Oregon OSHA

Plus FACT SHEET

Flammable and Combustible Liquids

OAR 437
Division 2/H

Flammable and Combustible Liquids

General Information

The general industry standard, 1910.106, Flammable and Combustible Liquids, is complex and covers many work environments and situations. This fact sheet covers only the basic storage, transfer, and transport requirements. Rules for heavier industrial applications; underground storage facilities; and for building tanks, containers, and other specialized items are in the standard. All references in this fact sheet are to 1910.106 unless stated otherwise. Contact the Oregon office of State Fire Marshal or your local fire department for additional requirements.

Flammable and combustible liquids are divided into "classes " according to their flashpoints. Flammable liquids have a flashpoint below 100° F and are Class IA, Class IB, or Class IC. Combustible liquids have a flashpoint at or above 100° F and are Class II or Class III. Knowing the "class" plays a role in how to store chemicals. This information may be on the material safety data sheet (MSDS).

Storage Requirements

Table H-12 in 1910.106 specifies maximum allowable sizes for various types of containers. Section 1910.106(d)(2)(iii) has provisions for glass or plastic containers of up to one-gallon capacity for a Class IA or Class IB flammable liquid under specified conditions.

Container volume limits from 1910.106, Table H-12.

CONTAINER TYPE	FLAMMABLE LIQUIDS			COMBUSTIBLE LIQUIDS	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pt	1 qt	1 gal	1 gal	1 gal
Metal (other than DOT drums)	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 specifications)	60 gal	60 gal	60 gal	60 gal	60 gal
Approved portable tanks	660 gal	660 gal	660 gal	660 gal	660 ga

Storage cans: Use storage cans that have been approved by the US Department of Transportation (DOT) or a nationally recognized testing laboratory. They may be either metal or plastic and in quantities of five gallons or less.

Cabinets: Do not store more than 60 gallons of Class I or II liquids or more than 120 gallons of Class III liquids in a storage cabinet. This includes aerosol cans. See additional requirements in (d)(3) of the standard. You must label cabinets "Flammable, Keep Fire Away." Your state or local fire authority may limit you to three cabinets in each fire area. A fire area is a building or part of a building built with a fire rating of at least one hour and areas of pass-through to other parts of the building with fire ratings of at least one hour.

Inside buildings: Rules for storage of flammables and combustibles inside buildings vary depending on the class of liquid, the type of building, type of occupancy, protection systems (fire sprinklers), types of containers, and other factors. See (d)(5).

Incidental inside storage

If you store or use flammable or combustible liquids that are incidental* to the work or process, the following quantities apply when the material (opened or unopened) is not in a specially built storage room or cabinet. See (e)(2).

Class IA	25 total gallons in containers
Class IB, IC, II or III	120 total gallons in containers
Class IB, IC, II or III	660 total gallons in a single portable tank

Inside storage rooms

An inside storage room permits the storage of larger quantities of flammable and combustible liquids than other methods. Paragraph (d)(4) has specific requirements for the design and construction of inside storage rooms. It references NFPA standards that you must follow and talks about wiring, ventilation, and the ways to configure stored containers.

** An example of "incidental to the principal business" use or handling of flammable liquids is a tool manufacturer cleaning parts with flammable degreasing chemicals.*

Web site:
www.orosha.org

Salem Central Office
350 Winter St. NE, Rm. 430
Salem, OR 97301-3882

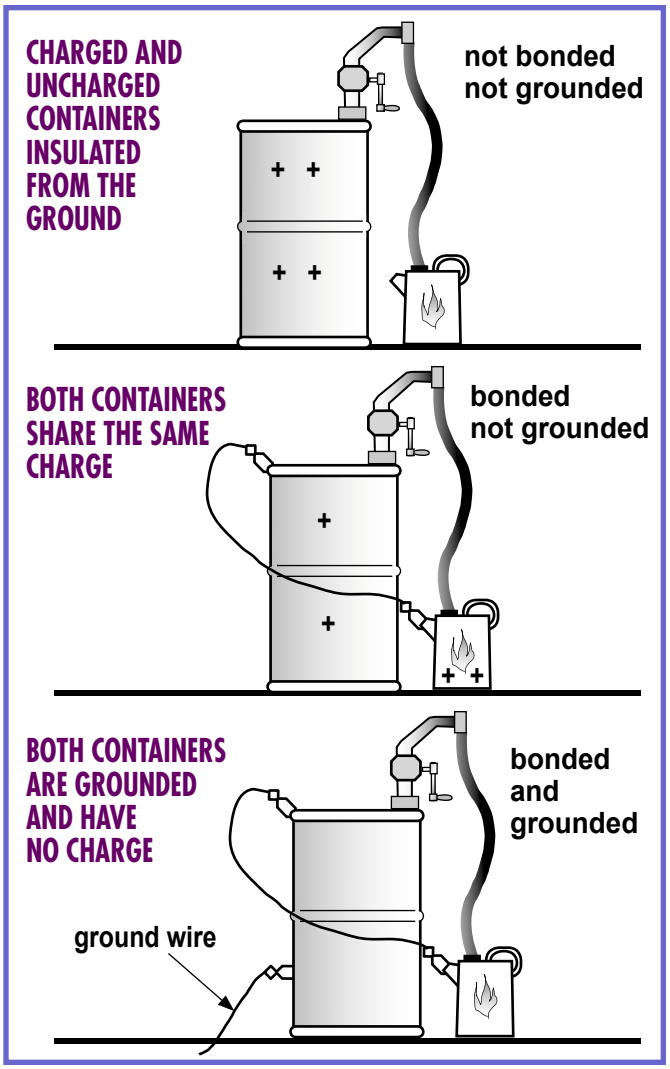
Phone: (503) 378-3272
Toll-free: (800) 922-2689
Fax: (503) 947-7461

