Chemical Storage Guide

Store chemicals in cabinets and on shelving provided for such storage. Avoid storing chemicals on top of cabinets, and never store any material within 18 inches of the ceiling in sprinklered areas. Avoid storing chemicals on bench tops or in fume hoods. Store flammable materials in a Flammable Storage Cabinet. Label all chemical containers, including samples, appropriately with the full name and hazard warning. Use secondary containment if the chemicals are stored near a sink or other drain or to segregate incompatible materials (e.g. acids and bases in a corrosive storage cabinet).

Do not store chemicals alphabetically as a general group. This may result in incompatibles appearing together on a shelf. Separate chemicals into their primary hazard class or organic and inorganic families and then related and compatible groups. Separation of chemical groups can be by different shelves within the same cabinet if spill containers are used.

The labels on several manufacturers' chemicals include a Storage Code. This color-coded bar provides a visible guide to storage compatibility by primary hazard class. Some of the groups may be further subdivided. The five storage groups are:

RED: Flammable. Store in area segregated for flammable reagents.
BLUE: Health Hazard. Toxic if inhaled, ingested or absorbed through skin. Store in secure area.
YELLOW: Reactive and oxidizing reagent. May react violently with air, water or other substances. Store away from flammable and combustible materials.
WHITE: Corrosive. May harm skin, eyes, mucous membranes. Store away from red-, yellow-, and blue-coded reagents.
GRAY, GREEN or ORANGE: Presents no more than moderate hazard. For general chemical storage.

Related and Compatible Storage Groups[1]

Inorganic Family

- Metals, hydrides
- Halides, sulfates, sulfites, thiosulfates,phosphates, halogens
- Amides, nitrates (ammonium nitrate), nitrites, azides
- Hydroxides, oxides, silicates, carbonates, carbon
- Sulfides, selenides, phophides, carbides, nitrides
- Chlorates, perchlorates, perchloric acid, chlorites, hypochlorites, peroxides, hydrogen peroxide
- Arsenates, cyanides, cyanates
- Borates, chromates, manganates, permanganates
- Nitric acid, other inorganic acids
- Sulfur, phosphorus, arsenic, phosphorus pentoxide

Organic Family

- Acids, anhydrides, peracids
- Alcohols, glycols, amines, amides, imines, imides
- Hydrocarbons, esters, aldehydes
- Ethers, ketones, ketenes, halogenated hydrocarbons, ethylene oxide
- Epoxy compounds, isocyanates
- Peroxides, hydroperoxides, azides
- Sulfides, polysulfides, sulfoxides, nitrites
- Phenols, cresols

[1] From National Research Council *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals.* 1995. (http://www.nap.edu/catalog/4911.html)

Classes of Incompatible Chemicals

A	Incompatible with	B
Alkali and alkaline earth		*Water*
Carbides		Acids
Hydrides		Halogenated organic compounds
Hydroxides		Halogenating agents
Metals		Oxidizing agents
Oxides		
Peroxides		
Azides, inorganic		*Acids*
		Heavy metals and their salts
		Oxidizing agents
Cyanides, inorganic		*Acids*
		Strong bases
Nitrates, inorganic		*Acids*
		Reducing agents
Nitrites, inorganic		*Acids*
		Oxidizing agents
Organic compounds		*Oxidizing agents*
Organic acyl halides		Bases
		Organic hydroxy and amino compounds
Organic anhydrides		Bases
		Organic hydroxy and amino compounds
Organic halogen compounds		Group IA and IIA metals
		Aluminum
Organic nitro compounds		Strong bases
Oxidizing agents		*Reducing agents*
Chlorates		Ammonia, anhydrous and aqueous
Chromates		Carbon
Chromium trioxide		Metals
Dichromates		Metal hydrides
Halogens		Nitrites
Halogenating agents		Organic compounds
Hydrogen peroxide		Phosphorus
Nitric acid		Silicon
Nitrates		Sulfur
Perchlorates		
Peroxides		
Permanganates		
Persulfates		
Reducing agents		*Oxidizing agents*
		Arsenates
		Arsenites
		Phosphorus
		Selenites
		Selenates