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SAFETY DATA SHEET

HYDROFLUORIC ACID

SECTION 1: Identification of the substance/mixture and of the company/undertaking Trade name:

1.1 Product identifier:	
CAS Number:	7664-39-3
EC number:	231-634-8
1.2 SYNONYMS:	• Hydrogen fluoride solution • Fluorhydric acid • HF (chemical formula) • Fluoric acid

SECTION 2: Hazards identification:

2.1 Classification of the substance or mixture:	Classification according to Regulation (EC) No 1272/2008 The substance is classified according to the CLP regulation.
2.2 Label elements:	Labelling according to Regulation (EC) No 1272/2008 Acute toxicity, oral (category 3) Acute toxicity, dermal (category 3) Skin corrosion/damage (category 1A) Serious Eye Damage/Eye Irritation (Category 1) Specific Target Organ Toxicity (Single Exposure) (Category 1) Environmental Hazards (Aquatic Toxicity)(category 1)
Hazard Pictograms:	
Signal Word:	Danger
Hazard statements:	**H301:** Toxic if swallowed. **H311:** Toxic in contact with skin. **H331:** Toxic if inhaled. **H314:** Causes severe skin burns and eye damage. **H318:** Causes serious eye damage. **H400:** Very toxic to aquatic life. **H410:** Very toxic to aquatic life with long-lasting effects.

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	H370: Causes damage to organs**.**
Precautionary Statements:	**P260:** Inhalation of Hydrofluoric acid fumes, vapors, or mist is hazardous; proper ventilation and respiratory protection are crucial. **P262:** Prevent skin and eye contact with Hydrofluoric acid, as it can cause severe damage. **P280:** Always wear appropriate personal protective equipment (PPE), including gloves, eye protection, and protective clothing, when handling Hydrofluoric acid. **P301+P312:** In case of ingestion, immediate medical attention is required. Poisoning can occur if swallowed. **P302+P352:** If Hydrofluoric acid comes into contact with the skin, it should be washed off immediately with soap and water. **P303+P361+P353:** If the acid is on skin or clothing, remove contaminated clothing and rinse skin thoroughly with water. **P305+P351+P338:** In case of eye contact, rinse with water and remove contact lenses if necessary. Seek medical help immediately. **P310:** If exposure occurs, immediate medical attention is necessary due to the severe hazards. **P405:** Hydrofluoric acid should be stored in a secure location to prevent unauthorized access, especially given its corrosive and toxic properties. **P501:** Proper disposal is essential to avoid environmental contamination, particularly to water bodies, due to Hydrofluoric acid's toxicity to aquatic life.
2.3 Other hazards:	

Inhalation:	can cause severe respiratory irritation, pulmonary edema, and systemic toxicity, potentially leading to death.
Ingestion:	can cause severe gastrointestinal burns, systemic toxicity, and damage to internal organs such as the liver, kidneys, and bones, potentially leading to death.
Skin Contact:	can cause severe chemical burns, deep tissue damage, and systemic toxicity, potentially affecting bones, kidneys, and other organs if not treated promptly.
Eye contact:	can cause severe eye damage, including permanent blindness, corneal burns, and deep tissue injury.
Chronic Exposure:	At low concentrations, it can lead to cumulative systemic toxicity, affecting bones, teeth, kidneys, and the liver, potentially causing fluorosis, renal damage, and other long-term health issues.
Aggravation of pre-existing conditions :	may aggravate pre-existing respiratory conditions (like asthma or COPD) and skin disorders (such as dermatitis or eczema)

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation:	Substances
CAS No:	Description: 7664-39-3 hydrofluoric acid
Identification number(s):	EC number: 231-634-8

SECTION 4: First aid measures

4.1 Description of first aid measures	
General information:	

After inhalation:	If breathed in, move person immediately into fresh air. Consult a physician
After skin contact:	Remove contaminated clothing. Wash with soap and water. Massage Calcium Gluconate Gel into the burnt area, continue this procedure until medical attention is available. Consult a physician.
After eye contact:	Immediately flush eyes with plenty of water or saline solution for at least 15 minutes. consult a physician.
After swallowing:	Immediately rinse mouth and provide fresh air. Drink plenty of Milk of Magnesia or 6 effercescent soluble Calcium Tablets in water. Do not induce vomiting. Consult a physician.
4.2 Most important symptoms and effects, both acute and delayed:	can cause severe respiratory, skin, and eye damage, as well as gastrointestinal burns, while delayed effects may include bone damage, kidney and liver dysfunction, and dental fluorosis from prolonged or repeated exposure.
4.3 Indication of any immediate medical attention and special treatment needed:	Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media:	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
5.2 Special hazards arising from the substance or mixture:	Hydrogen fluoride (HF). Oxides of: Fluorides
5.3 Advice for firefighters:	Wear fully protective suit, safety glasses and respiratory device . Cool tanks/drums with water spray/remove them into safety.
5.4 further information:	no data available

