



Coffee Break Training - Fire Protection Series

Storage Practices: Storage Racks

No. FP-2012-5 January 31, 2012

Learning Objective: The student shall be able to describe storage racks.

Last week's Coffee Break Training discussed the importance of defining storage shelves. Today, we look at "racks."

The following table provides "rack" definitions from the National Fire Protection Association (NFPA) 13, *Standard for the Installation of Sprinkler Systems*.



These cantilevered racks are a common storage configuration for banded products such as lumber, a Class III commodity.

Rack	Any combination of vertical, horizontal, and diagonal structural members that support stored materials or commodities.
Double-Row Racks	Racks less than or equal to 12 ft (3.7 m) in depth or single-row racks placed back-to-back having an aggregate depth up to 12 ft, with aisles having an aisle width of at least 3-1/2 ft (1.1 m) between loads on rack.
Movable Racks	Racks on fixed rails or guides. They can be moved back and forth only in a horizontal, two-dimensional plane. A moving aisle is created as abutting racks are either loaded or unloaded, then moved across the aisle to abut other racks.
Multiple-Row Racks	Racks greater than 12 ft in depth or single- or double-row racks separated by aisles less than 3-1/2-ft wide having an overall width greater than 12 ft.
Portable Racks	Racks that are not fixed in place. They can be arranged in any number of configurations.
Single-Row Racks	Racks that have no longitudinal flue space and that have a depth up to 6 ft (1.8 m) with aisles having a width of at least 3-1/2 ft between loads on racks.
Rack Shelf Area	The area of the horizontal surface of a shelf in a rack defined by perimeter aisle(s) or nominal 6 inches (152 mm) flue spaces on all four sides, or by the placement of loads that block openings that would otherwise serve as the required flue spaces.
Open Rack	Racks without shelving or racks that are fixed in place with shelves having a solid surface and a shelf area equal to or less than 20 ft ² (1.9 m ²) or with shelves having a wire mesh, slatted surface, or other material with openings representing at least 50 percent of the shelf area, including the horizontal area of rack members and where the flue spaces are maintained.
Slatted Shelf Rack	A rack where shelves are fixed in place with a series of narrow individual solid supports used as the shelf material and spaced apart with regular openings.
Solid Shelf Rack	A rack where shelves are fixed in place with a solid, slatted, or wire mesh barrier used as the shelf material and having limited openings in the shelf area.
Solid Shelving	Solid shelving is fixed in place with slatted, wire mesh, or other types 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 shall be defined as open racks. Shelves of wire mesh, slats, or other materials more than 50 percent open and where the flue spaces are maintained shall be defined as open racks.

For additional information, refer to *International Fire Code*[®], Chapter 23, or NFPA 1, *Uniform Fire Code*[™], Chapter 20, or NFPA 13, *Standard for the Installation of Sprinkler Systems*.



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