

## TECHNICAL INFORMATION PAPER SERIES: SAFE STORAGE OF FLAMMABLE LIQUIDS



## KEEP FLAMMABLES FROM BECOMING HAZARDS BY SAFELY LIMITING, LABELING AND STORING THEM.

Since the advent of the Industrial Revolution, the use of non-water based chemicals has increased dramatically. Exposure to the hazards associated with these chemicals, particularly in the workplace, has likewise increased.

In addition to the danger of fire, flammable materials may themselves present a health hazard. This can occur at air concentrations well below those needed to create a fire hazard.

**What is a flammable liquid?** A flammable liquid is defined by OSHA and by the National Fire Protection Association (NFPA) 30 “Flammable and Combustible Liquids Code” as any liquid with:

- A flashpoint below 100° F (37.8° C) and
- A vapor absolute pressure not exceeding 40 psia 100° F.

**What are flammable materials?** These are substances that can ignite easily and burn rapidly. They can be common materials that are at most work sites in gas, liquid and solid forms.

Some examples of flammable materials include:

- Gases (such as natural gas, propane, butane, and carbon monoxide)
- Liquids (such as gasoline)
- Solids (some types of coal, gunpowder, matches, and pyrophoric metals)

### SAFE STORAGE AND USE OF FLAMMABLES

To prevent fires, hazardous liquids require special precautions in storage, handling and use. The NFPA and the International Code Council (ICC) have developed guidelines for the safe storage and use of flammables under the Uniform Fire Code. These guidelines are not mandatory unless a federal, state or local authority chooses to use them.



**Mandatory regulations.** Mandatory regulations have been developed, however, by OSHA. OSHA has specified safe handling practices under three separate mandatory regulations for the general, construction and shipyard industries.

### CONTROL STORED QUANTITIES TO HELP LOWER YOUR RISK

Establish guidelines that control the total quantity of flammable and combustible liquids stored in any one area. Ensure that the quantity of flammable and combustible liquid that can be located outside of storage cabinets, inside storage rooms, cut-off rooms and attached buildings, general purpose warehouses, liquid warehouses, or other specific processing areas that are cut off by at least a two-hour fire-rated separation from the general plant area, which does not exceed the greater of the quantity in either (a) or the sum of (b), (c), (d), and (e), as follows:

- a) A supply for one day, or
- The sum of:
- b) 25 gallons of Class IA liquids in containers,
  - c) 120 gallons of Class IB, IC, II, or III liquids in containers,
  - d) Two portable tanks each not exceeding 660 gallons of Class IB, IC, Class II, or Class IIIA liquids, and
  - e) 20 portable tanks each not exceeding 660 gallons of Class IIIB liquids.

If you need to store a large amount of flammable liquids that exceed the amounts outlined above in flammable liquids cabinets, consider a specially designed separate storage and mixing room. A storage room should have:

- Continuous mechanical ventilation
- Explosion-proof lighting and wiring
- A grounding system, and
- An elevated floor or curbing arrangement.

**Notify your emergency responders.** If you store large quantities of flammable liquids, let your local emergency responders know the location, quantity, type, and hazards of these materials.

### USE THE RIGHT CONTAINERS AND STORAGE UNITS

- **Use only U.L.-listed or F.M.- approved safety cans** to carry, dispense and store flammable and combustible liquids. Safety cans minimize and contain spillage and control vapors.
- **Use only a U.L.-listed or F.M.-approved storage cabinet** to store containers of flammable or combustible liquids. Storage cabinets contain spilled liquids and protect liquids against flash fires. These cabinets are typically made of high-grade metal with self-closing doors and flame arrestors.



### STORAGE CABINET GUIDELINES

Ensure that storage cabinets for flammable materials meet the following guidelines, to control the quantity of flammable and combustible liquids stored in one area:

- Not more than 120 gallons of Class I, Class II, and Class IIIA liquids should be stored in a storage cabinet.

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- Of this total, not more than 60 gallons should be of Class I and Class II liquids.
- Not more than three such cabinets may be located in a single fire area, except in an industrial occupancy, additional cabinets may be located in the same fire area if the additional cabinet, or group of not more than three cabinets, is separated from other cabinets or group of cabinets by at least 100 feet.

Locate storage cabinets in a safe place away from traffic, people, machinery and equipment or operations that produce flames, sparks or heat.

### COMMON SENSE PRECAUTIONS

- Label all containers of flammable and combustible liquids to prevent misidentification and misuse.
- Inspect storage containers regularly to check for holes or leaks and make sure that caps close and seal properly.

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