

## Aerosol Products Fire Hazards And Controls

Aerosol products should be properly stored and displayed to prevent extensive, costly and fatal fires. Actual fire losses and large-scale fire tests have shown that aerosol products present a significant fire hazard which requires stringent control.

During a fire involving aerosol products:

- Overpressurization and failure of the aerosol container occurs.
- Ruptured aerosol containers release combustible or flammable contents.
- Fireball and/or flaming missiles created.
- Flaming missiles spread fire to remote areas of the occupancy.
- Automatic sprinkler protection is overwhelmed. Total loss is imminent.

### Classification of Aerosols

To simplify fire hazard considerations, aerosols are divided into three groups based on the percentage of flammable material (flash point below 500°F) in the base product and propellant.

- Level 1 (least hazard) – includes products such as shaving cream, oven cleaner, carpet shampoo, air fresheners.
- Level 2 (moderate hazard) – includes products such as personal care products, windshield deicer, some waxes and furniture polish.
- Level 3 (greatest hazard) – includes spray paint, carburetor cleaner, engine cleaner, automotive undercoating, lubricants.

NFPA Standards require that all cartons of aerosol products produced after January 1, 1992 are to be labeled with the classification level.

### Occupancy Type

### Maximum Stored Quantity By Aerosol Classification

<b>Mercantile (Unsprinklered)</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Sales - Display Areas	No Limit	Minimum required for normal merchandising or 2,500 lbs. on ground floor and 500 lbs. on upper floors	
Stock Rooms	No Limit	With 1 Hour Fire Wall 1,000 lbs.	With 1 Hour Fire Wall 500 lbs.
Basements	No Limit	Not Permitted	Not Permitted
<b>Mercantile (Sprinklered)<sup>1</sup></b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Sales - Display Areas	No Limit	Minimum required for normal merchandising or aggregate not over 2 lbs./sq. ft. and 1,000 lbs. in any 10' x 10' area.	
Stockrooms	No Limit	With 1 Hour Fire Wall 1,000 lbs.	With 1 Hour Fire Wall 500 lbs.
Basements	No Limit	Not Permitted	Not Permitted
<b>General Purpose Warehouse<sup>2</sup></b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
Unsprinklered	No Limit	2,500 lbs.	1,000 lbs.
With Auto Sprinklers <sup>3</sup>	No Limit	12,000 lbs. aggregate (24,000 lbs. with specially designed automatic sprinklers)	

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*General Purpose**Warehouse continued*

	Level 1	Level 2	Level 3
and Segregation by Fence	No Limit	Up to 20% of Area Not to Exceed 20,000 sq. ft.	
1 Hour Cut Off Room	No Limit	Up to 25% of Area Not to Exceed 30,000 sq. ft.	
2 Hour Cut Off Room	No Limit	Up to 25% of Area Not to Exceed 40,000 sq. ft.	

**Aerosol Warehouses**

See NFPA Standards

All Other Occupancies	Level 1	Level 2	Level 3
	No Limit	1,000 lbs.	500 lbs.
Aggregate Not to Exceed 1,000 lbs.			

<sup>1</sup> Sprinkler system for this occupancy must be designed for ordinary Hazard Group 2 or better.

<sup>2</sup> A fire alarm system is mandatory in all general purpose warehouses storing level 2 and 3 aerosols.

<sup>3</sup> Automatic sprinkler design must comply with NFPA 30 B standards.

**Protection**

Wet pipe automatic sprinklers are essential for adequate protection of aerosol warehouses and general purpose warehouses storing large quantities of level 2 and level 3 aerosols (sprinklers should be provided for all storage of more than 2,500 lbs. net weight of level 2, or more than 1,000 lbs. net weight of level 3, or more than 2,500 lbs. aggregate level 2 and 3).

**Separation**

Separation of storage by means of chain link fence or cut off fire resistive room having at least a 3 hour fire resistance rating or separate building is necessary when quantities of aerosols stored exceeds a limited quantity.

**Chain Link Fence Enclosure**

This prevents the spread of fire by containing flaming "missiles" of burning aerosol containers. To be effective, chain link enclosures should be designed as follows:

- Extend from floor to ceiling.
- Be constructed of at least 9 gauge wire with a minimum 2 inch mesh.
- Provided with automatic self-closing gates or labyrinth entrances.
- Minimum of two personnel exits.

**Aerosol Products Storage Control Measures**

- Complete an inventory of all aerosol products and determine whether products are level 1, 2 or 3 aerosols.
- Store aerosol products off the main property in a dedicated aerosol storage building. When aerosol products cannot be stored off premises, they should be stored in a dedicated, cut off room having 3 hour-rated fire walls and 3 hour-rated automatic fire doors on all wall openings. An outside door should be provided for fire personnel use.
- Provide wet pipe automatic sprinkler protection. Sprinkler spacing, size and temperature rating are dependent upon aerosol product classification and storage arrangements.
- Provide automatic heat and smoke venting.
- Provide explosion relief venting.
- Provide inside hose connections and portable fire extinguishers at all entrances.
- Prohibit all smoking and open flames.
- If aerosol storage building/room is heated, room should be heated by a duct which draws warm air from the rest of the facility. Heat supply duct should be equipped with a fusible-link operated automatic-closing fire damper at the wall penetration point.

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