



# INDIO OFFICE OF THE FIRE MARSHAL HIGH-PILED/RACK STORAGE REQUIREMENTS

46-990 Jackson Street • Indio, California 92201  
Phone (760) 347-0756 • Fax (760) 775-3710 • Indio.org

## PURPOSE

The intent of this guideline is to provide the requirements for the protection of high-piled storage (HPS) for a variety of commodities. The following requirements will ensure that the minimum measures required by the code have been taken to provide for public safety and that the required protection of these commodities has been designed in accordance with Chapter 32 of the 2019 California Fire Code (CFC) and referenced standards.

## SCOPE

This guideline provides the requirements for all HPS within the jurisdiction of the Indio, Fire Marshal's Office.

For the purposes of this guideline, certain terms are defined as follows:

### High-piled Combustible Storage(HPS)

The storage of combustible materials in closely packed piles, on pallets, in racks, or on shelves where the top of storage is greater than 12 feet in height. High-piled combustible storage also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable and combustible liquids, idle pallets, and similar commodities where the top of storage is greater than six feet in height.

### High-piled Storage Area

An area within a building that is designated, intended, proposed, or actually used for high-piled combustible storage. For purposes of selecting the applicable fire protection requirement row in Table 3206.2:

This area shall include the "footprint" of the actual storage array (racks, shelves, fixtures, or pallets), inclusive of aisles within the storage area(s). When individual storage arrays are separated by spaces 15 feet or less, the spaces shall be considered aisles and shall be included in a single storage area footprint. When individual storage arrays are separated by more than 15-foot spaces, the individual arrays shall be considered separate storage areas with their own footprint calculation.

Each storage area shall also include a 48inch perimeter aisle calculated in the footprint. This additional perimeter aisle is not required for areas that abut to a wall. For multiple storage areas within a building, the aggregate of all high-piled storage areas shall be used for selecting the applicable row in Table 3206.2, unless such areas are separated from each other by a one-hour rated fire barrier wall constructed in accordance with Section 706 of the California Building Code (CBC). Openings in such walls shall be protected by fire assemblies having a one-hour fire protection rating. CFC 3206.3.2.1.

### Rack Storage

A combination of vertical, horizontal, and diagonal members that support stored materials. Racks can be fixed or portable.

### Shelf Storage

Storage is on shelves less than 30 inches deep with the distance between shelves not exceeding three feet vertically. For larger shelves and other storage, arrangements see Rack Storage.

### Solid Shelving

Shelving that is solid, slatted, mesh, grated, or other construction located within racks that obstructs sprinkler water penetration through the racks.



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## SUBMITTAL REQUIREMENTS

### 1. General

At the time of building permit application, plans, and specifications, including but not limited to the information listed below, shall be submitted for review and approval. For certain HPS reviews, the services of a design professional familiar with the requirements contained in CFC Chapter 32 may be of great assistance. A current permit fee and a minimum of three sets of plans shall be submitted with the following information per CFC 3201.3:

- A. A letter of intent containing a detailed description of the products to be stored and the description of all containers, pallets, and packaging materials. This letter must also include a detailed description of the storage methods (racks, shelves, and pallets), the total storage area in square feet, maximum storage height, and aisle widths. An authorized officer of the company or business must sign this letter. The letter shall be copied onto the plans.
- B. A scaled site plan that shows the entire building, including all fire access lanes, fire hydrants, fire department connection, and fire sprinkler risers.
- C. A scaled floor plan of the building showing locations and dimensions of the HPS area, the location of the racks, and access doors to the storage area.
- D. The maximum desired/proposed storage height for each designated storage area per array. This height is measured from the finished floor to the highest point of the commodity stored (not shelf level).
- E. The number of tiers within each rack.
- F. The commodity clearance between the top of storage and the sprinkler deflector for each storage arrangement.
- G. Aisle dimensions between each storage array. Aisles are measured from the actual edge of the commodity to commodity, not rack to rack.
- H. Maximum pile volume for each storage array.
- I. The location and classification of different commodity classes.
- J. The location of commodities that are banded or encapsulated.
- K. The dimension and location of the transverse and longitudinal flue spaces.
- L. The sprinkler design requirements are based on commodity type, aisle width, and sprinkler temperature rating as outlined in 2016 NFPA 13 (e.g., .45/3000 with 286degree heads). A complete sprinkler design shall be submitted under a separate permit.
- M. The location of all steel columns in relationship to the racks. All steel columns located within a rack flue space or immediately adjacent to a rack in an aisle will require protection. See 2016 NFPA 13.
- N. The location, make, model, type, and automatic link temperature of the automatic/manual release smoke vents. Fusible links shall be at least one temperature rating higher than the fire sprinklers
- O. If required, the design (construction), location, and depth of the curtain board assembly, if applicable.
- P. The occupancy group as defined by CBC Chapter 3.



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## 2. California Fire Code Permits—CFC 3201.2

Fees, plans and specifications shall be submitted to the Indio Fire Department. All permits will be issued following plan approval and completion of corresponding inspections of the HPS installation. A CFC permit is required when a building or portion thereof is used for high-piled storage exceeding 500 square feet in area (see the definition of high-piled storage area under “Scope”). CFC permit fees are invoiced annually.

