

Chemical Safety Cabinets

These guidelines provide requirements for all University faculty, staff, and students using chemical storage cabinets.

Hazards Description

Chemicals can present serious hazards in laboratory condition if not properly stored. The use of proper chemical storage cabinets can reduce the risk and are in some cases required by building fire codes.

General Guidelines for Flammable and Combustible Storage Cabinets

The volume of flammable and combustible liquids in a lab, room or location is restricted by University guidelines, and International Fire Codes. EHS should be contacted regarding any questions or for additional guidance.

Volumes of flammable and/or combustible liquids in laboratories should be kept to the minimum necessary for the work being done. The following guidelines provide the maximum allowable container size and type based on the flammable and/or combustible liquid classification.

Container Type	Liquid Classification and Maximum Container Size				
	IA	IB	IC	II	III
Glass	1 pt. (0.5L)	1 qt. (1L)	1.3 gal (5L)	1.3 gal (5L)	5 gal (20L)
Metal or Approved Plastic	1.3 gal (5L)	5 gal (20L)	5 gal (20L)	5 gal (20L)	5 gal (20L)
Safety Cans	2.6 gal (10L)	5 gal (20L)	5 gal (20L)	5 gal (20L)	5 gal (20L)

The combined volume of flammable and combustible liquid containers stored in a single fire area (laboratory) outside of a storage cabinet or flammable liquid storage room should be restricted as follows:

- **Not in Safety Cans:** No more than 1 gallon of Class IA; 5 gallons of Class IB or Class IC; and no more than 10 gallons of Class I and Class II combined.
- **In Safety Cans:** No more than 2.6 gallons of Class IA; 5 gallons of Class IB and Class IC; and no more than 25 gallons of Class I and Class II combined.
- Class IIIA liquids should not exceed 60 gallons (230L).

- Class IIIB liquids should not exceed four, 55 gallon drums. This applies only to mechanical areas containing hydraulic oils, lubricating oils, etc.

Flammable aerosols and unstable liquids should be treated as Class IA liquids.

Empty and partially full containers should be handled and stored like full containers, that is, in an area suitable for flammable liquid storage (e.g., storage room, flammable liquid cabinet).

Flammable Liquid Storage Cabinet

Flammable Material Storage Cabinet: A storage cabinet constructed and arranged in accordance with NFPA and International Fire Code standards. **Note:** Cabinets that are typically located underneath bench tops and fume hoods are not considered approved cabinets unless they are provided with appropriate UL/FM labeling.

An approved flammable liquids storage cabinet is required when:

- The aggregate volume of Class I and Class II liquids in an individual fire area not in safety cans exceeds 10 gallons.
- The aggregate volume of Class I and Class II liquids in an individual fire area in safety cans exceeds 25 gallons.
- The aggregate volume of Class IIIA liquids exceeds 60 gallons.
- The aggregate volume of Class IIIB liquids exceeds 220 gallons. This applies only to mechanical areas containing hydraulic oils, lubricating oils, etc.

When a cabinet is provided, it shall be used for the storage of all flammable and combustible materials not in immediate use.

Flammable Material Storage Cabinets must meet the following criteria:

- Be yellow in color
- Bottom, top and sides of cabinet shall be at least No. 18 gauge sheet steel
- Cabinet must be doubled walled with 1½" airspace
- Joints shall be riveted, welded or made tight by some equally effective means
- Door shall have a three point latch
- Door sill shall be raised at least 2" above the cabinet bottom to retain spilled liquid within the cabinet
- UL/FM approved and marked in conspicuous lettering: **"FLAMMABLE – KEEP FIRE AWAY"**
- Limited so that the maximum quantity of Class IA liquids is 30 gallons within the cabinet.
- Unvented. If venting is required or requested, EHS must be contacted for a specific evaluation and guidelines.

- Equipped with self-closing and self-latching doors if purchased after 2005. If the cabinets were purchased prior to 2005 and came equipped with self-latching door mechanisms, it is recommended that this safety device be maintained as operational.

A maximum of three (3) flammable material storage cabinets may be located within a single fire area.

Acid/Corrosive Storage Cabinets

Strong acids will likely corrode most metal cabinets. It is recommended that hydrochloric, sulfuric, nitric, perchloric, iodic, chromic and hydrobromic acids not be stored in any metal cabinet. Instead poly cabinets should be used. A maximum of three (3) storage cabinets may be located within a single room.

Acid/Corrosive Storage Cabinets must meet the following criteria:

Metal Cabinets

- Be blue or white in color
- Bottom, top and sides of cabinet shall be at least No. 18 gauge sheet steel
- Must be doubled walled with 1½" airspace
- Joints shall be riveted, welded or made tight by some equally effective means
- Door shall have a three point latch
- Door sill shall be raised at least 2" above the cabinet bottom to retain spilled liquid within the cabinet and be liquid tight
- UL/FM approved and marked in conspicuous lettering (minimum of 6"): "**ACIDS/CORROSIVES**"
- Limited so that the maximum quantity is 30 gallons within the cabinet
- Metal cabinets should be lined with a corrosion resistant liner (multiple epoxy coats, poly, powder coating)
- Unvented. If venting is required or requested, EHS must be contacted for a specific evaluation and guidelines
- Equipped with self-closing and self-latching doors if purchased after 2005. If the cabinets were purchased prior to 2005 and came equipped with self-latching door mechanisms, it is recommended that this safety device be maintained as operational.

Poly Cabinets

- Be blue or white in color
- Bottom, top and sides of cabinet shall be at least high density (minimum of 0.25") poly
- Must have double walled poly doors
- Door shall have a three point latch

- Door sill shall be raised at least 2" above the cabinet bottom to retain spilled liquid within the cabinet and be liquid tight
- OSHA/FM approved and marked in conspicuous lettering (minimum of 6"):
- **"ACIDS/CORROSIVES"**
- Limited so that the maximum quantity is 30 gallons within the cabinet
- Unvented. If venting is required or requested, EHS must be contacted for a specific evaluation and guidelines.
- Equipped with self-closing and self-latching doors if purchased after 2005. If the cabinets were purchased prior to 2005 and came equipped with self-latching door mechanisms, it is recommended that this safety device be maintained as operational.

Wood Cabinets

- Be blue or white in color
- Bottom, top and sides of cabinet shall be at least 1" thick multi-ply plywood
- Door shall have a three point latch
- Door sill shall be raised at least 2" above the cabinet bottom to retain spilled liquid within the cabinet and be liquid tight
- OSHA/FM approved and marked in conspicuous lettering (minimum of 6"): **"ACIDS/CORROSIVES"**
- Limited so that the maximum quantity is 30 gallons within the cabinet
- Unvented. If venting is required or requested, EHS must be contacted for a specific evaluation and guidelines.
- Equipped with self-closing and self-latching doors if purchased after 2005. If the cabinets were purchased prior to 2005 and came equipped with self-latching door mechanisms, it is recommended that this safety device be maintained as operational.
- Lined with a corrosion resistant liner (multiple chemical resistant epoxy coats, poly)
- Fasteners will be stainless steel, wood or poly
- Poly lining or poly compartment needed for hydrochloric, sulfuric, nitric, perchloric, iodic, chromic and hydrobromic acids