



FLAMMABLE LIQUIDS STORAGE CABINETS

Part 2 of 2

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In a previous installment, we explained what safety cans are, where they are most likely to be found in the college or university setting, and what benefits they provide. This installment will cover flammable liquids storage cabinets, another means of controlling the hazards of flammable and combustible liquids. Like safety cans, these cabinets can be found in science laboratories and in the maintenance shop. They provide a dedicated central location for storing solvents and other flammable chemicals and also fuels, lubricants, and cleaning agents. Although referred to as “flammable liquids” storage cabinets, combustible liquids are can be stored in them as well. Keep in mind that the liquids stored in a cabinet should be mutually compatible and that the cabinets are designed and constructed for liquid storage only. They are not intended for storing small cylinders of compressed or liquefied gases, especially those that are flammable.

NFPA 30, Flammable and Combustible Liquids Code, covers flammable liquids storage cabinets in Chapter 9, Section 9.5. This section establishes general requirements for all storage cabinets and specific design and construction criteria for both metal and wooden cabinets. The general requirements are:

Not more than 120 gallons (460 L) of liquid can be stored in a cabinet.

The combined capacity of all cabinets in a single fire area cannot exceed the maximum allowable quantity specified in the building and fire prevention codes.

The basic performance requirement for storage cabinets is this: they must be able to limit the internal temperature at the center of the cabinet and 1 inch (25 mm) from the top inside surface to not more than 325 °F (163 °C) after a 10-minute exposure to a standard time-

temperature fire (ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials). During this fire exposure, all joints and seams must remain tight and doors must remain closed. The objective is to ensure that the cabinet can maintain its integrity during a fire.

The question might be asked: why just 10 minutes? The answer, quite simply, is that a flammable liquids storage cabinet is intended to keep a fire outside the cabinet from reaching the contents of the cabinet for a sufficient period of time to allow people to escape without having to contend with burning liquid. This also allows time for intervention, either by activation of sprinklers or response by a fire brigade or municipal fire department. Many people think the cabinet is intended to confine a fire originating in the cabinet. Not so.

Flammable liquids storage cabinets that are listed under the following standards are considered to be in compliance with the requirements stated above:

FM Global Approval Standard for Storage Cabinets (Flammable and Combustible Liquids) – Class Number 6050

UL 1275, Standard for Safety for Flammable Liquid Storage Cabinets

Listed cabinets typically provide additional features not specifically required by NFPA 30 – value added for the customer. A commercially-available listed cabinet is shown in Figure 1. This one has features not specifically required by NFPA 30: a self-closing mechanism, a fusible link-type hold-open latch, and sloped shelves.