## 3. Commodity Classification—CFC 3203

Commodities shall be classified as Class I, II, III, IV, or High Hazard, in accordance with CFC Chapter 32.

Plastics shall be classified as Group A, B, or C in accordance with CFC Chapter 32. To determine the proper commodity classification of products with limited quantities of Group A plastics in mixed commodities, use CFC Figure 3203.9(1). This figure identifies the quantity of Group A plastics allowed to be stored in a package, carton, or on a pallet without increasing the hazard and commodity classification to “high hazard.”

The designation and protection features of a high-piled combustible storage area intended for storage of different commodity classes shall be based on the highest hazard commodity stored, except as otherwise provided for by engineering analysis in CFC 3204.2.

## 4. General Fire Protection Provisions—CFC 3206

Fire protection features for high-piled storage areas shall be in accordance with CFC Chapter 32 and other nationally recognized standards approved by the Indio Fire Department. Fire detection systems, smoke and heat removal, curtain boards, and fire sprinkler design densities shall extend to 15 feet beyond the high-piled storage area or to a permanent partition, whichever is least. The aggregate of all high-piled storage areas within a building shall be used to design the fire protection features found in CFC Table 3206.2. Unless such areas are separated from each other by a one-hour fire barrier wall constructed in accordance with CBC 706. Distinct occupancy groups shall be separated according to CBC 508.

## 5. Fire Sprinkler Systems—CFC 3206.4

When fire sprinklers are required by CFC Table 3206.2 or the CBC (or if otherwise provided), the sprinkler system shall be installed in accordance with 2016 NFPA 13.

## 6. Fire Detection Systems—CFC 3206.

When fire detection is required by CFC Table 3206.2, an approved automatic fire detection system shall be installed in accordance with 2016 NFPA 72 standard throughout the high-piled storage area. This system shall be installed and monitored as required by CFC 907.

## 7. Fire Department Access—CFC 3206.6, 3206.7

When building access is required by CFC Table 3206.2, access roadways shall be provided to within 150 feet of all portions of the exterior walls of the building used for high-piled storage. When access doors are required by CFC Table 3206.2, they shall be distributed 125 linear feet of exterior wall and shall face the required access roadway.

## 8. Smoke and Heat Removal—CFC 3206.8

When smoke and heat removal are required by CFC Table 3206.2, smoke and heat vents shall be of an approved type and shall operate automatically by a heat response device rated between 100°F and 200°F above ambient temperatures and contain a manual release roof handle. Vent size shall be in accordance with CFC Table Section 910 (attached.) The fusible link temperature is required to be at least one temperature rating greater than that of the fire sprinkler head at the roof to prevent early venting.

Smoke and heat vents are not required when storage areas are protected by early suppression fast response (ESFR) sprinkler systems installed in accordance with 2016 NFPA 13.



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## 9. Curtain Boards

When required by CFC Table 3206.2, curtain boards shall be installed in accordance with CFC 910.3.5.

## 10. Rack Flue Spaces—CFC 2308.3

Requirements for flue spaces within the rack storage are provided in CFC Table 3208.3. Double row racks shall be equipped with a pallet/commodity stop along the longitudinal flue space at each level. The stop shall be steel or other ferrous material  $\frac{1}{4}$ " thick and in the mounted position shall extend a minimum of 4 inches above the shelf or cross member, or other method approved by the fire code official.

## 11. Control of Ignition Sources

Smoking shall be prohibited in the warehouse storage area. "NO SMOKING" signs shall be conspicuously posted. Clearance between ignition sources and the combustible storage shall be maintained in accordance with CFC 305 and 310.

## 12. Solid Piled and Shelf Storage

Shelf storage, storage in solid piles, solid piles on pallets, and storage in bin boxes not exceeding five feet in any dimension shall be in accordance with CFC 3206 and 3207.

## 13. Rack Storage

Rack storage shall be in accordance with CFC 3206 and 3208. Racks with solid shelving having an area greater than 32 square feet measured between approved flue spaces at all four edges of the shelf shall be in accordance with CFC 3208.2.2.

## 14. Automated Storage

Automated storage similar to carousel storage shall be in accordance with CFC 3209.

## 15. Specialty Storage—CFC 3210

Record storage facilities used for rack or shelf storage of combustible paper records greater than 12 feet in height shall be in accordance with CFC 2306 2308, and NFPA 13 and NFPA 230. Palletized storage of records shall be in accordance with CFC 2307.

## 16. Maintenance—CFC Chapter 9

All fire and life safety equipment and systems required by the CFC shall be maintained operable at all times. Equipment, devices, and systems shall be regularly tested in accordance with nationally recognized standards, manufacturers' recommendations, and adopted regulations.

## 17. Technical Assistance

Due to the complexity of the designs specified within the CFC and adopted standards, it may be necessary to obtain the service of a fire protection design professional to assist with developing a protection scheme that meets the requirements of the CFC and other applicable regulations.