

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:

Aqueous Hydrofluoric Acid

CHEMICAL FORMULA:

HFA

COMPANY NAME:

PELICHEM: The Chemical Division of NECSA

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2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME OF SUBSTANCE:

CONCENTRATION:

Aqueous Hydrofluoric Acid - contains water.

SYNONYMS:

Hydrofluoric Acid, Solution.
Aqueous Hydrogen Fluoride.

UN No:

1790

CAS-No:

7664-39-3

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Very toxic by inhalation, in contact with skin and if swallowed. Causes severe burns. Inhalation of vapors in high concentration may cause shortness of breath (lung oedema). Ingestion causes burns of the upper digestive and respiratory tracts. Will penetrate skin and attack underlying tissues and bone.

4. FIRST AID MEASURES

GENERAL ADVICE:

Remove from exposure, lie down. Show this safety data sheet to the doctor in attendance.

SKIN CONTACT:

Wash off immediately with plenty of water. Take all contaminated clothing off immediately. First treatment with calcium gluconate paste. Consult a physician.

INGESTION:

Call a physician immediately. Drink plenty of water. Do not induce vomiting. If possible drink milk afterwards.

INHALATION:

Remove from exposure, lie down. Consult a physician. Oxygen or artificial respiration is needed. Observe patient for 24 hours for possible delayed symptoms.

EYE CONTACT:

Rinse thoroughly with plenty of water for at least 15 minutes keeping eyes wide open. Consult a physician.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:

Water or water spray for fires adjacent to non-leaking tanks or containers. Carbon dioxide (CO₂), dry powder.

SPECIFIC METHODS:

Cool containers/tanks with water spray if not leaking.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

In case of fire, wear a self-contained breathing apparatus and full protective flameproof clothing.

SPECIFIC HAZARDS:

Reacts violently to water and can splash acid onto personnel.

EXTINGUISHING MEDIA WHICH MUST NOT BE USED FOR SAFETY REASONS:

Water or water spray for fires adjacent to leaking tanks or containers.

6. ACCIDENTAL RELEASE MEASURES

ENVIRONMENTAL PRECAUTIONS:

Prevent product from entering drains or environment.

METHODS OF CLEANING UP:

Dam up - dilute with water. Neutralize with soda ash or lime. Soak with inert absorbent material.

PERSONAL PRECAUTIONS:

Ensure adequate ventilation. Use personal protective equipment. Evacuate personnel to safe areas.

7. HANDLING AND STORAGE

TECHNICAL MEASURES AND PRECAUTIONS:

Use only in area provided with appropriate exhaust ventilation.

INCOMPATIBLE PRODUCTS:

Reacts violently with water. Strong oxidizing agents - metals.

HANDLING AND OPEN STORAGE CONDITIONS:

Keep container tightly closed in a dry, cool and well-ventilated area.

PACKAGING MATERIAL:

70% HF (Industrial Grade) mild steel pressure vessels. (Bulk deliveries in South Africa only).
< 60% HF 200 liter or 25 liter polyethylene cans.

SAFE HANDLING DEVICE:

Do not breathe vapors or spray mist. Avoid contact with skin and eyes. Wear self-contained breathing apparatus and a protective suit.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING MEASURES TO REDUCE EXPOSURE:

EYE PROTECTION:

Tightly fitting safety goggles and face-

Ensure adequate ventilation, especially in confined areas.

HAND PROTECTION:

Hydrofluoric acid-resistant and solvent-resistant gloves (gloves made of VITON*).

HYGIENE MEASURES:

Avoid contact with skin, eyes and clothing. When using - do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace.

RESPIRATORY PROTECTION:

Wear a positive-pressure supplied-air respirator with face shield (In case of higher concentration) Wear self-contained breathing apparatus and protective suit.

shield.

SKIN AND BODY PROTECTION:

Complete suit with rubber or plastic boots protecting against Hydrofluoric Acid.

CONTROL PARAMETERS:

OSHA PEL (3ppm). ACGIH TLV (3ppm).

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM:

Liquid.