Outside storage: Rules for storage of flammables and combustibles outside of buildings vary depending on the class of liquid, types of containers, amount stored, distance from streets and other property, and other factors. See (d)(6).

Transferring Flammables and Combustibles

The transfer or dispensing of flammable and combustible liquids often requires special preparation and caution. The movement of liquid from one container to another can cause static electricity, increasing the chance of ignition or explosion caused by a spark.

When dispensing Class I liquids into portable containers, the containers must be electrically interconnected. **Spray Finishing, 437-002-0107**, also requires bonding and grounding of flammable and combustible liquids. The purpose of bonding is to eliminate a difference in the static-electrical charge potential between two or more objects. Use grounding to eliminate a potential difference between an object and the ground. Bonding and grounding are effective only when the bonding objects are conductive materials. Some materials, including some plastics, accumulate static but do not permit effective bonding or grounding because of the inability to disperse the charge. Special instructions for electrical bonding when loading and unloading tank vehicles are in (f)(3)(iv) through (vi) and, for processing plants, in (h)(7)(I).



Transport

Never transport flammable or combustible liquids in the same part of the vehicle in which people ride. These Oregon rules for commercial and industrial vehicles apply: **437-002-0223(22) Hauling of Gasoline, etc.**

(a) Gasoline and other low-flashpoint liquids shall not be hauled on Class A, B, and D vehicles transporting workers except when in U.L.approved, closed safety containers of not more than five gallons capacity and provided such containers are carried in a safe, suitable location outside the passenger compartment. Such containers shall be carried as far away from the passenger compartment as possible and where they will not block exit from the vehicle and shall be firmly secured to prevent shifting or placed in well-ventilated compartments or racks.

(b) Gasoline in containers larger than five gallons may be transported in Class C vehicles provided all workers ride in the cab of the vehicle or in a separate compartment.

Other Points

Fire Extinguishers: Paragraph (d)(7) requires fire extinguishers where flammable or combustible liquids are stored. This section is a general requirement. Other sections have specific requirements for bulk plants, service stations, and other specialized situations. Find other directions for fire extinguishers in **OAR 437-002-1910.157, Portable Fire Extinguishers**.

Open Flames and Smoking: The standard prohibits smoking or open flames in flammable or combustible liquid storage areas. You must post "No Smoking" signs in service stations (filling areas) [(g)(8)] and bulk plants [(f)(6)].

Reactions With Other Substances: Read the labels and/or material safety data sheets before you store substances near or with flammable or combustible liquids. Some substances become unstable or explosive when mixed with flammable or combustible liquids. Always follow the manufacturers' instructions on storage compatibility.

Resources

Other standards containing requirements for flammable and combustible liquids include: 3/F, Construction; 4/H, Agriculture, and 7/F, Forest Activities.

www.orosha.org Rules/Laws, Letters of Interpretations, and Program Directives

http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=INTERPRETATIONS&p_toc_level=0
Federal OSHA Web site for interpretations.

NFPA 30 - 2000, Flammable and Combustible Liquid Code

Oar 437-002-1910.106, Flammable and Combustible Liquids http://www.cbs.state.or.us/external/osha/pdf/rules/division_2/1910-106.pdf

OAR 437-002-1910.157, Portable Fire Extinguishers http://www.cbs.state.or.us/external/osha/pdf/rules/division_2/div2_l.pdf

OR-OSHA (09/04) FS-12

OAR 437 Division 2/H

Flammable and Combustible Liquids