



Lash Miller Laboratories St. George Campus

OPS-SOP- 07	Revision #: 01	Implementation Date: April 2019	Last Reviewed/ Update Date: 2019-03-29	Page #: 1 of 5
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Standard Operating Procedure: CHEMICAL COMPATIBILITY & STORAGE

LM- applicable Policies:

- 1) NO chemical waste is allowed to be stored on the floor.
- 2) Peroxidizable compounds should be ordered in quantities no larger than a 6 months' supply. The opening date "must" be recorded. Stocks must be disposed of at the 6 months period from opening date (1 year if containing inhibitors)
- 3) It is mandatory for each laboratory at LM to have an updated inventory of hazardous chemicals together with the associated SDSs. This information must be available to every person working at LM.
- 4) All chemicals (stocks and working dilutions, solutions) must follow WHMIS 2015 labels

1. Purpose: to provide step by step guidance on how to compatibly store hazardous chemicals.

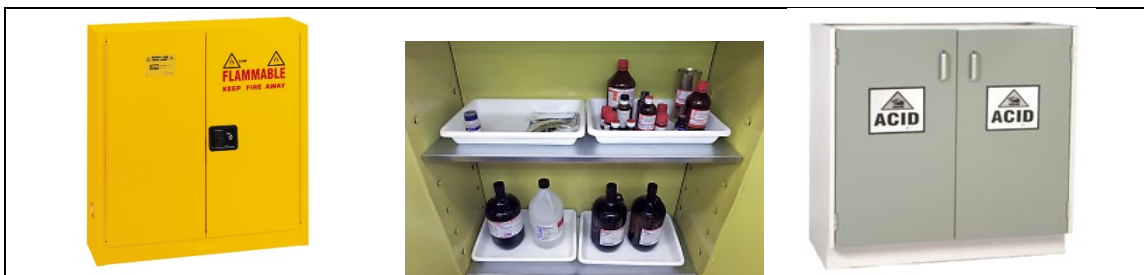
2. Scope: applies to all students, staff and faculty utilizing lab spaces.

3. Prerequisites: WHMIS and Chemical Safety training. Reference the chemical storage flow chart available in Appendix A.

4. Responsibilities: it is the responsibility of all lab users to ensure that chemicals are stored in the manner that is described in SDS. Lab users must be aware of different storage locations and requirements for using those locations safely.

5.

Types of Storage



5. Procedure:

- Know the hazards! Consult the SDS to obtain the physical and chemical properties of your chemical
- Identify the primary and secondary hazard class and determine the appropriate storage group. Store chemicals compatibly according to hazard groups; flammable, corrosive, oxidant etc.
- Some items will fit into 2 or more classes requiring further segregation. (Ex – caustic solution that is also an oxidant would need to be separated from other caustics).
- Chemicals should be stored on shelves with a small lip to help prevent bottles from falling or being knocked off.
- Use the following Guideline supplied by EHS to compatibly store chemicals in your lab.

Chemical Storage Guidelines: General Storage Requirements:

Chemical Type	WHMIS Class	Examples	Storage Recommendations
Flammable liquids – Flash Point <37.4°C	B2	<ul style="list-style-type: none"> • Toluene • Ethanol • Carbon Disulphide (CS₂) 	<ul style="list-style-type: none"> • Keep in a sealed or metal pipe ventilated, Fire Code approved, flammable storage cabinet • Keep away from oxidizing materials and acids/bases.
Combustible liquids – Flash Point >37.4°C	B3	<ul style="list-style-type: none"> • Mineral spirits • Ethylene glycol monobutyl ether (EB) 	<ul style="list-style-type: none"> • Recommended to be stored in the same way as flammables.
Caustic Solids	E	<ul style="list-style-type: none"> • Potassium hydroxide • Sodium hydroxide 	<ul style="list-style-type: none"> • Dry cabinet • Away from acids
Basic/caustic Solutions	E	<ul style="list-style-type: none"> • Sodium hydroxide/water 	<ul style="list-style-type: none"> • Cabinet with separate drip pan from acids etc.

Inorganic Acids	E	<ul style="list-style-type: none"> • Nitric acid • Phosphoric acid • Sulfuric acid • Hydrofluoric acid (HF(aq)) 	<ul style="list-style-type: none"> • Store in cabinet of non-combustible material – dedicated acid storage recommended • Use plastic secondary containment to contain spills • Separate acids into groups - mineral acids, oxidizing acids, special acids (e.g. perc, HF) • Separate Perchloric acid from all other acids using non- reactive bins such as glass or equivalent • Keep separate from caustic solids and solutions • HF - see HF protocol
Organic Acids	E, various	<ul style="list-style-type: none"> • Glacial acetic acid 	<ul style="list-style-type: none"> • On shelf in secondary containment, separate from other groups.
Odourous volatile substances	various	<ul style="list-style-type: none"> • Perchloro-ethylene • Mercaptans 	<ul style="list-style-type: none"> • Can be stored with flammable liquids to reduce odours
Water Reactives	F	<ul style="list-style-type: none"> • Sodium • Potassium 	<ul style="list-style-type: none"> • In cabinet, typically under inert blanket. • Cabinet should withstand water spray in case of fire requiring water suppression
Air Reactives	F	<ul style="list-style-type: none"> • T-butyl lithium • Lithium aluminum hydride 	<ul style="list-style-type: none"> • Store in inert atmosphere away from all other groups. • Follow supplier's specific storage instructions




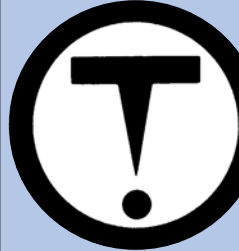























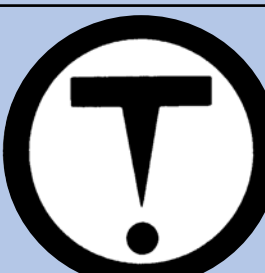




















Oxidizers	C	<ul style="list-style-type: none"> • Sodium hypochlorite • Benzoyl peroxide • Potassium permanganate 	<ul style="list-style-type: none"> • Store in cabinet of non-combustible material • Separate from flammable and combustible materials
Reducing agents	C	<ul style="list-style-type: none"> • Oxalic acid • Sodium borohydride • Tin II chloride • Phosphorous acid 	<ul style="list-style-type: none"> • Store away from oxidizers and flammables/combustibles in non-combustible cabinet
Toxic Gasses	D1A	<ul style="list-style-type: none"> • Hydrogen sulphide • Phosgene • Sulphur dioxide • Arsine 	<ul style="list-style-type: none"> • Dedicated ventilated cabinet if concentration is sufficient. • Example – 25ppm CO in N2 does not need ventilated cabinet.
Inert Solids	various	<ul style="list-style-type: none"> • Sodium Chloride • KNO3 	<ul style="list-style-type: none"> • Shelving/cabinets with edge guards

6. Other

- You may also use the EHS chemical storage flow chart to assist in choosing the correct storage for chemicals in the lab.

<https://ehs.utoronto.ca/wp-content/uploads/2014/06/Chemical-Storage-Flowchart.pdf>

Simplified Chemical Compatibility Storage

Classes of Materials						
 Flammable & Combustible Materials						
 Oxidizing Materials						
 Materials Causing Serious Toxic Effects						
 Materials Causing Other Toxic Effects						
 Corrosive Materials						
 Dangerously Reactive Materials						

 Compatible Storage
  Incompatible Storage
  Compatible under certain conditions; refer to SDS