CHEMICAL STORAGE TABLE SUPPLEMENT FOR CHEMICAL STORAGE SCHEME ONE SOG

Flammable Toxic Reactive Corrosive

Group	Properties	Important Notes	Storage	Examples
Group 1 **Flammables and Combustibles (Includes organic acids)** AKA: organics, solvents	Flammable liquids have a flashpoint (FP) below 100°F (38°C). Combustible liquids have a flashpoint above 100°F and below 140°F Flashpoint is the lowest temperature at which a liquid gives off enough vapor to ignite.	The MSDS provides the flashpoint for flammable and combustible liquids. Ignition sources include spark from electrical outlet, vacuum pumps, and static electricity.	FP ≤ 140°F (60°C) store in a metal flammable cabinet that is completely enclosed. If vented, the vent must have a flash arrestor. NO cardboard shipping boxes in the cabinet. Never store in cold rooms or refrigerators (unless the refrigerator is explosion proof). Do not store with oxidizers or inorganic acids.	<u>All alcohols</u>: butanol, ethanol, methanol, isopropanol, etc. Acetone, acetaldehyde, acetonitrile, amyl acetate, benzene, cyclohexane, dimethyldichlorosilane, dioxane, ether, ethyl acetate, hexane, hydrazine, methyl butane, picolene, pyridine, all silanes, tetrahydrofuran, toluene, triethylamine, xylene, etc. <u>Combustibles</u>: dimethylformamide, formaldehyde
Peroxideformers Generally, Group I	Highly flammable. May form low-power explosives that are very sensitive to shock, sparks, light, strong, oxidizing and reducing agents, friction, and high temperatures.	Read Peroxide-Forming Chemicals SOP Distillation, evaporation, or other concentration can present a high risk of explosion. Test for peroxide formation monthly.	Store with flammables. Date when received and when opened. Dispose of as hazardous waste after 12 months.	Ether (diethyl and isopropyl), tetrahydrofuran, acetaldehyde, etc.
Group II (volatile) and VII (non-volatile) Toxics AKA: poisons, organics, halogenated solvents, carcinogens, mutagens, reproductive toxins	Chronic exposure is a health hazard. Avoid inhalation, skin contact. Many toxins solvents are highly volatile. Non-flammable (some are combustible)	Commonly mistaken for a flammable liquid.	OK to store with flammables in flammable cabinet. Alternative: Any enclosed cabinet or shelf to protect from accidental breakage. Store containers larger than 1 liter below bench level. Do not store with bases.	<u>Volatile toxics</u>: carbon tetrachloride, chloroform, dimethyl sulfate, halothane, mercapotethanol, methylene, chloride (dichlormethane), phenol. <u>Non-volatile toxics</u>: acrylamide, solutions, ethidium bromide, triethanolamine

Group III (oxidizing acids)	Oxidizing acids are highly reactive, and may react with each other. Corrosive, burns skin and eyes.	Concentrated (>70%) perchloric acid reacts with wood and paper and may ignite. Never store concentrated perchloric acid directly on wood shelves without a plastic tub. Also, see Group IV.	Oxidizing acids should be separated from each other by use of plastic tub. Oxidizing acids can be stored with mineral acids.	Oxidizing inorganic acids: nitric, sulfuric, perchloric, chromic.
Group IV Mineral Acids and Organic Acids	Corrosive, burns skin and eyes. Organic acids are combustible (FP>°F<140°F)	Acid mist escapes from closed bottles and builds up inside unvented cabinets causing corrosion of labels, metal cabinets, etc.	Store in the vented cabinet under fume hood or in a vented stand alone cabinet. Do not store with bases. Store below eye level. It is a good idea to keep hydrofluoric acid in a separate tub or tray to avoid contamination of surfaces.	Mineral acids: hydrochloric, phosphoric, hydrofluoric Organic acids: acetic, acrylic, acetic anhydride, butyric, formic, glacial acetic, isobutyric, trifluoroacetic, etc.
Group V Lipid Inorganic Bases AKA: alkaline	Corrosive burns skin and eyes.	Avoid contact with acids and volatile toxics.	Store in a separate cabinet. Alternative: store with other chemicals and keep in a separate tub or tray. Can be stored with flammables if no volatile toxic (halogenated organics) are present. Store below eye level.	Sodium hydroxide, ammonium hydroxide, calcium hydroxide, potassium hydroxide, aqueous ammonia
Group VI Oxidizing Liquids (Excluding Oxidizing acids) AKA: reactives	Provides oxygen that feeds fires and makes fires very difficult to extinguish. Oxidizing liquids react with many things potentially	The oxidizer symbol (a burning O) may be mistaken for a flammable symbol (a flame). Oxidizers are considered	Store on a separate shelf. Do not store directly on wood shelf or paper. If stored near other chemicals, including other	Ammonium persulfate, hydrogen peroxide ≥ 30%

	causing explosions or corrosion of surfaces.	ignitable for hazardous waste management purposes.	oxidizers keep in a separate tub or tray. Do not store with flammables.	
Group VIII **Pyrophorics and Water Reactives**	Ignite spontaneously in air. Water reactives can react with moisture in the air to produce a flammable gas. Metal hydrides react violently with water, some ignite spontaneously in air.	Read Pyrophoric and Water Reactives SOP	Waterproof double containment (the shipping container may be an appropriate second container). Isolate from other chemicals. OK to store with dry chemicals. Do not store with liquid chemicals (oxidizers, flammables, acids, bases, toxics, etc.)	Metal hydrides: sodium borohydride, calcium hydride, lithium aluminum hydride. Pyrophorics: borane, diborane, dichloroborane, lithium, phosphorous, 2-furaidehyde, diethyl aluminum chloride, trimethyl aluminum, etc.
Group IX **Dry Solids**	Varies. They are dry, but when wet, may have different properties, depending on the material.	Keep Dry. Indicate where the more toxic materials are located. (See SOP)	Cabinets are suggested, but shelves are O.K. Store above liquids and separate from liquids.	Benzidine, cyanogens, bromide, oxalic acid, potassium hydroxide.
Chemicals with no great storage options e.g. anhydrides	These materials react with many things.	Keep isolated in some way by using secondary containment. Minimize quantities on hand.	Will depend on specific chemical. Call EHS for guidance.	Acetic anhydride, trichloro acetic anhydride