*** Plastic commodities shall be protected in accordance with Figure 34.3.8. *(See Section C.21 of NFPA 13.)* [**13:**20.4.8]

N **34.3.8.1** Group B plastics and free-flowing Group A plastics shall be protected the same as Class IV commodities. [**13:**20.4.8.1]

N **34.3.8.2** Group C plastics shall be protected the same as Class III commodities. [**13:**20.4.8.2]

N **34.3.9 Rubber Tires.** Pneumatic tires for passenger automobiles, aircraft, light and heavy trucks, trailers, farm equipment, construction equipment (off-the-road), and buses shall be protected as rubber tire storage in accordance with Chapters 20 through 25 of NFPA 13. [**13:**20.4.9]

34.3.10* Classification of Rolled Paper Storage. For the purposes of this *Code*, the classifications of paper described in 34.3.10.1 through 34.3.10.4 shall apply and shall be used to determine the sprinkler system design criteria in accordance with Chapters 20 through 25 of NFPA 13. [**13:**20.4.10]

34.3.10.1 Heavyweight Class. Heavyweight class shall be defined so as to include paperboard and paper stock having a basis weight [weight per 1000 ft^2 (93 m^2)] of 20 lb (9.1 kg). [**13:**20.4.10.1]

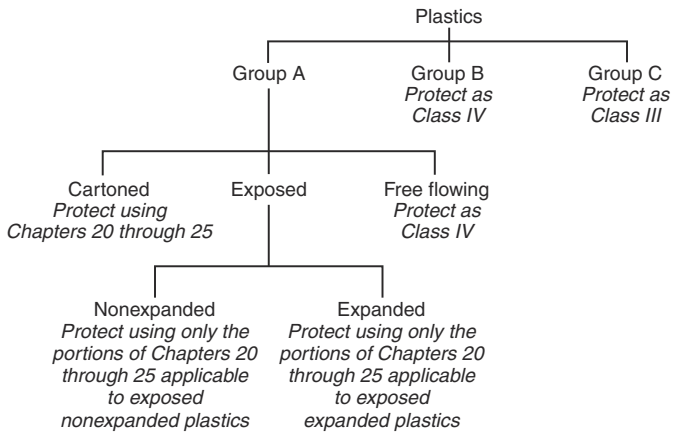
34.3.10.2 Mediumweight Class. Mediumweight class shall be defined so as to include all the broad range of papers having a basis weight [weight per 1000 ft^2 (93 m^2)] of 10 lb to 20 lb (4.5 kg to 9.1 kg). [**13:**20.4.10.2]

Δ **34.3.10.3 Lightweight Class.** Lightweight class shall be defined so as to include all papers having a basis weight [weight per 1000 ft^2 (93 m^2)] of 10 lb (4.5 kg). [**13:**20.4.10.3]

34.3.10.4 Tissue.

34.3.10.4.1 Tissue shall be defined so as to include the broad range of papers of characteristic gauzy texture, which, in some cases, are fairly transparent. [**13:**20.4.10.4.1]

34.3.10.4.2 For the purposes of this *Code*, tissue shall be defined as the soft, absorbent type, regardless of basis weight — specifically, crepe wadding and the sanitary class including facial tissue, paper napkins, bathroom tissue, and toweling. [**13:**20.4.10.4.2]



N **FIGURE 34.3.8 Decision Tree. [13:Figure 20.4.8]**

N **34.3.11* Plastic Motor Vehicle Components.** Group A plastic automotive components and associated packaging material consisting of exposed, expanded Group A plastic dunnage, instrument panels, and plastic bumper fascia shall be permitted to be protected as defined in Chapter 23 of NFPA 13. [**13:**20.4.11]

N **34.3.12 Retail Display/Storage of Up to Cartoned Group A Plastics.** Group A plastics combined with Class I through IV in a retail/storage environment (big box retail) that combines customer picking areas with storage above within the retail area shall be permitted to be protected in accordance with retail display/storage of up to cartoned group A plastics in Chapters 20 to 23 of NFPA 13. [**13:**20.4.12]

