

High-Piled storage plans are required for all high-pile storage buildings or arrangements within buildings when storage meets or exceeds 501 square feet of Class 1 through IV commodities and any quantity of High-Hazard commodities.

It is important to note that all storage areas within the building contribute to the square footage regardless of separation of areas.

For example: A building has four high-pile storage areas, each being 700 square feet of Class IV commodities. The aggregate square footage would be 2,800 square feet.

High-piled combustible storage shall comply with the requirements of the SBCFPD Code, Chapter 32 of the California Fire Code and NFPA 13. All submitted plans shall indicate the following information:

1. Scaled floor plan of building showing locations and dimensions of high-piled storage areas, fire access lanes, fire hydrants, fire department connections and fire sprinkler risers.
2. Maximum useable storage height for each storage area. Height to be measured from finished floor to the highest point of the commodity
3. Number of tiers within each rack.
4. Clearance between top of commodity storage and sprinkler deflector for each storage arrangement.
5. Aisle dimensions between each storage array. Aisles to be measured from the actual edge of the commodity to commodity NOT rack to rack.
6. Maximum pile volume for each storage array.
7. Location and classification of commodities in accordance with CFC Section 3203.
8. Location of commodities which are banded or encapsulated.
9. Location of required fire department access doors.
10. Type(s) of fire suppression and fire detection system(s) including system design calculations based upon commodity type, aisle width and sprinkler temperature ratings pursuant to NFPA 13 (eg., .45/3000 with 286° heads). A complete sprinkler design shall be submitted under a separate permit application by a licensed C16 contractor.
11. Location of valves controlling water supply of ceiling and in-rack sprinklers.
12. The location, make, model, type and automatic link temperature of the automatic/manual release smoke vents. In sprinklered buildings, the fusible links for smoke and heat vents shall operate at a temperature no less than 100° and no more than 200° above the sprinkler rating. In non-sprinklered buildings, the fusible link shall operate between 100° and 200° above **ambient** temperature pursuant to CFC 910.3.2.3. Gravity-operated drop-out vents shall operate at 500° within 5 minutes.
NOTE: New construction shall only use approved/labeled smoke vents in accordance with CFC Section 3206.7. Required smoke vents in existing structures shall be inspected for proper operation and link temperature by a qualified contractor. Non-required existing vents shall either be treated as a required vent or shall be rendered inoperable.
13. Dimensions and locations of transverse and longitudinal flue spaces.
14. 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 2010 NFPA 13, Section 16.1.4.
15. Additional information regarding required design features, commodities, storage arrangements, and fire protection features required by CFC Chapter 32.

HIGH PILED STORAGE QUESTIONNAIRE

The purpose of this questionnaire is to assist the Fire Prevention Office in determining the Fire Code requirements for the storage of "High piled Combustible Stock" at your facility. These requirements will be based on the 2013 California Fire Code, Chapter 32 and NFPA 13. The following information should be filled out and signed by a qualified person having the necessary code knowledge required for High Piled Combustible Stock e.g., Code Consultant, Insurance Underwrite or Fire Protection Engineer.

THIS QUESTIONNAIRE DOES NOT REPLACE A COMMODITY ANALYSIS, IF REQUIRED.

APPLICANT INFORMATION

PROJECT/BUSINESS NAME	ADDRESS	COMMUNITY	ZIP CODE
-----------------------	---------	-----------	----------

DESCRIPTION OF STORAGE

COMMODITY CLASSIFICATION

STORAGE INFORMATION 1

METHOD OF STORAGE (Check all that apply)

Solid Piles
 Racks w/ Solid Shelves
 Racks w/o Solid Shelves
 Bin Boxes
 Wood Pallets
 Plastic Pallets
 Encapsulated
 Non-encapsulated
 Other: _____

STORAGE INFORMATION 2

FLOOR AREA OF STORAGE (including aisles)	PILE STORAGE			RACK STORAGE					
	STORAGE HEIGHT	PILE DIMENSIONS	AISLE WIDTH	RACK TYPE		RACK HEIGHT	RACK DEPTH	RACK WIDTH	AISLE WIDTH
				<input type="checkbox"/> Single Row <input type="checkbox"/> Double Row	<input type="checkbox"/> Multiple Row				

BUILDING COMPONENTS

Emergency vehicle access to within 150' of all portions of the exterior walls? YES NO Distance between ext. access doors: _____

Smoke and Heat Vents? YES NO Draft Curtains? YES NO Automatic? Manual? Both?

