

Use and Ventilation Requirements for Flammable Liquid Storage Cabinets

The following guidance applies to ventilation and use of all cabinets used for storage of flammable and combustible liquids, including cabinets under fume hoods, in rooms where greater than 10 gallons of flammable and combustible liquids are stored. In rooms where 10 gallons or less are stored, flammable cabinets are recommended but not required. For additional guidance regarding flammable liquids storage, please refer to the EHS policy SY08 Storage, Dispensing, and Use of Flammable Liquids (<http://guru.psu.edu/policies/SY08.html>). For questions not covered in these documents or for assistance with more complicated issues, please contact EHS at 814-865-6391.



Fire burnt the exterior of the storage cabinet



Flammable solvents inside were protected from the fire

Q: Why store flammable and combustible liquids inside a flammable liquid storage cabinet?

A: To protect flammable liquids against flash fire, to prevent the containers from building excessive internal pressure, and to contain spilled flammable liquids that can further spread fire. The pictures above demonstrate how flammable storage cabinets effectively protect the contents inside from fire. Fire burnt the exterior of the storage cabinet; flammable solvents inside were protected from the fire

Q: Is my existing flammable liquid storage cabinet acceptable?

A: Cabinets must be Underwriter Laboratories (U.L.) (1275) listed or Factory Mutual (F.M.) approved, which is indicated by a permanent manufacturer's label on the cabinet. Alternatively, cabinets must be constructed in accordance with the following:

1. Unlisted metal cabinets shall be of steel having a thickness of not less than 0.044" (1.12mm) (18gauge). The cabinet, including the door, shall be double walled with 1-1/2" (38.1mm) airspace

between the walls. Joints shall be riveted or welded and shall be tight fitting. Doors shall be well fitted, self-closing and equipped with a latching device, OR,

2. Unlisted wooden cabinets, including doors, shall be constructed of not less than 1" (25.4mm) exterior grade plywood. Joints shall be rabbited and shall be fastened in two directions with wood screws. Door hinges shall be of steel or brass. Cabinet shall be painted with an intumescent-type paint. Doors shall be well fitted, self-closing and equipped with a three point latch.

Regardless of wood or metal cabinet, each cabinet shall have the followings:

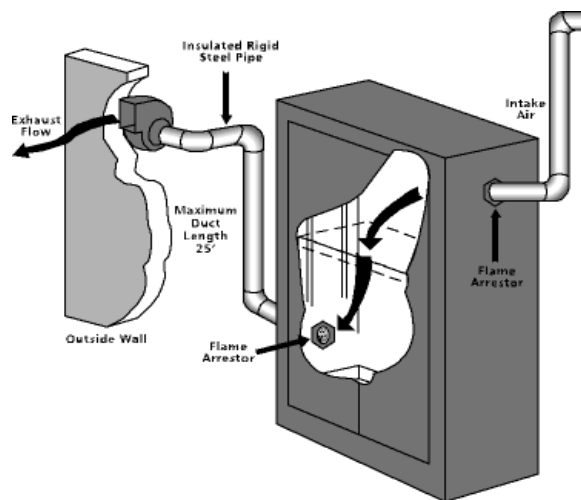
1. The bottom of the cabinet shall be liquid-tight to a height of at least 2" (50.8mm).
2. The door shall be well fitted, self-closing and equipped with a three point latch .
3. A conspicuous label on contrasting background which reads, "FLAMMABLE – KEEP FIRE AWAY" on the front.

Q: What is the maximum quantity of flammable and combustible liquids that I can store inside a single storage cabinet?

A: Cabinets are available in different sizes ranging from 4-gallon (15-liter) to 120 gallon (454-liter) capacity. However, per regulations, no more than 60 gallons of Class I-A flammable liquids may be stored inside a single cabinet. Class I-A flammable liquid is liquid having a closed cup flash point below 73°F (22.8° C) and boiling point below below 100°F (37.8°C).

Q: Should the flammable liquid storage cabinet be vented?

A: When used for storage of closed containers, a flammable liquid storage cabinet is not required to be vented for fire protection purposes. Vent openings must be sealed with the bungs supplied with the cabinet or with bungs specified by the cabinet manufacturer. If venting is required for other reasons such as personnel exposure or dispensing operations within the cabinet, then venting using the opening provided by the manufacturer shall be provided with metallic vent pipe directly to outdoors or to the fume hood exhaust duct in a manner that is acceptable to the EHS Fire Protection Engineer.



Proper venting practices: remove steel bungs from the factory furnished vent ports; connect metal vent pipe directly to the lower vent port since hydrocarbon vapors are usually heavier than air; inspect the upper vent port to ensure the flame arrestor is installed. The upper ventport with the flame arrestor will provide make up air for efficient purging. **DO NOT CUT OR DRILL INTO THE EXTERIOR OF THE CABINET FOR VENT CONNECTION.**

Q: Should the flammable liquid storage cabinet be grounded?

A: No, unless you are dispensing from one of the containers when it is sitting inside the cabinet.

Q: Who makes flammable liquid storage cabinets and where can I purchase one?

A: Cabinets can be purchased from lab equipment supply companies or safety equipment supply companies.

These manufacturers are currently listed in the Underwriters Laboratories Certification Directory or have cabinets that meet the requirements of the Fire Code:

Eagle (www.eagle-mfg.com/index.html)
Fisher Hamilton (www.hamiltonlab.com)
Justrite Manufacturing Company
(www.justritemfg.com)
SciMatCo (www.scimatco.com)

Institutional Casework Inc.
(www.caseworkservices.com)
Kewaunee Scientific Corporation
(www.kewaunee.com)
Protectoseal (www.protectoseal.com)
Securall (www.securallproducts.com)



May 2007

*With thanks to University California Berkeley EHS for information from their Fact sheet