



Technical Bulletin - KPM-101

Safe Use and Handling of Hydrofluoric Acid (PV) - HF

CAS Number: **7664-39-3**

Packing Group: **II**

Hazard Classification: **8, 6.1**

About Us

Kredence Electronics Materials India Pvt. Ltd has been providing high quality, photovoltaic grade chemicals to their customers throughout India and internationally since 2015. We at Kredence are committed to customer satisfaction achieved by clearly understanding the customers' needs and fulfilling those requirements through continual improvement of products, services, and the quality management system. In addition to that, **our company values the safety and well-being of our employees, customers, community, and the environment surrounding us. Our highly trained and experienced staff uses specialized equipment and technology to certify our customers receive quality service. Kredence Electronics Materials performs routine sample analysis to ensure grade specification requirements are met.**

Purpose

When working with hazardous materials on a day-to-day basis, it is important to be aware of the chemicals' properties, risks, and safety precautions that need to be followed. This Technical Bulletin serves the purpose to educate our customers and employees about the chemical nature, safety, and provisions associated with Hydrofluoric Acid (HF).

Hydrofluoric Acid EL / PV Grade 40-50% is currently provided by Kredence Electronics Materials India Pvt. Ltd. (Other concentrations/ specifications can be available)

Product Overview

Hydrofluoric Acid is a colorless gas and solution with a strong irritating odor. Although hydrofluoric acid is toxic and corrosive, it is a nonflammable solution that is soluble in water. This acid is incompatible with materials made of glass and most metals, but compatible with thermoplastics and elastomers. This solution has many industrial applications; some of which are glass etching (fiber optics), production of refrigerants, solar silicon processing, pharmaceutical, plastic production (PTFE), etc. Hydrofluoric Acid 40-50% PV / Electronic grade (HF), which is offered by our company, is used in: photovoltaic industry to manufacture solar polysilicon, wafers, and cells; electronic industry to manufacture semiconductor wafers. Hydrofluoric acid can be harmful to your health if exposed to greater concentrations for a long period of time. Refer to [OSHA](#) for exposure limit guidelines.

Safety

- ALL staff members should be trained on safe handling of HF
- Always wear PPE (goggles, face shield, gloves, closed shoes or rubber boots, full length clothing, apron, acid resistant body suit)
- Evacuate area in case of leak or release of HF
- ONLY attempt to clean-up a small spill or leak. Please call for help if the spill is large.



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- Restrict access to area until completely cleaned
 - Remove or isolate any flammable/ combustible material in the area
 - Use proper equipment for clean-up. Spill-Kit can be used for small spills.
 - Small spills can be absorbed with spill control pads and use acid neutralizer such as sodium bicarbonate.
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Handling

- NEVER work alone with this chemical. Another person with training on rescue should ALWAYS be nearby.
 - Protective equipment and First-Aid supplies should be available
 - Any signs of illness and symptoms should be reported IMMEDIATELY
 - Keep away from combustible material
 - NEVER add water to HF instead add HF to water(cold)
 - When mixing/diluting, stir slowly and cautiously
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Storage

- Store in cool, dry, and ventilated area
 - DO NOT store in a metal or glass container. ONLY store in approved containers. (IBC, plastic drums, containers, totes)
 - All containers and storage areas should be labeled properly
 - DO NOT store in direct sunlight
 - Keep containers tightly closed
 - DO NOT allow smoking or food consumption while handling
 - Refer to Figure 1 on Page 3 for appropriate storage practices
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Transport

- If HF needs to be transported from one lab area to another. Place the material in a clean, compatible container and tightly close the lid.
 - Remove gloves to avoid contamination onto door handles and other objects.
 - Use a new clean glove, if required.
 - Work with a partner to help open doors and handle objects.
 - Properly use forklift and trolleys.
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***If exposed to Hydrofluoric Acid, immediately follow First-Aid procedures as stated in MSDS.**

References

- (1.) E. B. Segal, "First aid for a unique acid, HF: A sequel," Chemical Health & Safety, Editor(s): Philip Wexler, 2000, 7 (1), Pages 18-23, DOI: 10.1021/acs.chas.8b07106.
- (2.) H.Y. Li, "Hydrofluoric Acid" *Encyclopedia of Reagents for Organic Synthesis*, John Wiley & Sons Ltd, Online, Apr. (15), 2001.



- (3.) K. F. Stahl, "HYDROFLUORIC ACID" *Journal of the American Chemical Society*, 1896, 18(5), Pages 415–425, Publication Date: May 1, 1896. DOI: 10.1021/ja02091a001.
- (4.) National Center for Biotechnology Information. "PubChem Compound Summary for CID 14917, Hydrofluoric acid" *PubChem*, <https://pubchem.ncbi.nlm.nih.gov/compound/Hydrofluoric-acid>. Accessed: 4 February, 2021.
- (5.) R. Cope, "Miscellaneous Inorganic Toxicants" *Veterinary Toxicology for Australia and New Zealand*, Elsevier, Amsterdam, NL., Editor(s): Rosalind Dalefield, 2017, Ch. 17 Pages 289-332, ISBN 9780124202276.
- (6.) S. E. Gad, "Hydrofluoric Acid" *Encyclopedia of Toxicology (Second Edition)*, Elsevier, Amsterdam, NL., 2005, Pages 542-543, ISBN 9780123694003.
- (7.) S. Verhaverbeke et. al., *J. Electrochem. Soc.*, 1994, 141 2852.



Figure 1: Hydrofluoric Acid (HF) PV Grade stored in compatible IBCs and properly labeled with pictograms and the company's customized label.

Hydrofluoric Acid 49%	Electronic Grade
	UN1790
Hazard messages : <ul style="list-style-type: none">• Toxic by Inhalation.• Corrosive to Metals.• Causes Severe Skin Burns.• Causes Severe Eye Damage.• Prolonged or Repeated Exposure May Cause Damage to Organs.	DANGER
Hazard Prevention : <ul style="list-style-type: none">• If contact with skin, eyes flush with plenty of water and consult a physician immediately.• If feeling uncomfortable, seek medical attention.• Put on suitable protective clothing, wear gloves and goggles/helmet.• Seal the container firmly and store it in a well ventilated area.	HYDROFLUORIC ACID Class 8, 6.1 PG - II Molecular Weight 20.01g/mol CAS No. 7664-39-3
Important: <ul style="list-style-type: none">• No liability accepted for accidents arising while handling or use.• Empty container before disposal.• Disposal to be done as per the local Govt. rules applicable.	
 Kredence Performance Materials (India) Pvt. Ltd. 301, Block-C, C-Square, Sarabhai Campus, Vadodara-390023, Gujarat, India.	Customer Care Contact : Technical Service Manager Contact : +91 265 2324280 Email : info@kredencematerials.com

Figure 2: Customized product label included on all IBCs and containers that customers receive from Kredence. Label includes important product information.

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