Flue Spaces – Transverse: _____ Inches. Longitudinal: _____ Inches. Ceiling Height: _____ Feet.

SPRINKLER SYSTEM

Discharge Density: _____ In-Rack Sprinklers? YES NO Distance from top of storage to sprinkler deflector: _____

K-Factor: _____ Temperature Rating: _____ Head Type: _____ Add'l Info.: _____

Hose Stations? YES NO Hose Lengths: 50' 100' 150'

ADDITIONAL INFORMATION

PLAN REVIEW INFORMATION

REVIEWED BY	DATE	COMMUNITY	FILE NUMBER
		YES NO	

INSTRUCTIONS

- 1. DESCRIPTION OF STORAGE** - Provide an accurate and detailed description of all storage which will be kept within the warehouse. If possible, classify these items into the commodity classifications the items would fall into, and also provide us with adequate documentation to substantiate your determination.
- 2. COMMODITY CLASS** - By utilizing the attached listings of the commodity classifications, please provide us with the correct determination that best describes the commodity classifications of the high piled items. Adequate information must accompany the submitted plans to insure the Fire Department will be able to verifying the commodity classification(s) are accurate. The attached list was copied from the International Fire Code. The National Fire Protection Association also has a commodity listing which is somewhat different than the IFC. Please indicate which code you have obtained the information from.
- 3. METHOD OF STORAGE** – Provide us with the method(s) in which you plan on storing, and indicate all that may apply. A lot of customers also include the actual specification sheet(s), pictures, and information from the manufacture supplying the racks, which is very helpful to us.
- 4. FLOOR AREA OF THE HIGH-PILED STORAGE AREAS ONLY** – Provide the square footage of the high-pile storage area. This must include aisles between and around the storage area.
- 5. PILE STORAGE** – High-piled combustible storage includes materials that are stacked in piles on the floor in addition to storage on racks. Provide specific responses to each field if storage is not on racks or shelves.
- 6. RACK STORAGE** – *This information must be detailed and specific.*

TYPE OF RACKS – We need to know if the racks will be made of steel or wood, solid shelves or slatted, portable or fixed racks, etc. It is also important for us to know the proposed rack configuration (single- or double- or multiple-row racks). Your rack supplier will be able to assist you in this, and will be the contact for the detailed specification sheets you will need to provide us in your submittal packet along with your plans.

HEIGHT OF RACKS – How high will the racks be? Are the racks going to be 15 feet high in one area and 35 feet in another? Provide good details, and specification sheets (if available) from your supplier, with your submittals.

DEPTH OF RACKS - How deep will your racks be from the front aisle to the rear of the rack?

WIDTH OF RACKS – How wide are the racks going to be from side to side?

AISLE WIDTH BETWEEN RACKS – We need the aisle width you will be providing. If some areas will be 4 ft wide, while other areas will be 8 ft wide, this type of information is critical for us to know.

At no time shall any aisle be less than 44 inches wide throughout the warehouse.

7. BUILDING COMPONENTS – Provide as much detail as possible for these items.

EMERGENCY VEHICLE ACCESS – The International Fire Code requires emergency vehicle access to within 150 feet of all exterior portions of the first floor of the building. Some older buildings may not meet this requirement.

SMOKE AND HEAT VENTS – These roof mounted assemblies are designed and installed to aid in the removal of heat and smoke in the event of a fire.

DRAFT CURTAINS – Draft curtains are structures arranged to limit the spread of smoke and heat along the underside of the ceiling or roof. Draft curtains are typically constructed of gypsum board attached to framing members, extend 4 feet or 6 feet down from the ceiling and divide the area into segments.

CLEAR CEILING HEIGHT – Provide the height of the warehouse as measured from the finished floor level (FFL) to the bottom of the roof decking.

8. FIRE SPRINKLER SYSTEM – A fire sprinkler system is critical for the control of potential fires in storage facilities. Provide as much information as possible for the system in the building. The fire sprinkler system maintenance contractor should be able to assist you with obtaining the required information.

