

Corrosive Substances-Generic Procedures for Safe Handling and Storage¹

Corrosive substances cause destruction of living tissue by chemical action at the site of contact and can be solids, liquids, or gases. Corrosive effects can occur not only to the skin and eyes, but also to the respiratory tract through inhalation and to the gastrointestinal tract through ingestion. In order to minimize these potential hazards, precautionary procedures must be observed when handling corrosives.

Handling

- Safety goggles, protective gloves, and a laboratory coat shall always be worn when working with corrosive chemicals. A face shield, rubber apron, and rubber booties may also be appropriate depending on the work being performed and concentration of the corrosive.
- Appropriate protective gloves which are resistant to permeation or penetration from corrosive chemicals must be selected and tested for the absence of pin holes prior to use (see Section 4.4.3 for glove selection guidelines).
- Eyewashes and safety showers should be readily available in areas where corrosive chemicals are used and stored. In the event of skin and eye contact with a corrosive chemical, the affected area should be immediately flushed with water for 15 minutes. Contaminated clothing shall be removed and medical attention sought.
- Corrosive chemicals should be handled in a chemical hood to ensure that any possible hazardous or noxious fumes generated are adequately vented. Lab hoods must be utilized when handling concentrated acids ($\geq 6M$).
- When mixing concentrated acids with water, add the acid slowly to the water. Allow the acid to run down the side of a container and mix slowly to avoid violent reactions and splattering. Never add water to acid.
- When performing exothermic reactions, inspect glass for cracks prior to use as heat can shatter glass.
- Appropriate spill material should be available in areas where corrosive chemicals are used and stored.
- Protective carriers must be used when transporting corrosive chemicals.
- Hydrofluoric acid (HF) is highly corrosive to body tissue, even in dilute solutions. Personnel using HF must be specifically trained prior to use and special work practices must be implemented to prevent exposures. HF users should consult the DRI [Guidelines for Using Hydrofluoric Acid](#).
- Perchloric acid must not be heated in a regular chemical hood. A specially designed lab hood is required. For additional safety information see DRI [Guidelines for Using Perchloric Acid](#).

Storage

- Containers and equipment used for storage and processing of corrosive materials must be corrosive resistant.
- Corrosive chemicals shall be stored below eye level, preferably near the floor to minimize the danger of their falling from cabinets or shelves.

¹Additional topics, such as appropriate PPE, spill procedures, disposal, etc., must be added in order to use this document as a stand alone training tool to satisfy lab specific training requirements. In addition, these generic procedures must be adapted for the use of HF, perchloric and fuming nitric acids. See additional information found on the MSDS and in guidelines posted on the safety web site.

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- Acids and bases must be stored separately from each other. Secondary containers can be used to help with separation within a corrosive cabinet.
- Inorganic acids must be separated from flammable/combustible material as they are particularly reactive to each other.
- Acids must be segregated from active metals (e.g., sodium, potassium, and magnesium) and from chemicals that can generate toxic gases (e.g., sodium cyanide and iron sulfide)

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