

Safety Manual

Subject: Flammable and Combustible Liquids	Number: 8-1
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FLAMMABLE AND COMBUSTIBLE LIQUIDS

General

The storage, issue, use and disposal of flammable and combustible liquids shall be governed by the rules and regulations promulgated under the Occupational Safety and Health Act (29 CFR 1910.106) and the Natural Fire Code (NFPA 30) of the National Fire Protection Association.

Classification of Flammable and Combustible Liquids

Flammable Liquid – refers to any liquid having flashpoint below 100 degrees Fahrenheit. Such as flammables are designated as Class I liquids.

Combustible Liquid – refers to any liquids having a flashpoint at or above 100 degrees Fahrenheit.

Maximum Capacity of Containers for Flammable and Combustible Liquids

Containers for flammable and combustible liquids shall be the type, not to exceeding the maximum capacities as set forth in OSHA Standards. Size limitation for containers must be following in order to prevent ignition of liquid by sparks from static discharge during pouring operations. Refer to Table I for container size specification.

Table 1 - Maximum Capacity of Containers for Flammable and Combustible Liquids

Flammable Liquids			
Container Type	Class IA	Class IB	Class IC
Glass or Approved Plastic	1 pint	1 quart	1 gallon
Metal		1 gallon	1 gallon
Safety Cans		2 gallons	2 gallons

Combustible Liquids			
Container Type		Class II	Class III
Glass or approved Plastic		1 gal	1 gal
Metal		1 gal	5 gal
Safety can		2 gal	5 gal

Glass containers of more than 1 (one) gallon capacity may be used if the purity (such as ACS analytical reagent grade or higher) would be affected by storage in metal containers, if the liquid would cause excessive corrosion to metal containers.

Pouring and Transfer of Liquids

To avoid sparks during the discharge caused by static electricity during pouring operations of Class I and II liquids, the storage containers being filled must be bonded and grounded. Bonding is the provision of an electrical path between the storage container and the containers being filled. Grounding is the providing an electrical path from the storage container to an earthen ground.

Storage Cabinets: Construction and Capacity

Storage Cabinets for flammable and combustible liquids may be of either wood or metal construction, designed and constructed to limit the internal temperature to not more than 325 degrees F when subject to time temperature curves as set forth in the Standard Methods of Fire Test of Building Construction materials, NFPA 251-1969. Construction shall be in accordance with OSHA standard 1910.106(d)(3).

Storage cabinets for flammable and combustible liquids shall be limited to following maximum capacity:

Storage Cabinets Used In	Maximum Capacity
Laboratories	45 gallons
Printing Operations	30 gallons

There will be no more than one 45-gallon storage capacity or two 30-gallon capacity storage cabinet in any one room or storage space. Storage cabinets will be labeled in conspicuous lettering “**FLAMMABLE KEEP FIRE OPEN FLAME AWAY**”, “**NO SMOKING**” signs shall be prominently posted in the room and on the entrance doors.

Table 2 – Maximum Quantities of Flammables and Combustibles Liquids Permitted Outside of Storage Cabinets Per Indicated Types of Space (*liquids in containers per Table 1*)

Container Type	Class I and II	Class III
Laboratory (Institution or Research)		
Glass, approved plastic, metal	5 gallons	10 gallons
Safety cans	5 gallon	10 gallons
Printing Operations		
Glass, approved plastic or plastic	3 gallons	5 gallons
Safety Cans	5 gallons	10 gallons
Shops		
Glass, approved plastics	5 gallons	10 gallons
Safety Cans	10 gallons	20 gallons

If quantities of flammable or combustible liquids are required in excess of maximum quantities shown in **Table 2**, then storage cabinets must be provided to accommodate these excess quantities.

Inside Storage Room

Inside storage rooms, constructed in strict accordance with the detailed requirements of OSHA and NFPA, may be used for storage of large quantities of flammables and combustibles liquids.

Storage Outside Building

Storage of flammable and combustibles liquids outside of building shall be in accordance with the specific requirement of OSHA and NFPA as to capacity, location, construction, spill, containment, security and fire control.

Fire Control

At least one portable fire extinguisher having a rating of not less than 10BC shall be located in each space where flammable or combustible liquids are stored or used.

Exemptions

29 CFR 1910.106(e)(b), OSHA regulation for storage of flammable and combustible liquids, states that supply for one day or up to 120 gallon of Class IB, IC, II or III flammable liquids and 25 gallons of Class IA liquids can be safely located in container outside cabinet or an inside storage room building or in any one fire area of a building. Also, 660 gallons of IB, IC, II or III may be stored in a single portable tank. Area using Class I liquids must be ventilated at a rate not less than 1 cfm per square foot of solid area by natural or mechanical ventilation with discharge or exhaust to a safe location outside the building. Provision must be made for introduction of make-up air, so ventilation will not be interrupted.