N **34.3.12.1 Baled Cotton.** A natural seed fiber wrapped and secured in industry-accepted materials, usually consisting of burlap, woven polypropylene, or sheet polyethylene, and secured with steel, synthetic or wire bands, or wire; also includes linters (lint removed from the cottonseed) and motes (residual materials from the ginning process) shall be protected as baled cotton in accordance with Chapter 21 of NFPA 13. *(See Table A.3.3.13 of NFPA 13.)* [**13:**20.4.12.1]

N **34.3.13 Carton Records Storage.** A Class III commodity consisting predominantly of paper records in cardboard cartons shall be permitted to be protected as cartoned record storage in accordance with Chapter 21 or 23 of NFPA 13. [**13:**20.4.13]

34.3.14 Mixed Commodities.

34.3.14.1 Protection requirements shall not be based on the overall commodity mix in a fire area. [**13:**20.4.14.1]

34.3.14.2 Unless the requirements of 34.3.14.3 or 34.3.14.4 are met, mixed commodity storage shall be protected by the requirements for the highest classified commodity and storage arrangement. [**13:**20.4.14.2]

34.3.14.3 The protection requirements for the lower commodity class shall be permitted to be utilized where all of the following are met:

(1) Up to 10 pallet loads of a higher hazard commodity, as described in 34.3.1 and 34.3.7, shall be permitted to be present in an area not exceeding 40,000 ft^2 (3720 m^2).
(2) The higher hazard commodity shall be randomly dispersed with no adjacent loads in any direction (including diagonally).
(3) Where the ceiling protection is based on Class I or Class II commodities, the allowable number of pallet loads for Class IV or Group A plastics shall be reduced to five. [**13:**20.4.14.3]

34.3.14.4 Mixed Commodity Segregation. The protection requirements for the lower commodity class shall be permitted to be utilized in the area of lower commodity class, where the higher hazard material is confined to a designated area and the area is protected to the higher hazard in accordance with the requirements of this *Code*. [**13:**20.4.14.4]

34.4 Building Construction.

34.4.1* Construction Type. Buildings used for storage of materials that are stored and protected in accordance with this chapter shall be permitted to be of any of the types described in NFPA 220.

34.4.2 Fire-Fighting Access. Access shall be provided to all portions of the premises for fire-fighting purposes.

34.4.3* Emergency Smoke and Heat Venting.

34.4.3.1 Protection outlined in this chapter shall apply to buildings with or without smoke and heat vents.

34.4.3.2 Protection outlined in this chapter shall apply to buildings with or without draft curtains.

34.4.3.3 Where local codes require smoke and heat vents in buildings protected by early suppression fast response (ESFR) sprinklers, the vents shall be manually operated or have an operating mechanism with a standard response fusible element rated not less than 360°F (182°C).

34.5 Storage Arrangement.

34.5.1* Piling Procedures and Precautions.

34.5.1.1 Any commodities that are hazardous in combination with each other shall be stored so they cannot come into contact with each other.

34.5.1.2 Safe floor loads shall not be exceeded.

34.5.1.3 Where storing water-absorbent commodities, normal floor loads shall be reduced to take into account the added weight of water that can be absorbed during fire-fighting operations.

34.5.2 Commodity Clearance.

34.5.2.1 The clearance between top of storage and sprinkler deflectors shall conform to NFPA 13.

34.5.2.2* If the commodity is stored above the lower chord of roof trusses, not less than 1 ft (0.3 m) of clear space shall be maintained to allow wetting of the truss, unless the truss is protected with 1-hour fireproofing.

