

Flammable/Combustible Liquid Storage

RESPONSIBILITY

University personnel are responsible for using approved and safe methods for storing flammable/combustible liquids.

Personnel must store flammable and combustible liquids in accordance with the *International Fire Code*. Address questions to the WSU Fire Marshal; telephone 509-335-8548.

Limit the storage of such liquids to the amount required for the operation of office equipment or for maintenance, demonstration, treatment, or laboratory work.

Refer to the [Glossary of Terms](#) for definitions.

STORAGE

Departments are to limit stored flammable and combustible liquids to only the amounts required for the following functions:

- Operation of office equipment
- Maintenance
- Demonstration
- Treatment
- Laboratory work

Flammable and combustible liquids stored in portable containers in excess of ten gallons are to be stored in approved storage cabinets (see [Storage Cabinets](#)).

NOTE: This restriction does not apply to H (Hazardous) occupancies (see [H \(Hazardous\) Occupancy](#)).

Storage Containers

Use only approved containers and portable tanks to store flammable/ combustible liquids.

Standards

Containers meeting the following standards are considered acceptable:

- Metal containers and portable tanks--Chapter I, Title 49 of the Code of Federal Regulations (DOT Regulations), or NFPA 386, Standard for Portable Shipping Tanks.
- Polyethylene containers--DOT Specification 34, and polyethylene drums authorized by DOT Exemption Procedures.
- Plastic containers (including jerry cans used for petroleum products)--ANSI/ASTM D3435-78.

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Maximum Allowable Size					
Container Type	Flammable Liquids			Combustible Liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass	1 pt*	1 qt*	1 gal	1 gal	5 gal
Metal or Listed and Approved Plastic	1 gal	5 gal	5 gal	5 gal	5 gal
Safety Cans	2 gal	5 gal	5 gal	5 gal	5 gal
Metal Drum (DOT Spec.)**	N/A	5 gal	5 gal	60 gal	60 gal
Polyethylene (DOT Spec. 34, or as authorized by DOT Exemption)	1 gal	2 gal	2 gal	60 gal	60 gal

N/A = Not Allowed

*Exception: Class IA and Class IB flammable liquids may be stored in glass containers of not more than one-gallon capacity if the required liquid purity (e.g., ACS analytical reagent grade or higher) would be affected by storage in metal containers or if the liquid would cause excessive corrosion of the metal container.

**Drum capacities refer to total volume allowed per container *but* these containers must be stored inside a proper storage cabinet or storage room.

Storage Cabinets

Capacity Each flammable liquid storage cabinet may be designed to hold up to 120 gallons. Many cabinets are designed to hold 60 gallons or less.

Do not exceed the design capacity of a liquid storage cabinet. The *International Fire Code* lists the construction requirements of flammable and combustible liquid storage cabinets. Contact the WSU Fire Marshal for more information.

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Location Do not locate more than three flammable liquid storage cabinets in a single room.

EXCEPTION: More than three liquid storage cabinets may be located in certain H (Hazardous) occupancies (see [H \(Hazardous\) Occupancy](#)). Contact the WSU Fire Marshal for cabinet location information.

Inside Storage Rooms

Rooms where concentrated quantities of flammable/combustible liquids are stored are classified as H-3 (hazardous) occupancies and must meet specific construction requirements regarding the following:

- Fire resistance rating
- Fire suppression and detection systems
- Openings
- Shelving
- Electrical wiring and equipment
- Exhaust ventilation
- Explosion venting
- Mechanical ventilation
- Runoff containment

Contact the WSU Fire Marshal for specific requirements and recommendations regarding storage room construction.

Storage Limits

Storage limits outside of storage cabinets or storage rooms specify that not more than ten gallons total of Class I and Class II liquids in one gallon container may be stored outside of a storage cabinet or storage room.

GLOSSARY OF TERMS

Contact the WSU Fire Marshal for further explanation of the following terms.

Combustible Liquid

A liquid having a flash point at or above 100 degrees Fahrenheit (37.8 degrees centigrade).

Combustible liquids are subdivided as follows.

Class II Liquids

Those having flash points at or above 100 degrees Fahrenheit (37.8 degrees centigrade) and below 140 degrees Fahrenheit (60 degrees centigrade).

Class IIIA Liquids

Those having flash points at or above 140 degrees Fahrenheit (60 degrees centigrade) and below 200 degrees Fahrenheit (93.4 degrees centigrade).

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Class IIIB Liquids Those having flash points at or above 200 degrees Fahrenheit (93.4 degrees centigrade).

Flammable Liquid

Flammable liquids are Class I liquids.

Class I Liquid--A liquid having a flash point below 100 degrees Fahrenheit (37.8 degrees centigrade) and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 degrees Fahrenheit (37.8 degrees centigrade). Class I liquids are subdivided as follows.

Class IA Includes those having flash points below 73 degrees Fahrenheit (22.8 degrees centigrade) and having a boiling point below 100 degrees Fahrenheit (37.8 degrees centigrade).

Class IB Includes those having flash points below 73 degrees Fahrenheit (22.8 degrees centigrade) and having a boiling point at or above 100 degrees Fahrenheit (37.8 degrees centigrade).

Class IC Includes those having flash points at or above 73 degrees Fahrenheit (22.8 degrees centigrade) and below 100 degrees Fahrenheit (37.8 degrees centigrade).

Flash Point

The minimum temperature at which the liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid within the vessel as specified by appropriate test procedure and apparatus as follows:

- The flash point of a liquid having a viscosity less than 45 SUS at 100 degrees Fahrenheit (37.8 degrees centigrade) and a flash point below 200 degrees Fahrenheit (93.4 degrees centigrade) is determined in accordance with the Standard Method of Test for Flash Point. (ASTM D-56-70)
- The flash point of a liquid having a viscosity of 45 SUS or more at 100 degrees Fahrenheit (37.8 degrees centigrade) or a flash point of 200 degrees Fahrenheit (93.4 degrees centigrade) or higher is to be determined in accordance with the Standard Method of Test for Flash Point. (ASTM D-93-72)

H (Hazardous) Occupancy

Any building, structure, or area in which materials that constitute high fire, explosion, or health hazards are manufactured, processed, or generated.

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H (Hazardous) Occupancy (cont.) Any building, structure, or area in which over-exempt amounts of certain flammable/combustible materials are stored. Contact the WSU Fire Marshal for more information; telephone 509-335-8548.

Liquid Any material that has fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test for Penetration for Bituminous Materials, D-5-71. When not otherwise identified, the term liquid shall include both flammable and combustible liquids.

Safety Can An approved container of not more than two gallons capacity having a spring-closing lid and spout cover and so designed that it safely relieves internal pressure when subjected to fire exposure.