

Flammable & Combustible Liquids Storage In Campus Laboratories

California Fire Code (CFC) regulations limit the quantity of flammable and combustible liquids that can be stored in research and teaching laboratories. This fact sheet provides a simplification of the complicated CFC regulations, and establishes standard practice at University of California, Berkeley (UC Berkeley). For questions not covered in this fact sheet, or for assistance with more complicated issues, please contact the Office of Environment, Health & Safety (EH&S) at 642-3073 for situation-specific guidance.

Table 1.

Classification of Flammable and Combustible Liquids

BOILING POINT (°F)	Y ≥ 100°F	Flam. Liq. 1B	Flam. Liq. 1C	Comb. Liq. II	Comb. Liq. III A	Comb. Liq. III B
	Y < 100°F	Flam. Liq. 1A				
		X < 73°F	73°F ≤ X < 100°F	100°F ≤ X < 140°F	140°F ≤ X < 200°F	X ≥ 200°F
		FLASH POINT (°F)				

See table 2 for common examples of chemicals in each category.

The limits below are per room, refer to the size of each container and include unwanted hazardous materials.

Quantity Limits outside Flammable Liquid Storage Cabinets

For each room, no more than a total of 10 gallons of flammable or combustible liquids may be outside a flammable liquid storage cabinet (with the exception of materials stored in approved safety cans).

Flammable Liquid Storage Cabinets

Quantity Limits **inside Flammable Liquid Storage Cabinets**

Flammable liquids stored in cabinets meeting applicable requirements (see next section) must not exceed 60 gallons total for Class I-A flammable liquids, per cabinet. In addition, the total volume of all classes of flammable and combustible liquids in any one cabinet must not exceed 120 gallons.

Flammable Liquid Storage Cabinets

- Cabinets purchased new must meet the requirements of the CFC or National Fire Protection Association Flammable and Combustible Liquids Code (NFPA 30). The cabinets must be purchased with the self-closing door option to comply with these requirements.
- Contact EH&S for questions regarding cabinets not meeting the above requirements.
- For further information, see “Flammable Liquid Storage Cabinet Frequently Asked Questions”.

Refrigerators and Freezers

“Flame Safe” Refrigerators and Freezers

It is unsafe to store flammable liquids in a domestic refrigerator or freezer. (See the EH&S Fact Sheet, “Storing Flammable Liquids in Refrigerators and Freezers” for guidance on equipment selection.) Even in special refrigerators and freezers recommended in the Fact Sheet, the stored volume must not exceed the amount allowed in a flammable liquid storage cabinet.

Storage Containers

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- Individual **glass** containers of Class I-A liquids must not exceed 1 pint (500 ml) capacity. Individual **glass** containers Class I-B liquids must not exceed 1 quart (1 liter) capacity. **Exception:** *Class I-A and I-B liquids may be stored in factory-shipped glass containers up to 1-gallon or 4-liter capacity if the required liquid purity would be affected by storage in metal containers or if the liquid would cause excessive corrosion of a metal container.*
- Class I-A liquids can be stored in metal or plastic containers not larger than 1 gallon (4 liters) capacity, or U.L. listed safety cans not larger than 2 gallons (8 liters) capacity.
- For liquids other than Class I-A liquids, the capacity of the containers regardless of type (i.e., metal, glass, etc) must not exceed five (5) gallons each.



Table 2.**Classifications of Some Commonly Used Flammable and Combustible Liquids**

Class I-A Flammable Liquids		Class I-B Flammable Liquids	
Acetaldehyde		Acetone	Hexane
Ethylamine		Acetyl Chloride	Isopropyl Alcohol
Chloroethane		Acetonitrile	Methanol
Ethyl Ether		Benzene	Methyl Ethyl Ke- tone
Ethyl Mercaptan		Cyclohexane	Petroleum Ether
Isopropylamine		1, 2- Dichloroethane	Pyridine
2-Methylbutane		Diethylamine	Tetrahydrofuran
Propylene Oxide		Ethyl Acetate	Toluene
Tetramethylsilane		Ethyl Alcohol >50%	Vinyl Acetate
Trichlorosilane		Gasoline	Triethylamine
Class I-C Flammable Liquids		Class II Combustible Liquids	
Amyl Acetate	2-Methyl-1-Propanol	Acetic Acid > 80%	Formaldehyde
Azidotrimethylsilane	Morpholine	Acetic Anhydride	Formic Acid
1-Butanol	Nitromethane	Boron Trifluoride	Kerosene
Chlorobenzene	2,4-Pentanedione	Etherate	2-Methoxyethanol
Dicyclopentadiene	1-Pentanol	Cyclohexanone	3-Methyl-1-Butanol
Ethylenediamine	Propyl Alcohol	Decane	Propionic Acid
Hydrazine	Styrene	Diesel (Fuel Oil No.2)	Thiophenol
Methyl Isobutyl Ketone	Trichloroethylene	N,N-Dimethyl For- mamide Dimethylami- noethanol	WD-40® Lubri- cant
Class III-A Combustible Liquids		Class III-B Combustible Liquids	
Acetophenone	N,N-Dimethylacetamide	p-Anisaldehyde	Hydraulic Oil (ge- neric)
Aniline	Dimethylsulfoxide	Benzyl Alcohol	Methyl Salicylate
Benzaldehyde	Ethanolamine	2-Bromoethanol	Mineral Oil (ge- neric)
Benzoyl Chloride	Hexyl Alcohol	Diethanolamine	Oxalyl Chloride
Benzyl Bromide	2-Mercaptoethanol	Ethylene Glycol	Polyethylene Gly- col
Benzylamine	1-Methyl-2-pyrrolidinone	Formamide	Transformer Oil (generic)
Butyric Acid	Nitrobenzene	Glycerol	Triethanolamine
Diethyl-Pyrocabonate	1-Octanol	Hexadecane	Triton X®
Dimethyl Sulfate	Phenol	Hexanoic Acid	Tween 20®

For classification information on other materials, visit the EH&S MSDS site at:

<http://www.ehs.berkeley.edu> or call EH&S at 642-3073.