34.5.2.3 Storage clearance from ducts shall be maintained in accordance with NFPA 91.

34.5.2.4 The clearance between stored materials and unit heaters, radiant space heaters, duct furnaces, and flues shall not be less than 3 ft (0.9 m) in all directions or shall be in accordance with the clearances shown on the approval agency label.

34.5.2.5* Clearance shall be maintained to lights or light fixtures to prevent ignition.

34.5.2.6 Clearance shall be maintained around the path of fire door travel to ensure the door's proper operation and inspection.

34.5.2.7 Operation and inspection clearance shall be maintained around fire-extinguishing and fire protection equipment.

34.5.3 Aisles.

34.5.3.1 For the storage of commodities that expand with the absorption of water, such as roll paper, wall aisles not less than 24 in. (0.6 m) wide shall be provided.

34.5.3.2 Aisles shall be maintained to retard the transfer of fire from one pile to another and to allow convenient access for fire fighting, salvage, and removal of storage.

34.5.4 Flammable and Combustible Liquids. Storage of flammable or combustible liquids shall be in accordance with Chapter 60.

34.6 General Fire Protection.

34.6.1* Sprinkler Systems. Sprinkler systems installed in buildings used for storage shall be in accordance with Section 13.3.

34.6.2 High-Expansion Foam.

34.6.2.1 High-expansion foam systems installed in addition to automatic sprinklers shall be installed in accordance with NFPA 11 except where modified by other requirements in this chapter.

34.6.2.2 High-expansion foam used to protect idle pallets shall have a fill time of not more than 4 minutes.

34.6.2.3 High-expansion foam systems shall be automatic in operation.

34.6.2.4 Detectors for high-expansion foam systems shall be listed and shall be installed at the ceiling at not more than one-half the listed spacing in accordance with *NFPA 72*.

34.6.2.5 Detection systems, concentrate pumps, generators, and other system components essential to the operation of the system shall have an approved standby power source.

34.6.3 Manual Protection.

34.6.3.1 Portable Fire Extinguishers.

34.6.3.1.1 Portable fire extinguishers shall be provided in accordance with Section 13.6, unless 34.6.3.1.2 applies.

34.6.3.1.2 Where 1½ in. (38 mm) hose lines are available to reach all portions of areas with Class A fire loads, up to one-half of the portable fire extinguishers required by Section 13.6 shall be permitted to be omitted.

34.6.3.2 Hydrants. At locations without public hydrants, or where hydrants are not within 250 ft (75 m), private hydrants shall be installed in accordance with Section 13.5.

34.6.4 Fire Organization.

34.6.4.1 Arrangements shall be made to allow rapid entry into the premises by the municipal fire department, police department, or other authorized personnel in case of fire or other emergency.

34.6.4.2* Due to the unique nature of storage fires and the hazards associated with fighting such fires, facility emergency personnel shall be trained to have knowledge of the following:

(1) Pile and building collapse potential during fire-fighting and mop-up operations due to sprinkler water absorption, use of hose streams, and the undermining of piles by fire that is likely to cause material or piles to fall (especially roll tissue paper), resulting in injury
(2) Operation of sprinkler systems and water supply equipment
(3) Location of the controlling sprinkler valves so that the correct sprinkler system can be turned on or off as necessary
(4) Correct operation of emergency smoke and heat vent systems where they have been provided
(5) Use of material-handling equipment while sprinklers are operating to effect final extinguishment
(6) Procedure for summoning outside aid immediately in an emergency
(7) Maintenance of the security features of the premises
(8) Operation of foam systems, evacuation procedures, and safety precautions during all foam operations

34.6.4.3 A fire watch shall be maintained when the sprinkler system is not in service.

34.6.5 Alarm Service.

34.6.5.1 Automatic sprinkler systems and foam systems, where provided, shall have approved central station, auxiliary, remote station, or proprietary waterflow alarm service unless otherwise permitted by 34.6.5.1.1 or 34.6.5.1.2.

