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Berkeley Lab Corrosives Storage Requirements

Below are LBNL storage requirements for corrosive chemical storage:

Segregate acids from bases in their own secondary containment trays.

Segregate acids from reactive metals such as sodium, potassium, and magnesium.

Segregate oxidizing acids from organic acids and flammable and combustible materials.

Segregate acids from chemicals that could generate toxic or flammable gases upon contact, such as sodium cyanide, iron sulfide, and calcium carbide.

Store inorganic acids in corrosive- or acid-storage cabinets. Their interiors and hardware (door hinges and shelf brackets) are corrosion resistant. Corrosive-storage cabinets can be located under fume hoods or exist as stand-alone units. Flammable-storage cabinets are not corrosion resistant and must not be used for acid storage.

Store acids and bases in sealed, air-impermeable containers with tight-fitting caps, as opposed to loose-fitting lids or glass stoppers. An exception to this is mixtures that may produce gases that can pressurize the container. These include piranha etch and aqua regia. Piranha etch is a mixture of 98% sulfuric acid and 30% hydrogen peroxide in ratios ranging from 2-4:1. It produces gaseous oxygen. Aqua regia is a 1:3 mixture of concentrated nitric and hydrochloric acids. It produces nitrogen dioxide, chlorine, and nitrosyl chloride gases. Either mix fresh batches and use on the same day, or fit containers with vented caps to prevent over-pressurization.

Keep piranha etch and aqua regia in fume hoods at all times. Note: Normally hazardous materials kept in fume hoods should be limited to those that are in use or that are needed for an activity. But because piranha etch and aqua regia may off-gas, these should be kept in a fume hood.

Do not store aqueous sodium and potassium hydroxide solutions in aluminum drip trays. These will corrode aluminum and compromise its integrity.

Store nitric acid in its own secondary containment trays. Nitric acid can combine with other acids to form nitrogen oxides and nitrosyl halide gases.

Combustible organic carboxylic acids such as formic and acetic acids may be stored in a flammable storage cabinet along with other flammable and combustible liquids. These acids do not pose the same corrosive and oxidizing hazards of other mineral and oxidizing acids.