

NON-REACTIVE FLAMMABLES AND OTHER COMBUSTIBLES

Hazard Description

Flammable liquids can be easily ignited, even at concentrations less than their lower flammable limits, and

Description	Class	Boiling Point (°C)	Flash Point (°C)
Flammable	IA	<37.8	<22.8
Flammable	IB	>37.8	<22.8
Flammable	IC	---	>22.8 and <37.8
Flammable	II	---	>37.8 and <60
Combustible	IIIA	---	<60 and <93.3
Combustible	IIIC	---	>93.3

at temperatures below their flash point. Vapours may be heavier than air, allowing them to travel long distances along the ground to reach an ignition source.

Examples

- Ethanol
- Hexane
- Carbon
- Methanol
- Acetonitrile
- Charcoal

Handling

All work, research, investigations, etc. involving flammable or combustible liquids must be carried out in an approved chemical (fume) hood when:

1. Their use releases flammable vapours which could be potentially explosive
2. Liquids are heated to a temperature greater than their flash point
3. Unstable liquids are used

Dispensing flammable or combustible liquids from containers of 5L capacity or less is permissible if performed in an approved chemical (fume) hood. ChemStores is the only location on campus which may dispense flammable or combustible liquids from containers with greater than 5L capacity.

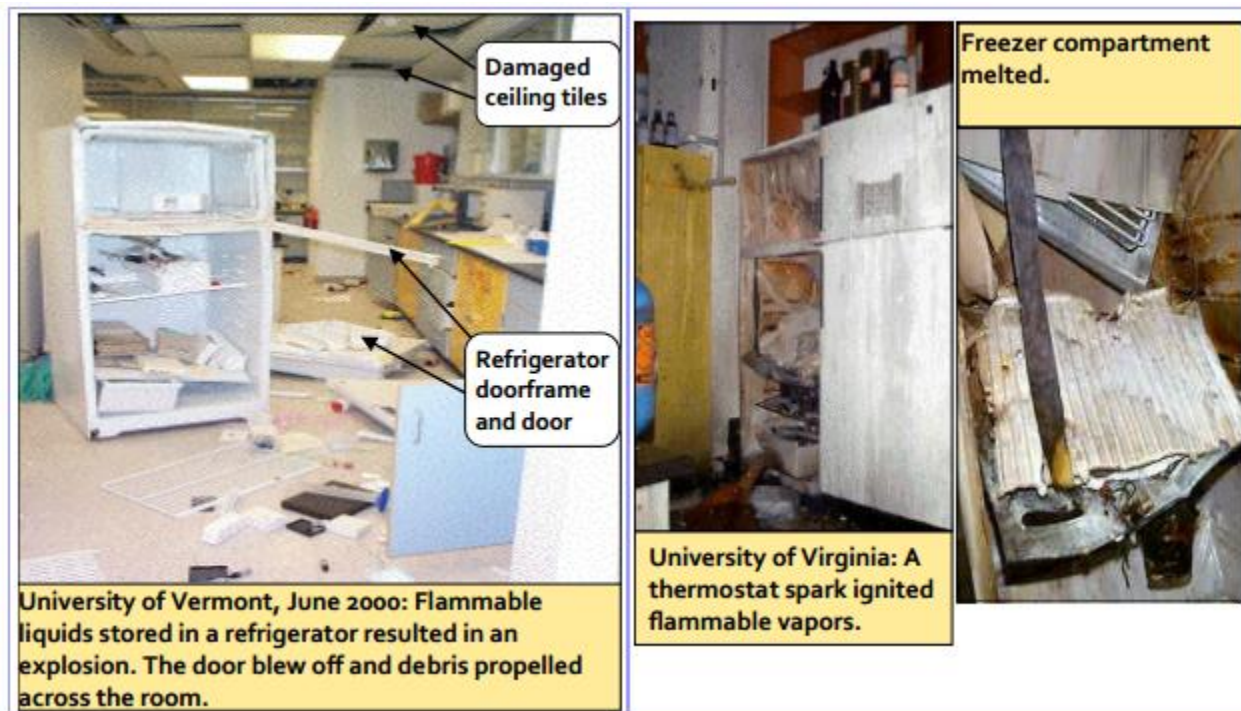
Some flammable liquids are peroxide formers, and the user should be aware of which ones are. Purchase date should be written on the container, expiry dates should be observed and testing for peroxide formation should be done as per guidelines. For more information, visit the [chemistry departments resource on peroxide forming compounds](#).

Storage

- Store away from oxidizers, oxidizing acids, and sources of ignition.
- No more than 50 L of flammable liquids may be kept in a laboratory outside of a flammable cabinet.
- Non-flammable solvents may also be stored in flammables cabinets.
- Flammable cabinets must be installed as per building code with proper venting.



- **Refrigerators used for storage of flammable compounds shall be certified for such use and designated as explosion proof. Vapours from stored chemicals can accumulate over time and come in contact with an electrical spark which creates a powerful explosion.**



(Image from [Emory Research Administration News - Flammable Chemicals and Refrigerator Storages](#))

Flammable Cabinets for Flammable Liquid Storage

In Ontario, new flammable liquid storage cabinets must conform to ULC or cUL standards or be listed as meeting NFPA 30. Older cabinets certified only to UL can continue to be used but cannot be used for new installations. The cabinets must be made of metal having a double wall construction with a 3-point door latch and a liquid tight door sill raised at least 50 millimetres above the floor.

Cabinets should be grounded upon installation.

Cabinets do not have to be vented. If a cabinet is not vented the vent bung should be sealed (usually the cabinet will come with a sealed bung). If the cabinet is going to be vented, the venting must conform to the following:

- the cabinet must be vented outdoors
- the fan used to ventilate the cabinet must be rated intrinsically safe (fume hood fans meet this requirement)
- the piping for the cabinet must be schedule 40 Black Iron piping (0.154 to 0.22 in thickness) or equivalent
- flash arrestors must be installed in both openings to the cabinet. One opening should be used for the vent, and the other left open for incoming clean air.

Hazardous Waste

- Must be disposed of as per the [University's Hazardous Waste Standard](#).
- Label as liquids as either a Halogenated Solvent or a Flammable Solvent.
- Plan ahead and request a specialized container from the ESF if large (weekly) volumes will be generated.