34.6.5.1.1 Local waterflow alarm service shall be permitted when recorded guard service also is provided.

34.6.5.1.2 Local waterflow alarm service shall be permitted where the storage facilities are occupied on a 24-hour basis.

34.6.5.2 Alarm service shall comply with *NFPA 72*.

34.6.6 Security Service. Security service, where provided, shall comply with NFPA 601.

34.7 Building Equipment, Maintenance, and Operations.

34.7.1 Industrial Trucks.

34.7.1.1 Power-operated industrial trucks and their use shall comply with NFPA 505.

34.7.1.2 Industrial trucks using liquefied petroleum gas (LP-Gas) or liquid fuel shall be refueled outside of the storage building at a location designated for the purpose.

34.7.2 Building Service Equipment. Electrical equipment shall be installed in accordance with the provisions of Section 11.1.

34.7.3 Cutting and Welding Operations.

34.7.3.1 Where welding or cutting operations are necessary, the requirements of Chapter 41 shall apply.

34.7.3.2* Welding, soldering, brazing, and cutting shall be permitted to be performed on building components or contents that cannot be removed, provided that no storage is located below and within 25 ft (7.6 m) of the working area and flameproof tarpaulins enclose the area.

34.7.3.3 During any of the operations identified in 34.7.3.2, all of the following shall apply:

(1) The sprinkler system shall be in service.
(2) Extinguishers suitable for Class A fires with a minimum rating of 2-A shall be located in the working area.
(3) Where inside hose lines are available, charged and attended inside hose lines shall be located in the working area.
(4) A fire watch shall be maintained during the operations specified in 34.7.3.2 and for not less than 30 minutes following completion of open-flame operation.

34.7.4 Waste Disposal.

34.7.4.1 Approved containers for rubbish and other trash materials shall be provided.

34.7.4.2 Rubbish, trash, and other waste material shall be disposed of at regular intervals.

34.7.5 Smoking.

34.7.5.1 Smoking shall be prohibited except in locations designated as smoking areas.

34.7.5.2 Signs that read "No Smoking" shall be posted in prohibited areas.

34.7.6* Maintenance and Inspection.

34.7.6.1 Fire walls, fire doors, and floors shall be maintained in functional condition at all times.

34.7.6.2* All water-based fire protection systems and the water supplies shall be inspected, tested, and maintained in accordance with NFPA 25.

N **34.7.6.3 Storage Plan Maintenance.**

N **34.7.6.3.1** Storage shall comply with the approved storage floor plan.

N **34.7.6.3.2** Compliance with the approved storage floor plan required by 34.1.3 shall be evaluated and verified not less than once per year.

N **34.7.6.3.3** Modifications or changes to the approved storage floor plan shall be approved by the AHJ prior to any modifications or changes.

34.7.7 Refrigeration Systems. Refrigeration systems, if used, shall be in accordance with ASHRAE 15, *Safety Code for Mechanical Refrigeration*.

34.7.8 Lighting. Where metal halide lighting is installed, it shall be selected, installed, and maintained such that catastrophic failure of the bulb shall not ignite materials below.

34.8 Protection of Rack Storage.

34.8.1 Application. Section 34.8 shall apply to the indoor storage of normal combustibles (Class I through Class IV) and plastics that are stored on racks.

34.8.2 Building Construction.

34.8.2.1 Fire protection of roof steel shall not be required when sprinkler systems are installed in accordance with Section 13.3.

34.8.2.2 Fire protection of steel building columns and vertical rack members that support the building shall not be required when ceiling sprinklers and in-rack sprinklers are installed in accordance with Section 13.3.

34.8.2.3 For sprinklered buildings with rack storage of over 15 ft (4.6 m) in height and only ceiling sprinklers installed, steel building columns within the rack structure and vertical rack members that support the building shall have a fire resistance rating not less than 1 hour, unless the installation meets the requirements of 16.1.4 of NFPA 13.