CEILING DISCHARGE DENSITY – Fire sprinkler systems are hydraulically engineered to provide a specified minimum discharge of water in case of a fire. The discharge density is expressed in gallons per minute per square foot of floor area, i.e. 3/2,000.

IN RACK SPRINKLERS – Storage of some materials can require the installation of sprinkler heads in the storage racks. If in rack sprinklers are present or proposed, then answer affirmatively.

HEAD TYPE, TEMPERATURE RATING AND K-FACTOR – This is specific information that is essential for an accurate review of the proposal. Please include information for each of the three items.

ADDITIONAL INFORMATION – Provide any additional information that you have related to this proposal that is not requested on the questionnaire.

The bottom of the form is for fire department use only. Submit the completed form for a review by the Fire Department Fire Prevention Division.

COMMODITY CLASSIFICATIONS

Classification of Commodities:

Commodities shall be classified as Class I, II, III, IV, or high-hazard. The materials listed within each of these commodity classifications are assumed to be unmodified for improved combustibility characteristics. The use of flame-retarding modifiers, or the physical form of the material could change the classifications.

Class I Commodities:

Class I commodities are essentially noncombustible products on wooden or nonexpendable 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 the Fire Code. Examples of Class I commodities include, but are not limited to, the following:

- Alcoholic beverages not exceeding 20% 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 non-plastic trays or containers Frozen foods
- Glass
- Glycol in metal cans Gypsum board
- Inert materials, bagged Insulation, noncombustible
- Non-combustible liquids in plastic containers having less than a 5-gallon capacity Non-combustible metal products

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 the Fire Code. Examples of Class II commodities include, but are not limited to the following:

- Alcoholic beverages not exceeding 20% alcohol, in combustible containers;
- Foods in combustible containers;
- Incandescent or fluorescent light bulbs in cartons;
- thinly coated fine fire on reels or in cartons

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 the Fire Code. Examples of Class III commodities include, but are not limited to, the following:

Aerosol Level 1 (See Chapter 51 of Fire Code)

Combustible fiberboard

Cork, baled Feed, bagged

Food in plastic containers

Furniture: wood, natural fiber, upholstered, non-plastic, wood or metal with plastic-padded and covered arm rests

Glycol in combustible containers not exceeding 25%

Lubricating or hydraulic fluid in metal cans

Lumber

Mattresses, excluding foam rubber and foamed plastics

Non-combustible liquids in plastic containers having a capacity of more than 5 gallons

Paints, oil base, in metal cans

Paper and pulp, horizontal storage

Paper, waster, baled

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

Paper in cardboard boxes

Pillows, excluding foamed rubber and foamed plastics

Plastic coated paper food containers

Plywood

Rags, baled

Rugs, without foamed backing

Sugar, bagged

Wood, baled

Wood doors, frames and cabinets

Yarns of natural fiber

Class IV Commodities:

Class IV commodities are Class I, II, III products containing Group A plastics in ordinary corrugated cartons and Classes I, II, 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 non-freeflowing Group A plastics shall be in accordance with the Fire Code. Examples of Class IV commodities include, but are not limited to, the following:

- Aerosol, Level 2 (see Chapter 51 of the Fire Code)
- Alcoholic beverages, exceeding 20% but less than 80% alcohol, in cans or bottles in cartons
- Clothing, synthetic or non-viscous
- Combustible metal products (solid)
- Furniture, plastic upholstered
- Furniture, wood or metal with plastic covering and padding
- Glycol in combustible containers (greater than 25% and less than 50%)
- Linoleum products
- Paints, oil base in combustible containers
- Pharmaceuticals, alcoholic elixirs, tonics, etc.
- Rugs, foamed back
- Shingles, asphalt
- Thread or yarn, synthetic or non-viscous

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 51 of the Fire Code)
- Alcoholic beverages, exceeding 80% alcohol, in bottles in cartons
- Commodities of any class in plastic containers in carousel storage
- Flammable solids (except solid combustible metals)
- Glycol in combustible containers (50% or greater)
- Mattresses, foamed rubber or foamed plastic
- 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 approved wrap
- Pillows, foamed rubber and foamed plastics
- Pyroxylin
- Rubber tires
- Vegetable oil and butter in plastic containers