



Guidance Document

Safe Handling of Hydrofluoric Acid

[This is a brief summary. Read the full MSDS for more details before handling.]

Introduction: Hydrofluoric acid is hydrogen fluoride (HF) dissolved in water. Pure HF is a gas at room temperature. Typically purchased is the concentrated hydrofluoric acid which contains 48-52% HF in water.

Uses: Concentrated hydrofluoric acid is used in the fabrication of electronic components, for the etching of glass and in the manufacture of semiconductors. Dilute solutions on campus find such uses as biological staining, metal etching and ore digestion.

Chemical Properties: Hydrofluoric acid is a clear, colorless, corrosive liquid. Concentrated and dilute solutions, as well as vapors, can cause severe burns to tissues. It will attack glass, concrete, rubber, leather, many metals and organic compounds. Upon reaction with metals, explosive hydrogen gas may be formed.

Health Hazards: Acute (immediate) effects include respiratory irritation, burns to body tissues, pulmonary edema. Exposure to concentrated acid can cause immediate, severe, penetrating burns. Dilute solutions may cause equally serious effects, but symptoms may be delayed for up to 24 hours. Exposure to dilute solutions may not have immediate sensations of pain or irritation. Chronic (long term) effects from repeated exposure to small quantities can include bone loss, kidney dysfunction, joint damage and blood disorders. Persons with pre-existing skin disorders, eye problems, kidney or pulmonary function may be more susceptible.

Exposure Control: Always handle with adequate ventilation, as in a fume hood. Always wear safety glasses or goggles. Wear nitrile or neoprene or other HF resistant gloves (latex is not effective). Wear a long-sleeved, buttoned lab coat, long pants and closed-toe shoes. Other PPE may be required, such as face shield, foot coverings, apron, etc.

Safe Handling: Do not use hydrofluoric acid when working alone or after hours. Users of hydrofluoric acid must be trained in its hazards and in procedures for use and disposal. Use and store hydrofluoric acid in containers made of polyethylene, polypropylene, Teflon, lead or platinum. Do not use or store in glass. Very small spills may be neutralized and absorbed with calcium carbonate or calcium hydroxide. Call EHS (ext. 3316) for assistance with any spill. Collect all HF-containing wastes in plastic bottles for disposal by the EHS Department.

First Aid: Immediately move victim to safe area and flush the affected area of the body with copious quantity of water for at least 5 minutes. Remove all contaminated clothing while flushing with water. Apply calcium gluconate gel to the exposed tissues. Seek medical attention for any significant exposure. HF acid burns require immediate and specialized medical treatment.