34.8.3 Storage Arrangement.

34.8.3.1* Rack Structure. Rack configurations shall be approved.

34.8.3.2* Rack Loading. Racks shall not be loaded beyond their design capacity.

34.8.3.3* Aisle Widths.

34.8.3.3.1 Aisle widths and depth of racks shall be determined by material-handling methods.

34.8.3.3.2 The width of aisles shall be considered in the design of the protection system.

34.8.3.3.3* Aisle widths shall be maintained by either fixed rack structures or control in placement of portable racks.

34.8.3.3.4 Any decrease in aisle width shall require a review of the adequacy of the protection system.

34.8.3.4 General Fire Protection.

34.8.3.4.1 High-Expansion Foam.

34.8.3.4.1.1* Where high-expansion foam systems are installed, they shall be automatic in operation and shall be in accordance with NFPA 11, except when modified by 34.8.3.4.

34.8.3.4.1.2 When high-expansion foam systems are used in combination with ceiling sprinklers, in-rack sprinklers shall not be required.

34.8.3.4.1.3 Detectors shall be listed and shall be installed in one of the following configurations:

(1) At one-half listed linear spacing [e.g., 15 ft × 15 ft (4.6 m × 4.6 m) rather than 30 ft × 30 ft (9.1 m × 9.1 m)] when the following conditions exist:
   (a) Detectors are installed at the ceiling only.
   (b) The clearance from the top of storage does not exceed 10 ft (3 m).
   (c) The height of storage does not exceed 25 ft (7.6 m).
(2) At the ceiling at listed spacing and on racks at alternate levels
(3) Where listed for rack storage installation and installed in accordance with ceiling detector listing to provide response within 1 minute after ignition using an ignition source equivalent to that used in a rack storage testing program

34.8.3.4.2 High-Expansion Foam Submergence.

34.8.3.4.2.1 The following requirements shall apply to storage of Class I, Class II, Class III, and Class IV commodities, as classified in Section 34.2, up to and including 25 ft (7.6 m) in height:

(1)* When high-expansion foam systems are used without sprinklers, the submergence time shall be not more than 5 minutes for Class I, Class II, or Class III commodities.
(2) When high-expansion foam systems are used without sprinklers, the submergence time shall be not more than 4 minutes for Class IV commodities.
(3) When high-expansion foam systems are used in combination with ceiling sprinklers, the submergence time shall be not more than 7 minutes for Class I, Class II, or Class III commodities.
(4) When high-expansion foam systems are used in combination with ceiling sprinklers, the submergence time shall be not more than 5 minutes for Class IV commodities.

34.8.3.4.2.2 The following requirements shall apply to storage of Class I, Class II, Class III, and Class IV commodities stored over 25 ft (7.6 m) high up to and including 35 ft (10.7 m) in height:

(1) Ceiling sprinklers shall be used in combination with the high-expansion foam system.
(2) The submergence time for the high-expansion foam shall be not more than 5 minutes for Class I, Class II, or Class III commodities.
(3) The submergence time for the high-expansion foam shall be not more than 4 minutes for Class IV commodities.

34.9 Protection of Rubber Tires.

34.9.1* Application.

34.9.1.1 Section 34.9 shall apply to new facilities with indoor storage of usable tires and to existing facilities being converted to the indoor storage of usable tires.

34.9.1.2 Existing buildings storing rubber tires shall be exempted from complying with Section 34.9.

34.9.1.3 This section shall not apply to scrap tire storage.

34.9.2 Building Arrangement.

34.9.2.1 Steel Columns. Steel columns shall be protected as follows unless protected in accordance with 16.1.4 of NFPA 13:

(1) For storage exceeding 15 ft to 20 ft (4.6 m to 6 m) in height, columns shall have 1-hour fireproofing.
(2) For storage exceeding 20 ft (6 m) in height, columns shall have 2-hour fireproofing for the entire length of the column, including connections with other structural members.