COLOR:

Colorless

DENSITY:

70% HF 1225 kg/m³ at 20°C
70% HF 1260 kg/m³ at 0°C

pH:

Strongly acidic.

ODOR:

Pungent.

VAPOR DENSITY:

2.21 (Air 1).

BOILING POINT:

70% HF: 63°C at sea level.

MELTING POINT:

70% HF: 75°C.

SOLUBILITY:

Water solubility: completely miscible.

MOLECULAR WEIGHT (HF):

20.01

VAPOR PRESSURE:

70% HF 20 kPa at 20°C.
70% HF 43 kPa at 40°C.

10. STABILITY AND REACTIVITY

STABILITY:

Stable at normal conditions.

CONDITIONS TO AVOID:

Gives off Hydrogen by reaction with metals.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen, by reaction with metals. Silicon Tetra fluoride by reaction with silicates, e.g.: glass or sand.

MATERIALS TO AVOID:

Glass, metals and bases

11. TOXICOLOGICAL INFORMATION

HUMAN EXPERIENCE:

Will penetrate skin and attack underlying tissues and bone.

CHRONIC TOXICITY:

May cause fluorosis.

LOCAL EFFECTS:

Very toxic by inhalation, in contact with skin and if swallowed. Risk of serious damage to eyes. Ingestion causes burns of the upper digestive and respiratory tracts. Causes severe burns.

ACUTE TOXICITY:

LC50/inhalation/4h/rat = 456ppm.
LC50/inhalation/1h/mouse = 342 ppm.

12. ECOLOGICAL INFORMATION:

ECOTOXICITY:

Acute fish toxicity = 60ppm*/fish/lethal/fresh water (* = time period not specified.)

13. DISPOSAL CONSIDERATIONS

SAFE AND PREFERRED DISPOSAL METHODS:

Contact manufacturer.

CONTAMINATED PACKAGING:

Contact manufacturer.

14. TRANSPORT INFORMATION

HS NO:

2811.11

UN NO:

1790

EMERGENCY ACTION CODE:

4WE

ADR/RID:

Class: 8;6.1

TREM-CARD:

ADR/RID-Labels:

Corrosive

Proper shipping name:

Hydrofluoric Acid, Solution/ Fluoric Acid, Solution/ Hydrogen Fluoride, Solution

IMO:

Class: 8;6.1

Packaging group: I

MFAG: 750

IMDG Page: 8184

IMO-Labels:

Corrosive

Proper shipping name:

Hydrofluoric Acid, Solution/ Fluoric Acid, Solution/ Hydrogen Fluoride, Solution

ICAO:

UN No: 1790

Packaging group: I

CLASS: 8;6.1

ICAO-Labels: Corrosive

Subrisk: Poison

Proper shipping name:

Hydrofluoric Acid, Solution/ Fluoric Acid, Solution/ Hydrogen Fluoride, Solution

15. REGULATORY INFORMATION

APPLICABLE REGULATIONS:

Refer to country of destination.

SAFETY AND RISK PHRASES:

According to (National equivalent of EC-Dir.67/548), as amended, the product is labelled as follows:

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- T⁺** : Very toxic
C : Corrosive
R26/27/28 : Very toxic by inhalation, in contact with skin and if swallowed.
R35 : Causes severe burns.
S7/9 : Keep container tightly closed in well ventilated area.
S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 : Wear suitable protective clothing, gloves and eye/face protection.
S45 : In case of an accident or if you feel unwell, seek medical advice immediately

(show the label where possible).

16. OTHER INFORMATION

RECOMMENDED USE:

1. Pickling agent for stainless steel.
2. Polishing of cut glass.
3. Cleaning of diamonds.
4. Chemical cleaning of components.
5. Preparation of natural gas wells.
6. Preparation of metal surfaces for plating.

REFERENCES:

1. (CED) Chemical Exchange Directory S.A., Geneva, Switzerland.
2. Hydrogen Fluoride Handling Guidelines, AECI Chloralkali and Plastics Ltd, Sasolburg, South Africa, April 1989.
3. Unpublished Reports, AEC of SA Ltd, Pelindaba, South Africa, 1993.
4. IMDG SABS 0228, SABS 0229.

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