

ADVISORY 15.0: STORAGE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS

INTRODUCTION

Regulations for the storage of flammable and combustible liquids in containers on State of Ohio-owned property are governed by the Ohio Fire Code. Specific laws, rules and regulations required by the Ohio Fire Code are based on the Building Officials and Code Administrators (BOCA) Basic Fire Code, with approved amendments by the State of Ohio.

DEFINITIONS

Definitions applicable to this advisory follow in the section below.

Approved

Signifies acceptance by the authority having jurisdiction of design, equipment, installation, or intended use as required by National Fire Protection Association (NFPA 30). Devices that have been tested and accepted for a specific purpose by a nationally recognized testing laboratory may be deemed acceptable (e.g. Underwriter's Laboratories, Inc. listed or Factory Mutual approved).

Boiling Point

Is the boiling point of a liquid at a pressure of 14.7 p.s.i.a. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for purposes of this classification, the 10 per cent point of a distillation performed in accordance with Standard Method of Test for Distillation of Petroleum Products, American Society of Testing and Materials, ASTM D86-62 may be used as the boiling point of the liquid.

Combustible Liquid

Is a liquid having a flash point at or above 100°F (37.8°C) and is subdivided as follows:

- Class II liquids include those having flash points at or above 100°F and below 140°F (60°C).
- Class IIIA liquids include those having flash points at or above 140°F and below 200°F (93.4°C).
- Class IIIB liquids include those having flash points at or above 200°F.

Fire Areas

Means an area of a building separated from the remainder of the building by construction having a fire resistance of at least one-hour and having all communicating openings properly protected by an assembly having a fire resistance of at least one-hour.

Flammable Liquid

Is any liquid having a flash point below 100° F. These liquids are known as Class I and are subdivided as follows:

- Class IA liquids include those having flash points below 73°F (22.8°C) and having a boiling point below 100°F.
- Class IB liquids include those having flash points below 73°F and having a boiling point at or above 100°F.
- Class IC liquids include those having flash points at or above 73°F and having a boiling point at or above 100°F.

Flash Point

The flash point of a liquid means the temperature at which it 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.

Safety Can

Is an approved container, of not more than five-gallon capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

REQUIREMENTS OF THE STATE FIRE CODE

Section F-2905.0 of the Ohio Fire Code limits the size of containers that may be used for the storage of flammable and combustible liquids, depending upon the material in the container, as well as the construction of the container. In addition, it defines the maximum permissible storage for flammable or combustible liquids in office, educational and institutional occupancies.

Container Storage Size - The following is a synopsis of the pertinent parts of the Ohio Fire Code pertaining to the storage of flammable and combustible materials in containers. Container size and material of construction are determined by the physical characteristics of the liquid (see definitions of flammable and combustible liquids). Containers and portable tanks for flammable and combustible liquids shall conform to **Appendix No. 1**.

Exclusions from Container Storage - Medicines, beverages, foodstuffs, cosmetics and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of this section. In addition, Class IA and Class IB flammable liquids may be stored in glass of not more than one (1) gallon capacity if the required liquid purity (such as 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.

Storage Inside Buildings or Structures - Storage of flammable and combustible liquids is limited to that required for operation of office equipment, maintenance, demonstration, treatment and laboratory work. All liquids in laboratories shall meet the following storage provisions:

- Not more than ten (10) gallons of flammable liquids shall be stored outside of an interior storage room or approved storage cabinet;
- Not more than twenty-five (25) gallons of flammable liquids shall be stored in safety cans outside of an interior storage room or approved storage cabinet;
- Not more than sixty (60) gallons of combustible liquids shall be stored outside of an interior storage room or storage cabinet;
- Quantities of flammable and combustible liquids in excess of those set forth in this section shall be stored in an approved interior storage room or storage cabinet.
- No more than one hundred and twenty (120) gallons of flammable or combustible liquids shall be stored in a flammable liquid storage cabinet with no container exceeding five-(5) gallon capacity. Of this total, not more than sixty (60) gallons may be of Class I and Class II liquids. Not more than three (3) flammable liquid storage cabinets may be located in a single fire area.
- Quantities greater than defined shall be stored in an approved flammable liquid storage room. (Approval from the State Fire Marshall or his authorized representative is required).
- Refrigerators and coolers used for storage of flammable liquids shall be used only if they are approved explosion proof appliances.

Requirements for Marking and Labeling - Every container of flammable or combustible liquids must be clearly labeled. In addition, safety cans or other portable containers of flammable liquids having a flash point at or below 80°F (26.7°C), excluding shipping containers must be painted red with some additional clearly visible identification, either a yellow band around the can or the name of the chemical conspicuously painted or stenciled on the can in yellow.

Dispensing Flammable Liquids

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- The dispensing of Class I, II or IIIA liquids from containers larger than five-gallon capacity shall be in an approved flammable liquid storage room and is limited to not more than three 55-gallon drums at any one time.
- An approved safety pump must be used with Class I and II liquids. Dispensing Class IIIA liquids requires the use of an approved self-closing safety faucet, a bonding wire between the drum and the container being filled, and a grounding wire connecting the drum to ground. In locations where flammable vapors are present, precautions should be taken to control or eliminate sources of ignition.

APPENDIX 1

MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS

Liquids Container Size	Flammable Liquids			Combustible	
	Class IA	Class IB	Class IC	Class II	Class III
Glass	1 pt.	1 qt.	1 gal.	1 gal.	5 gal.
Metal (other than DOT drums) or 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 drums (DOT spec.)	60 gal.	60 gal.	60 gal.	60 gal.	60 gal.
Approved portable tanks	660 gal.	660 gal.	660 gal.	660 gal.	660 gal.

(gal. = gallon; pt. = pint; qt. = quart)