34.9.2.2 Fire Walls.

34.9.2.2.1 Four-hour fire walls shall be provided between the tire warehouse and tire manufacturing areas.

34.9.2.2.2 Fire walls shall be designed in accordance with NFPA 221.

34.9.2.3* Travel Distance to Exits. Travel distance to exits shall be in accordance with NFPA *101*.

34.9.3 Storage Arrangement.

34.9.3.1 Piling Procedures.

34.9.3.1.1* Piles that are not adjacent to or located along a wall shall be not more than 50 ft (15 m) in width.

34.9.3.1.2 Tires stored adjacent to or along one wall shall not extend more than 25 ft (7.6 m) from the wall.

34.9.3.1.3 Where tires are stored on-tread, the dimension of the pile in the direction of the wheel hole shall be not more than 50 ft (15 m).

34.9.3.1.4 The width of the main aisles between piles shall be not less than 8 ft (2.4 m).

34.9.3.2 Clearances.

34.9.3.2.1 Storage clearance from roof structures shall be not less than 18 in. (470 mm) in all directions.

34.9.3.2.2 A clearance of not less than 24 in. (610 mm) shall be maintained around the path of fire door travel unless a barricade is provided.

34.9.3.2.3 Where protection in accordance with this chapter is provided, stored tires shall be segregated from other combustible storage by aisles not less than 8 ft (2.4 m) wide.

34.10 Protection of Roll Paper.

34.10.1 Application. Section 34.10 shall apply to new facilities with indoor storage of roll paper, and to existing facilities being converted to the indoor storage of roll paper, except for the following types of roll paper:

(1) Waxed paper
(2) Synthetic paper
(3) Palletized roll paper storage other than that stored on a single floor pallet or raised floor platform

34.10.2* Building Construction. The protection outlined in Section 34.10 shall apply to buildings with or without fireproofing or other modes of steel protection, unless modified by the requirements of 34.5.2.2.

34.10.3 Storage Arrangement. The floor load design shall take into account the added weight of water that could be absorbed by the commodity during fire-fighting operations.

34.11 Storage of Idle Pallets.

34.11.1* General. Idle pallets shall be stored outside or in a separate building designated for pallet storage, unless permitted by 34.11.2.

34.11.2 Indoor Storage. Idle pallets shall be permitted to be stored in a building used for other storage or other purpose if the building is sprinklered in accordance with Section 13.3.

34.11.3* Outdoor Storage.

34.11.3.1 The storage of wood and wood composite pallets or listed pallets equivalent to wood at pallet manufacturing and pallet recycling facility sites shall comply with 34.11.4.

34.11.3.2 Idle pallets stored outside shall be stored in accordance with Table 34.11.3.2(a) and Table 34.11.3.2(b).

34.11.3.3 Idle pallet stacks shall not exceed 15 ft (4.6 m) in height nor shall cover an area of greater than 400 ft^2 (37 m^2). Pallet stacks shall be arranged to form stable piles. A distance of not less than 8 ft (2.4 m) shall separate stacks. Piles shall be no closer than 8 ft (2.4 m) to any property line.

34.11.4 Outside Storage at Pallet Manufacturing and Pallet Recycling Facilities.

34.11.4.1* The outside storage of wood and wood composite pallets or listed pallets equivalent to wood on the same site as a pallet manufacturing or pallet recycling facility shall comply with 34.11.4.

