

## Storage cabinets

Incompatible chemicals must be kept separately to reduce the risk of mixing in case of accidental breakage or response to an emergency within the laboratory. (A starting point is to check the Safety Data Sheet for hazard and storage requirements.) Containers must be kept tightly closed and stored in cabinets which are suitable for the chemical. It is important to check materials which have a shelf life and safely dispose of before the date expires, and generally check the label to ensure it is still suitable and provides the necessary safety information. The condition of the cabinets needs to be checked to ensure that they are providing adequate containment of the materials being stored. Ensure spill trays are used which are capable of holding 110% volume of the largest container being stored in the tray.

There may be occasions where the quantities being stored are very small and secondary containment of the chemicals within a cabinet provided would be deemed as providing adequate separation. The table below provides guidance on the type of materials being stored and the type of cabinet which is suitable for that material. This is not a definitive list and does not include 'Highly Toxic' materials. Separate guidance is in development.

Hazard Group	Type of cabinet	Safety Sign and suggested wording	Other information	Max allowed (where applicable)
<b>Flammable Liquids</b> E.g. alcohols, toluene, hexane, acetone etc.	Metal flammable storage cabinet to BS EN 14470-1:2004, offering minimum 30 minutes fire resistance.	 Warning: Flammable materials	Flammable liquids must never be stored in a refrigerator or freezer unless they are known to be spark proof.  Cabinets should be positioned away from doors and fire evacuation routes.	50 litres of highly flammable liquid stored in any one laboratory.  250 litres of flammable liquid.  500 ml working volume (on open bench)  Where any of these volumes is exceeded a DSEAR** assessment is required.
<b>Halogenated liquids</b> E.g. chloroform, trichlorethylene	Ventilated cabinets	 Halogenated Solvents	Ideally stored separately. Where small quantities are stored, secondary container may be adequate.	
<b>Acids</b> Mineral acids (inorganic)	Cabinets with an inert finish to resist corrosion and		Use corrosion resistant storage trays for	

Hazard Group	Type of cabinet	Safety Sign and suggested wording	Other information	Max allowed (where applicable)
<p><i>Eg Hydrochloric acid, Phosphoric acid, Sulphuric acid</i></p> <p>Organic acids</p> <p><i>Eg acetic acid, formic acid</i></p>	vented where possible to remove fumes	<p>Corrosive Substance</p> <p>Acid</p>	<p>containment of leaks, drips etc.</p> <p><b>Separate storage for organic and inorganic acids.</b></p> <p>Do not store acids above eye level.</p>	
Alkalis (bases)	Same type cabinets as acid storage	 <p>Corrosive Substance</p> <p>Alkali / Base</p>	Where space is limited and quantities are small, can be stored in the acid cabinet, must be on separate shelf or secondary containers used.	
<p>Oxidisers</p> <p>Eg Permanganates, perchlorates, fuming nitric acid</p>	Metal cabinet.	 <p>Oxidising Agents</p>	<p>Must not be stored with flammable solvents or reducing agents.</p> <p>e. Metal hydrides, boranes, silanes, hydrazine etc.</p>	

\*\* DSEAR – Dangerous Substances and Explosive Atmospheres regulations

Additional guidance on chemical reactivity - [Brethericks](#); [NIOSH pocket guides](#)

**NB** Materials which are subject to licence requirements for purchase, storage or use will be stored in accordance with the requirements of that licence, eg explosive materials.

Some common lab/workshop chemicals.

Chemical	Incompatible with:	Chemical	Incompatible with:
Acetic acid	Chromic acid, nitric acid, hydroxyl compounds, ethylene glycol, perchloric acid, peroxides, permanganates	Bromine	See Chlorine
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury	Calcium oxide	Water
Acetone	Concentrated nitric acid and sulphuric acid mixtures	Carbon (activated)	Calcium hypochlorite, all oxidizing agents
Alkali and alkaline earth metals	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, halogens	Chlorates	Ammonium salts, acids, powdered metals, sulphur, finely divided organic or combustible materials
Ammonia (anhydrous)	Mercury(e.g., in manometers), chlorine, calcium hypochlorite, iodine, bromine, hydrofluoric acid (anhydrous)	Chromic acid and chromium trioxide	Acetic acid, naphthalene, camphor, glycerol. Alcohol, flammable liquids in general
Ammonium nitrate	Acids, powdered metals, flammable liquids, chlorates, nitrites, sulphur, finely divided organic combustible materials	Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, benzene, finely divided metals, turpentine
Aniline	Nitric acid, hydrogen peroxide	Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulphide
Arsenical materials	Any reducing agent (e.g. boranes, metal hydrides, hydrazine, silanes etc.)	Copper	Acetylene, hydrogen peroxide
Azides	Acids	Cumene hydroperoxide	Acids (organic and inorganic)

Some common lab/workshop chemicals.

Chemical	Incompatible with:	Chemical	Incompatible with:
Cyanides	acids	Nitrates	Acids
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens	Nitric acid (concentrated)	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulphide, flammable liquids and gases, copper, brass, any heavy metals
Fluorine	All other chemicals	Nitrites	Acids
Hydrocarbons (such as butane, propane, benzene)	Fluorine, chlorine, bromine, chromic acid, sodium peroxide	Nitroparaffins	Inorganic bases, amines
Hydrocyanic acid	Nitric acid, alkali	Oxalic acid	Silver, mercury
Hydrofluoric acid (anhydrous)	Ammonia (aqueous or anhydrous)	Oxygen	Oils, grease, hydrogen, flammable liquids, solids, and gases
Hydrogen sulphide	Fuming nitric acid, oxidizing gases	Perchloric acid	Acetic acid, anhydride, bismuth and its alloys, alcohols, paper, wood, grease, oils
Hypochlorites	Acids, activated carbon	Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen	Phosphorus (white)	Air, oxygen, alkalies, reducing agents
Mercury	Acetylene, fulminic acid, ammonia	Potassium chlorate	Sulphuric and other acids

Some common lab/workshop chemicals.

Chemical	Incompatible with:	Chemical	Incompatible with:
Potassium perchlorate (see also chlorates)	Sulphuric and other acids	Sodium nitrite	Ammonium nitrate and other ammonium salts
Potassium permanganate	Glycerol, ethylene glycol, benzaldehyde, sulphuric acid	Sodium peroxide	Ethyl and methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural
Selenides	Reducing agents	Sulphides	Acids
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds, fulminic acid	Sulphuric acid	Potassium chlorate, potassium perchlorate, potassium permanganate (similar compounds of light metal, such as sodium, lithium)
Sodium	Carbon tetrachloride, carbon dioxide, water	Tellurides	Reducing agents