Compatibility Table for Chemical Storage at room temperature (defined by physical, not health hazard and not including gases)

This is generic, supplementary guidance only and does not replace lab specific chemical hygiene training, COSHH SSRA and the compatibility advice in sections 7&10 of the SDS

Where a substance has multiple physical hazards – consideration should be given to the higher hazards e.g. acetic acid is both corrosive and flammable the higher physical risk is fire

Chemical grouping	Details	Examples	How to store	Notes
GROUP 1 Flammables and Combustibles Organic solvents including organic acids	A flammable liquid has a flashpoint of no more than 93°C **Category 1** flashpoint of < 23°C and initial boiling point ≤ 35°C – **Extremely flammable liquid and vapour** **Category 2** flashpoint of < 23°C and initial boiling point > 35°C **Highly flammable liquid and vapour**	acetone acetonitrile benzene 1-butanol heptane, methanol Xylene Ethanol Pyridine	Store in a clearly labelled, fire resistant metal flammables cabinet or, depending on temperature requirements, in an explosion proof fridge NO cardboard shipping boxes or other combustible in the cabinet. Never store in significant quantities in cold rooms or any in refrigerator / freezer unless they are confirmed and labelled **explosion proof**). **ISOLATE FROM:** **Inorganic acids, oxidizing acids, bases, oxidizers, water reactive substances, inorganic poisons**	The MSDS and SSRA provide the flashpoint for flammable and combustible liquids. Primary Storage Concern: To protect from ignition Segregate acids from chemicals which could generate toxic or flammable gases upon contact e.g., cyanide salts, and reactive metals e.g. magnesium
	Category 3 flashpoint of ≥ 23°C and ≤ 60°C **Flammable liquid and vapour**	Acetic acid Acetic-Anhydride DMF		
	Combustible Category 4 flashpoint of > 60°C and ≤ 93°C	Glycerol Glycerine DMSO	Combustible liquids i.e. those with a flash point of > 60°C and ≤ 93°C do not need to be stored in a flammables cabinet can be safely stored at room temperature on **lab shelving** away from incompatible substances	
Potential Peroxide-forming solvents	**Not including diethyl ether (need special permission)** **Highly flammable, unstable on long term storage, can form shock sensitive peroxides**	Acetaldehyde Cyclohexene glycol ethers Isospropanol 2-propanol	Store in a clearly labelled, fire-resistant, metal flammables cabinet or (depending on temperature requirements) in an explosion-proof fridge **FBMH Guidance on Storage of Peroxide Forming Solvents must be followed.**	If there are **visible crystals, visible precipitate or an oily viscous** layer present in the material, these are ***visual indicators of dangerous high peroxide levels***, **DO NOT TOUCH –** contact your PI