34.11.4.2 Each site shall maintain a current site plan. The site plan shall be submitted to the authority having jurisdiction for review and approval and shall include all of the following:

(1) Lot lines
(2) Utilities

Table 34.11.3.2(a) Required Clearance Between Outside Idle Pallet Storage and Other Yard Storage

	Minimum Distance	
Pile Size	**ft**	**m**
Under 50 pallets	20	6
50–200 pallets	30	9
Over 200 pallets	50	15

Table 34.11.3.2(b) Required Clearance Between Outside Idle Pallet Storage and Building

	Minimum Distance of Wall from Storage					
	Under 50 Pallets		50 to 200 Pallets		Over 200 Pallets	
Wall Construction	ft	m	ft	m	ft	m
Masonry with no openings	0	0	0	0	15	4.6
Masonry with wired glass in openings, outside sprinklers, and 1-hour doors	0	0	10	3	20	6
Masonry with wired or plain glass, outside sprinklers, and ¾-hour doors	10	3	20	6	30	9
Wood or metal with outside sprinklers	10	3	20	6	30	9
Wood, metal, or other	20	6	30	9	50	15

(3) Size, location, and type of construction of the buildings on the property
(4) Presence of fire protection systems
(5) Water supply sources for fire-fighting purposes
(6) Locations of hazardous material storage areas
(7) Location of pallet storage
(8) Equipment protected with a dust collection system
(9) Fire department access routes
(10) Designated smoking areas
(11) Locations of fire alarm control panels

34.11.4.3 The owner or designated representative shall submit a fire prevention plan for review and approval by the authority having jurisdiction that includes all of the following:

(1) Frequency of walk-through inspections to verify compliance with the approved fire prevention plan
(2) Hot work permit process in accordance with Chapter 41
(3) Preventive maintenance program for equipment associated with the pallet activities
(4) Inspection, testing, and maintenance of fire protection systems in accordance with Chapter 13
(5) Frequency of walk-through inspections to verify pallet stack height, area, and setbacks are in compliance with 34.11.4

34.11.4.4 The owner or designated representative shall prepare and train employees in an approved emergency action plan in accordance with Section 10.8.

34.11.4.5 The owner or designated representative shall prepare a security management plan based on a security risk assessment and shall make the plan and assessment available to the AHJ upon request.

34.11.4.6 Unless permitted by 34.11.4.11, stacks of pallets shall not be stored within 0.75 times the stack height or 8 ft (2.4 m), whichever is greater, of any property line.

34.11.4.7 Unless permitted by 34.11.4.11, stacks of pallets shall not be stored within 0.75 times the stack height of any important building on site.

34.11.4.8 Pallet stacks shall not exceed 20 ft (6 m) in height.

34.11.4.9* The size of pallet arrays shall comply with one of the following:

(1) Where the access to the pallet array is less than 20 ft (6 m) in width but at least 8 ft (2.4 m) in width, the nearest edge of any individual pallet stack shall be no more than 30 ft (9 m) from the access.
(2) Where the access to the pallet array is by a fire department access route complying with Section 18.2, the nearest edge of any individual pallet stack shall be no more than 50 ft (15 m) from the access.
(3) The individual pallet stack depth from access within pallet arrays at existing facilities that exceed 34.11.4.9(1) or 34.11.4.9(2) shall be as approved by the AHJ.

34.11.4.10* Fire flow requirements for the site shall be determined by the AHJ.

34.11.4.11 Portable fire extinguishers shall be selected, installed, and maintained in accordance with Section 13.6.

34.11.4.12 The AHJ shall be permitted to allow pallet stacks closer to a property line or structure on site where additional fire protection is provided, including, but not limited to, the following:

(1) The storage yard areas and materials-handling equipment selection, design, and arrangement are based upon an approved risk assessment.
(2) Automatic fire detection transmits an alarm signal to a supervising station in accordance with *NFPA 72*.
(3) Fire apparatus access roads are provided around all storage areas.

Chapter 35 Animal Housing Facilities

Δ **35.1 General.** Animal housing facilities shall comply with NFPA 150 and this chapter.

35.2 Permits. Permits, where required, shall comply with Section 1.12.

Chapter 36 Telecommunication Facilities and Information Technology Equipment

36.1 General.

36.1.1 Telecommunication facilities shall comply with NFPA 76.

36.1.2 Information technology equipment and information technology equipment areas shall comply with NFPA 75.