



Laboratory Safety Fact Sheet: Hydrofluoric Acid

The fact sheet below gives hazard information and precautions for the use of Hydrofluoric Acid in laboratory settings.

Hydrofluoric Acid

Hydrofluoric acid (HF) is a highly corrosive and toxic solution of hydrogen fluoride in water. HF is colorless with a strong, irritating odor. It appears in different forms including fuming liquid and compressed gas. HF can penetrate deep into tissue, causing severe chemical burns, and systemic toxicity. HF is toxic from even extremely low concentrations, with the OSHA Permissible Exposure Limit (PEL) being 3 ppm/8 hr and the NIOSH Immediately Dangerous to Life and Health (IDLH) Level being 30 ppm.

Hazards

Skin and Eye contact	-Causes severe, delayed burns—damage may not be immediately painful but worsens over time
Inhalation	-Vapors can cause severe irritation, lung damage, pulmonary edema, or be fatal
Systemic Toxicity	-Absorption through skin or inhalation can cause hypocalcemia (low blood calcium), cardiac arrhythmias, or cardiac arrest
Corrosivity	-Strongly corrosive to skin, eyes, mucous membranes, and many materials like glass, metals

Personal Protective Equipment (PPE)

- Lab coat (acid-resistant, if available)
- HF- resistant gloves (Neoprene is a common HF resistant material but check with the manufacturer for HF resistance before purchasing) or double nitrile glove
- Closed-toed shoes and long pants
- Safety glasses
- Apron (acid-resistant) when handling concentrations above 30%

Safe Handling Practices

- **Training required:** Only trained personnel may work with HF.

- Buddy system is recommended. If someone gets hurt, the other person can provide help.
- **Work Location:** Always use HF in a **certified chemical fume hood**.
- **Containers:** Store in **plastic (polyethylene or Teflon) containers**—never glass.
- **Handling:**
 - Use smallest quantities possible.
 - Clearly label all containers.

Special Precautions

- **Calcium Gluconate Gel** must be accessible in all areas where HF is used.

Storage & Disposal

- Hydrofluoric acid should be collected in a plastic container (polyethylene or Teflon) fitted with an appropriate cap.
- Store HF in secondary containment (plastic trays) in cool, dry, ventilated areas.
- Segregate from incompatible chemicals (e.g. bases, glass, metals, strong oxidizers).
- Dispose of HF waste through EHS Hazmat.

Emergency Response

Skin Contact

1. Call Georgia Tech PD @ 404-894-2500 and/or EHS @ 404-216-5237
2. Immediately flush with water for 5 minutes.
3. Apply Calcium Gluconate Gel to affected area with nitrile gloves.
4. Seek emergency medical care immediately—even small exposures can be fatal.

Eye Contact

1. Call Georgia Tech PD @ 404-894-2500 and/or EHS @ 404-216-5237
2. Flush eyes with water at eyewash station for at least 15 minutes.
3. Hold eyelids open.
4. Seek immediate emergency medical care.

Inhalation

1. Call Georgia Tech PD @ 404-894-2500 and/or EHS @ 404-216-5237
2. Move victim to fresh air immediately.
3. Seek immediate emergency medical care.

Ingestion

1. Call Georgia Tech PD @ 404-894-2500 and/or EHS @ 404-216-5237
2. Do not induce vomiting.
3. Rinse mouth with water.
4. Seek immediate emergency medical assistance.

Contact EHS:

For spills, exposure or questions:

EHS Emergency Number: 404-216-5237

Email: lab-chemsafety@gatech.edu