THE CITY OF SAN DIEGO
City of San Diego
Development Services
1222 First Ave., MS-401
San Diego, CA 92101
(619) 446-5000

High-Piled Combustible Storage

FORM DS-164
January 2014

This form is required to be submitted for all new or existing High-Piled Combustible Storage as defined in the California Fire Code. All applicants must fill out Section I.

SECTION I: GENERAL INFORMATION

Project Name:	Project Number: *For City Use Only*
Tenant Name:	Permit Number: *For City Use Only*
Job Address:	
Building/Unit/Suite Number:	Phone Number:

❑ No high-piled combustible storage. If this facility will NOT contain storage of high hazard commodities (including Group A plastics) over 6 feet in height to the top of storage or over 12 feet in height of storage of all other commodities, check this box.

❑ High-piled combustible storage. If this facility will contain storage of high hazard commodities over 6 feet in height to the top of storage or over 12 feet in height of storage of all other commodities, check this box and complete Sections II and III below.

I declare under penalty of perjury that, to the best of my knowledge, the responses made herein are true and correct.

_____ _____ _____
Name of Owner/Occupant/Authorized Agent (*circle one*) Signature Date

SECTION II: COMMODITIES

Total Combustible High-Piled Storage Area _____ft² Ceiling/Roof Height: _____ ft

List all products containing plastics over 6 feet in height in the table below. List all products stored over 12 feet in height. List all aerosol products and all flammable/combustible liquids stored over 1 container high.

Material(s) - Include Description of Product, Packaging, & Type of Pallet (Plastic or Wood)	Max. Storage Height (ft)	Aisle Width (ft)	Cartoned or Open Top Containers or Bin box?	Encap-sulated (Y/N)	Palletized Floor or Solid Piled Storage?	Single-, Double-, Multiple-Row Racks, Shelf, Automated or Carousel?	Solid Shelv-ing (Y/N)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							

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COMMODITY CLASSIFICATION ❑ I ❑ II ❑ III ❑ IV ❑ N/A
❑ High Hazard/Expanded Group A
❑ High Hazard/Unexpanded Group A

City Employee: _____ **Date:** _____

Project Address/Location:	Project Number: *For City Use Only*

SECTION III: HIGH-PILED COMBUSTIBLE STORAGE REQUIREMENTS

Complete all questions below. If the answer is **Yes** to the items containing an asterisk (*), provide the specific item on a reference plan. If the answer is Yes to Item 12, complete **Part A**, **B**, **C**, or **D** below.

1.	Is rack storage provided? If **Yes**, the transverse flue space is ____ inch and the longitudinal flue space is____ inch.	❑ Yes* ❑ No
2.	Is floor/palletized storage provided? If **Yes**, maximum pile dimension is ____ feet and maximum pile volume is ____feet^3.	❑ Yes* ❑ No
3.	Are smoke and heat vents provided? If **Yes**, the smoke/heat vent ratio is _____ : _____.	❑ Yes* ❑ No
4.	Is a mechanical smoke exhaust system(s) provided? If **Yes**, the airflow exhaust rate is _____ cfm.	❑ Yes* ❑ No
5.	Are draft curtains provided? If **Yes**, the draft curtain depth is _____ over _____ ft^2 area.	❑ Yes* ❑ No
6.	Are fire apparatus access roads provided 150 feet from all portions of exterior walls?	❑ Yes* ❑ No
7.	Are access doors provided for each 100 lineal feet of the exterior walls facing FD apparatus roads?	❑ Yes* ❑ No
8.	Is there a one-hour rated fire barrier between adjacent tenant spaces?	❑ Yes* ❑ No
9.	Are exit passageway(s) provided?	❑ Yes* ❑ No
10.	If **Yes to Item 9**, are Class I standpipes provided?	❑ Yes* ❑ No
11.	Is a fire detection system provided?	❑ Yes ❑ No
12.	Is an automatic sprinkler system provided? If **Yes**, fill out **Part A**, **B**, **C**, **OR D** below.	❑ Yes ❑ No
13.	If **Yes to Item 12**, is sprinkler protection extended 15 feet beyond the high piled storage area or to a permanent partition?	❑ Yes ❑ No

PART A. CONTROL MODE DENSITY/AREA SPRINKLER SYSTEM

Ceiling Sprinklers:	**In-Rack Sprinklers:** ❑ Yes ❑ No **If Yes, complete Items 8-11 below.**
1. NFPA 13 Table & Curve Fig. No. & Curve: _____	8. NFPA 13 Table or Curve: _____
2. Sprinkler K-Factor: _____	9. Number of Levels of In-Rack Sprinklers: _____
3. Design Area: _____ft^2 Density: _____ gpm/ft^2	10. Number of Designed In-Rack Sprinklers: _____
4. Hose Stream Allowance: _____ gpm for _____ minutes	11. Minimum In-Rack Pressure Calculated: _____ psi
5. Sprinkler Link Temperature: _____ °F	
6. Apply Fig. 14.2.4.3 for Storage Height? ❑ Yes ❑ No	
7. Clearance Above Storage: _____ feet	

PART B. ESFR SPRINKLER SYSTEM

Ceiling Sprinklers:	**In-Rack Sprinklers:** ❑ Yes ❑ No **If Yes, complete Items 6-9 below.**
1. NFPA 13 Table: _____	6. NFPA 13 Table or Curve: _____
2. Sprinkler K-Factor: _____	7. Number of Levels of In-Rack Sprinklers: _____
3. 12 Sprinklers Calculated at _____ psi	8. Number of Designed In-Rack Sprinklers: _____
4. Hose Stream Allowance: _____ gpm for _____ minutes	9. Minimum In-Rack Pressure Calculated: _____ psi
5. Clearance Above Storage: _____ feet	