GROUP 2 Volatile poisons, halogenated / chlorinated solvents	Poisons, toxics and known and suspected carcinogens, mutagens with strong odour and/or high rate of evaporation Includes highly toxic (LD50 oral rat < 50 mg/kg) and toxic chemicals (LD50 oral rat < 500 mg/kg), known carcinogens, suspected carcinogens and mutagens	Chloroform Mercaptoethanol Phenol Formamide	May be stored in a solvents cabinet if bases are not present. Ideally store separately in a ventilated cabinet. – if using a flammables cabinet, separate by shelf **ISOLATE FROM:** **Inorganic acids, oxidizing acids, organic acids, oxidizers, water reactive substances, strong bases** *****Isolate from other storage groups ******	Note: these substances are usually non-flammable but may be combustible Volatile poisons may be in the same compartment of the flammable cabinet as flammable if bases are not present **Exposure is a significant health hazard** Primary Storage Concern: To prevent inhalation exposures
GROUP 3 Oxidizing inorganic acids	All oxidizing acids are highly reactive with most substances and each other. They have the potential to act with the surface of the storage cabinet e.g. wood	Nitric acid Sulphuric acid Phosphoric acids Perchloric acid >70%	Store in – a clearly labelled corrosives cabinet under the fume hood Oxidizing substances react with nearly everything and must be double contained i.e., the primary container must be kept inside canister, tray or tub **Concentrated >70% perchloric acid must be stored on its own and used in a designated fume hood only. See Perchloric Acid Guidance Notes** **ISOLATE FROM:** **Bases, flammables, organic acids, organic solvents, water reactive substances, organic poisons** *****Isolate from other storage groups ******	Acid mist escapes from closed bottles and builds up inside un- vented cabinets causing corrosion of labels, metal cabinets, etc. Only ever open secondary and primary containers under the fume hood Primary Storage Concern: Preventing contact and reaction with each other and other substances and corrosive action on surfaces
GROUP 4 Non- oxidizing Organic and Mineral Acids	NOTE: Acetic anhydride and Trichloroacetic anhydride are corrosive **and are very reactive with other acids** and should not be stored in this group.	Formic acid Hydrochloric acid Trifluroacetic acid	Store in – a clearly labelled corrosives cabinet under the fume hood – often react with each other **ISOLATE FROM:** **Oxidizing agents, flammables, oxidizing acids, volatile substances, bases, organic or inorganic poisons**	Primary Storage Concern: To prevent contact and reaction with bases and oxidizing acids and corrosive action on surfaces Acid mist escapes from closed bottles and builds up inside un- vented cabinets causing corrosion of labels, metal cabinets
GROUP 5 Liquid Bases	Have the potential to degrade the cabinet they are stored in unless it's a corrosion resistant design	Sodium hydroxide Ammonium hydroxide Calcium hydroxide Glutaraldehyde	Store in – a clearly labelled corrosives cabinet **ISOLATE FROM:** **inorganic, organic or oxidizing acids, oxidizing substances volatile poisons or halogenated solvents**	Primary Storage Concern: To prevent contact and reaction with oxidizing acids and corrosive action on surfaces

GROUP6 Oxidizers / Organic Peroxides (Excluding Oxidizing acids)	React with everything potentially causing explosions or corrosion of surfaces	Hydrogen peroxide >30% APS	**Compatible Storage Groups: None** If stored near other chemicals, including other oxidizers keep in a separate tub or tray. Store organic peroxides in area such as a refrigerator where the temperature will remain below the self accelerating decomposition temperature ****** ISOLATE FROM: all other storage groups ******	Primary Storage Concern: To isolate from other materials and prevent reactive decomposition
GROUP 7 Non-volatile liquid and dry Poisons	Includes highly toxic (LD50 oral rat < 50 mg/kg) and toxic chemicals (LD50 oral rat < 500 mg/kg), known carcinogens, suspected carcinogens and mutagens	Acrylamide solutions; uncured epoxy resins; Ethidium bromide Cyanide salts etc.	Storage is often temperature dependant For those at room temperature store in a lockable toxins cabinet Always protect form accidental breakage – use waterproof secondary containment. It is particularly important to keep liquid poisons below cyanide- or sulfide-containing poisons (solids). A spill of aqueous liquid onto cyanide- or sulphide-containing poisons would cause a reaction that would release poisonous gas.	**Exposure is a significant health hazard** Note – acrylamide is incompatible with most other substances
GROUP 9 Dry Solids	All powders, hazardous and non-hazardous (except poisons / toxins)	Generally cabinets are recommended simply to avoid spillages but if not available, open shelves are acceptable (NOT above eye height). If solid oxidizers are being store on the lab shelf, store well away from other substances Store powders above liquids		Primary Storage Concern: To prevent contact and potential reaction with liquids and to prevent / limit access **NOTE: may have different properties when wet**

Summary of Storage Group by Location and Possible Combinations – Ideally all groups should be stored separately – if tight on space groups can be combined as follows – always check the incompatibilities of a substance – either on your COSHH SSRA and or Sections 7& 10 of the associated SDS

When possible, isolate all storage groups in separate cabinets. If space does not allow, use the associated cabinet scheme to combine storage groups. Use secondary containment as shown to prevent spilled materials from contacting containers of incompatibles that are in the same cabinet.
Storing acids and bases in the same cabinet is not ideal but can be done if really short on space (but never in the presence of oxidizing acids). Separation must be achieved by distance i.e. separate. Acids and Bases are of concern for two reasons: they are generally corrosive, and their reactions with each other are usually highly exothermic. Hence acids and bases should ideally be stored apart from each other. (A white powder developing on the outsied of the bottle and the inner surface of the cabinet is an early indicator of incompatible substances)