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Avoid dust accumulation. Seek medical attention.
6.2 Environmental precautions:	Do not enter this chemical into drains or into environment.
6.3 Methods and material for containment and cleaning up:	Bund material with inert material, carefully dilute with water spray to minimize fume emmision ahd heat generation. Carefully neutralize using excess of slaked lime or soda ash to form a slury. take up slurry into plastic containers and hold for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling:	For use in are with adequate ventilation. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material Do not use in confined spaces. Electrostatic discharge protection. Minimize dust generation and accumulation. Avoid ingestion and inhalation.
7.2 Conditions for safe storage, including any incompatibilities:	Store in original containers. Keep containers securely sealed
Requirements to be met by storerooms and receptacles:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
7.3 Specific end uses:	no data available

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters	
Additional information about design of technical facilities:	A system of local and general exhaust is recommended.
8.2 Exposure controls	
Appropriate engineering controls	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment:	Dust respirator, protective masks, wearing anti chemical gloves, rubber gloves, etc.
General protective and hygienic measures:	Eyes, body and hand protection, maintain indoor air unobstructed. Wear protective equipment.
	Respiratory protection: Required.
Protection of hands:	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws. Wash and dry hands.
	Eye protection: Required
Protection of Body:	Complete suit protecting against chemicals, Flame retardant antistatic protective clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties General Information	
Appearance: Form:	Fuming liquid
Colour:	Colourless
Odour:	Strong
pH-value:	2
Melting point/Melting range:	-35°C
Boiling point/Boiling range:	19.5°C
Flammability (solid, gaseous):	Non- Flammable

Ignition temperature:	Not applicable
Decomposition temperature:	Not applicable
Self-igniting:	Not applicable
Flash point:	Not applicable
Danger of explosion:	Not applicable
Explosion limits: Lower:	Not applicable
Explosion limits: Upper:	Not applicable
Vapour pressure:	750 mmHg
Density at 20 °C:	1.15 g/cm^3.
Relative density:	1.15
Vapour density:	16.5
Evaporation rate:	No data available
Solubility in / Miscibility with-·water at 20 °C:	Completely miscible
Partition coefficient:(n-octanol/water)	No data available
Viscosity:	1.2 cPs

SECTION 10: Stability and reactivity

10.1 Reactivity	No data available
10.2 Chemical stability	This chemical is stable under storage conditions.
10.3 Possibility of hazardous reactions	Under extreme heat, reactions can happen releasing fluorides.
10.4 Conditions to avoid	Avoid excessive heat for prolonged periods of time
10.5 Incompatible materials	Inorganic sulphides. Inorganic cyanides. Organic cyanides (nitriles). Strong alkalis. Water, steam, water mixtures.
10.6 Hazardous decomposition products	Toxic gases/vapours/fumes of: Hydrogen fluoride (HF)

SECTION 11: Toxicological information

11.1 Information on toxicological effects	
Acute Toxicity:	**LD50** (Oral, Rat) : no data available **LD50** (Dermal, Rabbit) : no data available **LC50** (Inhalation Rat) : no data available

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Skin corrosion/Irritation:	Causes burns
Serious eye damage/irritation:	Causes burns. Irritation, burning, lachrymation, blurred vision after liquid splash.
Respiratory damage/irritation:	Vapours irritate the respiratory system, and may cause coughing and difficulties in breathing.
Ingestion:	May cause chemical burns in mouth, oesophagus and stomach. Nausea, vomiting.
Germ cell mutagenicity:	No data available
Carcinogenicity:	No data available
Reproductive toxicity:	No data available
Specific target organ toxicity - single exposure:	No data available
Specific target organ toxicity - repeated exposure:	No data available
Aspiration hazard:	No data available
Signs and Symptoms of Exposure:	Refer section 2.3
11.2 Additional toxicological information	
Biodegradability:	not biodegradable.

SECTION 12: Ecological information

12.1 Toxicity **Aquatic toxicity:**	LC50 (fish): 5.9-7.5 mg (96hr)
12.2 Persistence and degradability:	Not biodegradable.
12.3 Bioaccumulative potential:	No data available
12.4 Mobility in soil:	No data available
12.5 Other adverse effects:	No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods	
Uncleaned packaging **Recommendation:**	dispose of in accordance with local hazardous waste regulations
Recommended cleansing agents:	Mild Soap and Water, Isopropyl Alcohol (IPA), sodium bicarbonate or sodium hydroxide.

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SECTION 14: Transport information

14.1 UN-Number · ADR, ADN, IMDG, IATA:	1790
14.2 UN proper shipping name · ADR, ADN, IMDG, IATA:	HYDROFLUORIC ACID
14.3 Transport hazard class(es) · ADR, ADN, IMDG, IATA :	8
14.4 Packing group · ADR, IMDG, IATA:	2
14.5 Environmental hazards:	No data available
14.6 Special precautions for user:	Handle responsibly.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Directive 2012/18/EU	Directive 2012/18/EU, under that this substance is classified in listed substance as corrosive.
Named dangerous substances:	This substance is listed in the annex 1 to the directive.
15.2 Chemical safety assessment:	Chemical assessment has not been carried out.

SECTION 16: Other information

The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.