For City Use Only **COMMODITY CLASSIFICATION** ❑ I ❑ II ❑ III ❑ IV ❑ N/A
❑ High Hazard/Expanded Group A
❑ High Hazard/Unexpanded Group A

City Employee: _____ **Date:** _____

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PART C. CONTROL MODE SPECIFIC APPLICATION (CMSA)

Ceiling Sprinklers:	**In-Rack Sprinklers:** ❑ Yes ❑ No **If Yes, complete Items 6-9 below.**
1. NFPA 13 Table: _____	6. NFPA 13 Table or Curve: _____
2. Sprinkler K-Factor: _____	7. Number of Levels of In-Rack Sprinklers: _____
3. _____ Sprinklers Calculated at _____ psi	8. Number of Designed In-Rack Sprinklers: _____
4. Hose Stream Allowance: _____ gpm for _____ minutes	9. Minimum In-Rack Pressure Calculated: _____ psi
5. Clearance Above Storage: _____ feet	

PART D. OTHER DESIGN CRITERIA

Specify NFPA 13 Referenced Section(s) Used and Design Criteria: _____

SECTION IV: DEFINITIONS TAKEN FROM THE CFC AND NFPA 13

Aisle Width: The horizontal dimension between the face of the loads in racks under consideration. NFPA 13

Automated Rack Storage: A stocking method whereby the movement of pallets, products, apparatus or systems are automatically controlled by mechanical or electronic devices. CFC

Back-to-Back Shelf Storage: Two solid or perforated shelves up to 30 inches in depth each, not exceeding a total depth of 60 inches, separated by a longitudinal vertical barrier such as plywood, particleboard, sheet metal, or equivalent, with a maximum 0.25 inch diameter penetrations and no longitudinal flue space and a maximum storage height of 15 feet. CFC

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. CFC

Cartoned: A method of storage consisting of corrugated cardboard or paperboard containers fully enclosing the commodity. NFPA 13

Ceiling/Roof Height: The distance between the floor and the underside of the roof deck or insulation within the storage area. NFPA 13

Clearance: The distance from the top of storage to the ceiling sprinkler deflectors. NFPA 13

Commodity: A combination of products, packaging materials, containers, and pallets. CFC

Double-Row Rack: Racks less than or equal to 12 feet in depth or single-row racks placed back to back having an aggregate depth up to 12 feet, with aisles having an aisle width of at least 3.5 feet between loads on racks. NFPA 13

Encapsulation: A method of packaging consisting of a plastic sheet completely enclosing the sides and top of a pallet load containing a combustible commodity or a combustible package or a group of combustible commodities or combustible packages. Combustible commodities individually wrapped in plastic sheeting and stored exposed in a pallet load also are to be considered encapsulated. Totally noncombustible commodities on wood pallets enclosed only by a plastic sheet as described are not covered under this definition. Banding (i.e., stretch-wrapping around the sides only of a pallet load) is not considered to be encapsulation. Where there are holes or voids in the plastic or waterproof cover on the top of the carton that exceeds more than half of the area of the cover, the term encapsulated does not apply. The term encapsulated does not apply to plastic-enclosed products or packages inside a large, non-plastic, enclosed container. NFPA 13

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 in height. 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 greater than 6 feet in height. CFC

Longitudinal Flue Space: The space between rows of storage perpendicular to the direction of loading. CFC

Miscellaneous Storage: Storage that does not exceed 12 feet in height and is incidental to another occupancy use group. Such storage shall not constitute more than 10 percent of the building area or 4,000 ft^2 of the sprinklered area, whichever is greater. Such storage shall not exceed 1,000 ft^2 in one pile or area, and each such pile or area shall be separated from other storage areas by at least 25 feet. NFPA 13

Multiple-Row Racks: Racks greater than 12 feet in depth or single- or double-row racks separated by aisles less than 3.5 feet wide having an overall width greater than 12 feet. NFPA 13

Open-Top Container: A container of any shape that is entirely or partially open on the top. NFPA 13

Palletized Storage: Storage of commodities on pallets or other storage aids that form horizontal spaces between tiers of storage. NFPA 13

Rack: Any combination of vertical, horizontal, and diagonal structural members that support stored materials or commodities. NFPA 13

Shelf Storage: Storage on shelves less than 30 inches deep with the distance between shelves not exceeding 3 feet vertically. CFC

Single-Row Racks: Racks that have no longitudinal flue space and that have a depth up to 6 feet with aisles having a width of at least 3.5 feet between loads on racks. NFPA 13

Solid Shelving: Shelving that is solid, slatted or of other construction located in racks and which obstructs sprinkler discharge down into the racks. Solid shelving is fixed in place, slatted, wire mesh, or other type of shelves located within racks. The area of a solid shelf is defined by perimeter aisle or flue space on all four sides. Solid shelves having an area equal to or less than 20 ft^2 measured between approved flue spaces at all four edges of the shelf shall be defined as open racks. Shelves of wire mesh, slats or other materials more than 50% open and where the flue spaces are maintained shall be defined as open racks. NFPA 13

Storage Height: Storage of commodities on rack, floor, shelf etc. measured from floor to top of highest storage. NFPA 13

Transverse Flue Space: The space between rows of storage parallel to the direction of loading. CFC

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City Employee: _____ **Date:** _____

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