

Safe storage of flammable or combustible liquids is imperative to help minimize exposure to ignition sources, while at the same time segregating them from the rest of the facility. The purpose of a flammable liquid storage cabinet is to protect the contents inside and to keep the contents from contributing to a fire.

It is important to note that in 2012, OSHA revised their standard 1910.106 after revising their Hazard Communication standard (Globally Harmonized System [GHS]). The standard has been changed from "Flammable and Combustible Liquids" to "Flammable Liquids." One significant change is that the revised regulation lists liquids as "categories" rather than "classes."

(Per OSHA 1910.106): A liquid with a flashpoint at or below 199.4° F. (93° C). Flammable liquids are divided into four categories:

Category	Flashpoint	Boiling Point	Example
1	< 73.4° F (23° C)	< 73.4° F (23° C)	Ethyl ether, heptane, pentane, propylene oxide, vinyl chloride
2	< 73.4° F (23° C)	> 95° F (35° C)	Acetone, ethanol, gasoline, isopropyl alcohol, methano
3	> 73.4° F (23° C) and < 140° F (60° C)		Isobutyl alcohol, mineral spirits, turpentine, diesel fuel, motor oil, kerosene
4	> 140° F (60° C) and < 199.4° F (93° C)		Furfural, linseed oil, mineral oil, oil based paints, ethylene glycol, glycerine

Storage

Storage of flammable and combustible liquids is a necessity. Whenever flammable liquids are stored improperly they become a significant fire hazard. Below are the new OSHA guidelines for storage.

(Per OSHA 1910.106):

Maximum Quantities <i>Outside</i> of a Flammable Storage Cabinet or Inside Storage Room	
Category and Container Type	Quantity
Category 1 Liquids in Containers	25 Gallons
Category 2, 3, or 4 Liquids in Containers	120 Gallons
Category 2, 3, or 4 Liquids in a Single Portable Tank	660 Gallons

Maximum Quantities <i>Inside</i> of a Flammable Storage Cabinet or Inside Storage Room	
Category of Liquid	Quantity
Category 1, 2, or 3	60Gallons
Category 2, 3, or 4 Liquids in a Single Portable Tank	120 Gallons

Construction of Cabinet

While it is possible to construct your own cabinet from the specifications outlined in this Flammable Liquids standard, commercially available cabinets are recommended as an easier means of obtaining the proper protection. Storage cabinets are available in a variety of sizes and configurations to meet all types of flammable liquid storage needs. They can be designed for small applications and for larger applications requiring cabinets that hold up to two 55 gallon drums. Approved and listed cabinets are produced by a number of companies.

- Storage cabinets are designed and constructed to limit the internal temperature to 325 degrees F or less when subjected to a 10-minute fire test using the standard time-temperature curves specified in ASTM E 119.
- All joints and seams should remain tight and the door should remain securely closed during the fire test. Cabinets should be labeled in conspicuous lettering, such as “Flammable - Keep Fire Away.”
- Metal cabinets constructed in the following manner should be deemed to be in compliance with OSHA standard 1910.106.
 - The bottom, top, door, and sides of cabinet should be at least No. 18 gauge sheet iron and double walled with 1 1/2 inch air space.
 - Joints should be riveted, welded, or made tight by some equally effective means.
 - The door should have a three-point lock, and the door sill should be raised at least 2 inches above the bottom of the cabinet to retain liquid within the cabinet.
- Wooden cabinets constructed in the following manner shall be deemed in compliance with OSHA standard 1910.106.
 - The bottom, sides, and top should be constructed of an exterior-grade plywood that is at least 1 inch thick and of a type that will not break down or delaminate under fire conditions.
 - All joints should be rabbeted and shall be fastened in two directions with flathead woodscrews.
 - When more than one door is used, there should be a rabbeted overlap of not less than 1 inch.
 - Doors should be equipped with a means of latching. Hinges should be mounted in such a manner as not to lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test.
 - A raised sill or pan capable of containing a 2 inch depth of liquid should be provided at the bottom of the cabinet to retain spilled liquid within the cabinet





Venting Cabinets

There is no requirement for ventilation for storage cabinets, although most cabinets have plugged fittings that can be used for such purposes. Exhaust ventilation should only be provided when warranted by the materials in the cabinet. An example of this may be for a particularly toxic or noxious material.

Frequently Asked Questions

Some flammable liquid storage cabinets have a grounding screw. Is the cabinet required to be electrically grounded?

Flammable liquids storage cabinets are governed in Section 9.5 of NFPA 30. There is no requirement that the cabinet itself be grounded. Many manufacturers provide a grounding screw on their cabinets as a convenience to the user. The user can connect this screw to a building ground and use the cabinet mounted ground point as needed to ground individual containers from which liquids are dispensed.

Do the cabinets have to be vented?

There is no requirement for ventilation for storage cabinets. Although, most cabinets have plugged fittings that can be used for such purpose. Exhaust ventilation should only be provided when warranted by the materials in the cabinet. An example of this may be a particularly toxic or noxious material. The primary objective of a flammable liquid storage cabinet is to protect its contents from a fire on the outside. If the cabinet is ventilated, a flame, spark or ember could potentially enter the cabinet and set ablaze its contents.

NOTE: While there is no federal law or regulation requiring the ventilation of flammable liquid storage cabinets, local state and city officials may have their own laws in place requiring ventilation of storage cabinets. Always check with the local jurisdiction to determine whether ventilation is required.

How are cabinets vented if it is determined they need to be?

The NFPA states, "If a storage cabinet is vented for whatever reason, the vent openings shall be ducted directly to a safe location outdoors or to a treatment device designed to control volatile organic compounds and ignitable vapors in such a manner that will not compromise the specified performance of the cabinet and in a manner that is acceptable to the authority having jurisdiction."

References

- OSHA standard is 29 CFR 1910.106--Flammable Liquids
- NFPA 30, Flammable and Combustible Liquids Code.
- https://www.osha.gov/dte/library/flammable_liquids/flammable_liquids.html

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