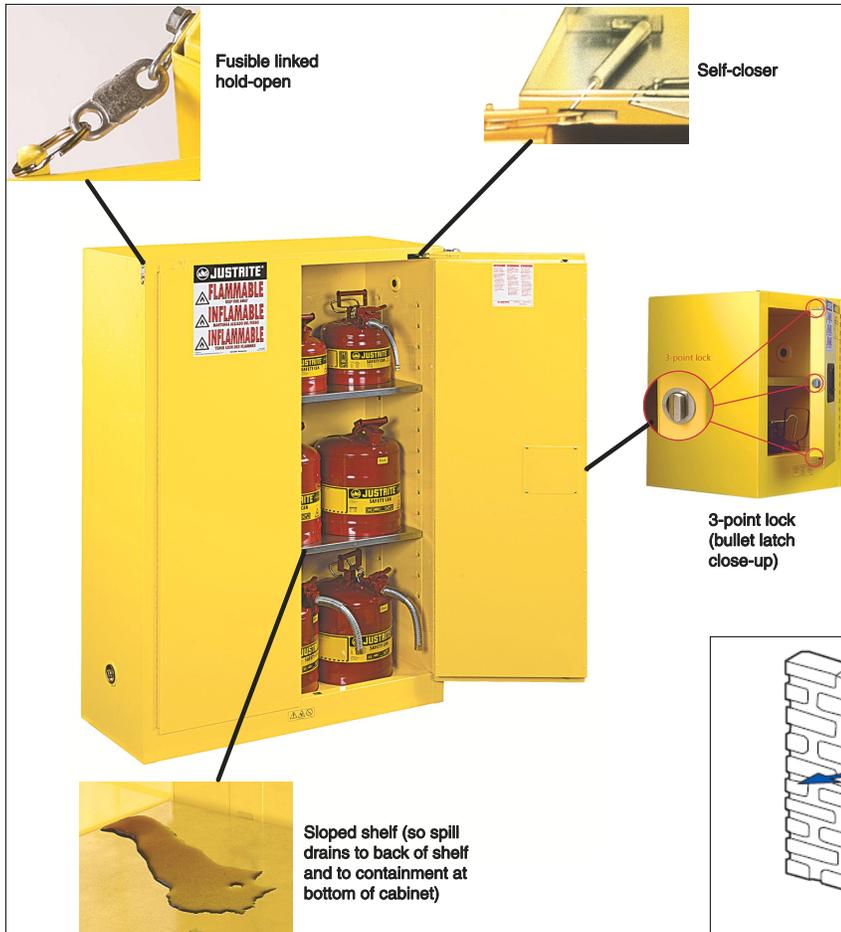


Figure 1

Note the capped ventilation openings on the lower left and upper right sides. These openings are intended for ventilating the cabinet. Now, Section 9.5 of NFPA 30 does not require a flammable liquids storage cabinet to be ventilated; in fact, the Code would prefer that they not be. However, some jurisdictions require this and manufacturers provide the means to do so. Also, there are some flammable and combustible liquids whose toxicity or noxious smell dictate that ventilation be provided, so NFPA 30 does not prohibit the practice. If ventilation is required or desired, the following procedure is suggested:

Remove the closures and make sure the flash arrester screens (provided with the cabinet) are in place.

The top opening serves as the fresh air inlet; exhaust is through the bottom opening. This ensures a sweep of fresh air through the cabinet and out through the

bottom, where vapors are expected to collect.

The bottom opening is to be connected to the intake of the exhaust fan using steel pipe or steel sheet exhaust duct. The fan should have a nonsparking blade and shroud and should exhaust directly to outside.

The total run of the exhaust duct should not exceed 25 ft (7.6 m).

See Figure 2 for details of this arrangement.

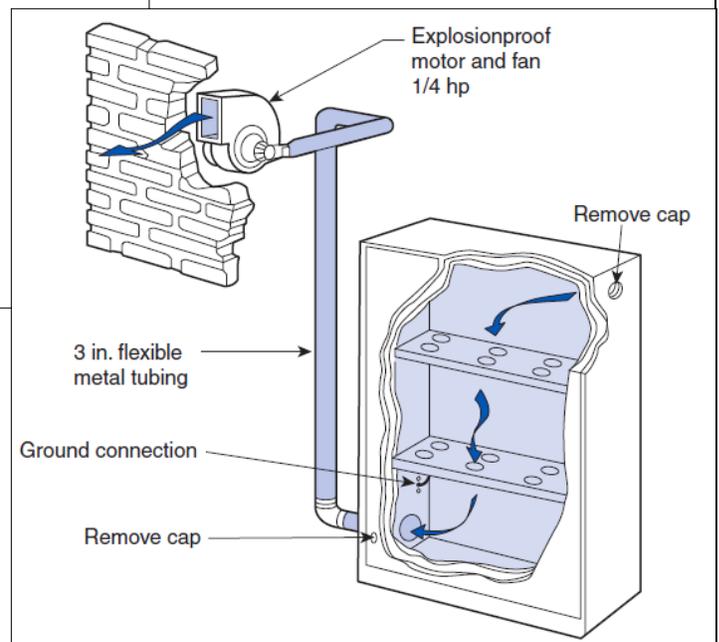


Figure 2

One more feature not required by the Code, but almost always provided by the manufacturer: a bonding and grounding connection. This provides a convenient point to bond a container in the cabinet from which liquids are dispensed. A ground wire connects this ground point to a convenient ground, such as the building steel or a cold water pipe.

(See July 2011 issue for Part 1)

