

SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

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MATERIAL NAME: **TITANIUM ETCHANT TFT**

REVISED: December 2023

CHEMICAL FAMILY: Aqueous Acid Solution

SYNONYMS: Hydrogen fluoride solution

Product Number: 060-0032000

SECTION 2. HEALTH HAZARD INFORMATION

Hazard Statements

H402 Acute harm to aquatic life: Category 3
H290 Corrosive to metals: Category 1
H300 Acute toxicity oral : Category 2
H310 Acute toxicity dermal: Category 1
H330 Acute toxicity inhalation : Category 2
H314 Skin corrosion / skin irritation : Category 1A
H318 Serious eye damage / Eye irritation : Category 1
H371 Special target organ systemic toxicity single exposure: Category 2
H373 Special target organ systemic toxicity repeated exposure : Category 2

Pictograms or Hazard symbols



Signal word: Danger

May be corrosive to metals

Fatal if swallowed. Toxic if inhaled.

Causes severe skin burns and eye damage. Causes serious eye damage.

May cause damage to bones.

Harmful to aquatic life.

Precautionary Statements

P234 Keep only in original container.
P260 Do not breathe fume/gas/mist/vapors.
P262 Do not get in eyes, on skin, or on clothing
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P273 Avoid release into the environment.
P280 Wear protective gloves, clothing, and eye and face protection.

P301 + P310 If swallowed, immediately call a physician.
 P301 + P330 + P331 If swallowed, rinse mouth. Do not induce vomiting.
 P303 + P361 + P353 If on skin (or hair) take off immediately all contaminated clothing.
 Rinse skin with water.
 P304 + P340 If inhaled, remove person to fresh air and keep comfortable for breathing.
 P305 + P351 + P338 If in eyes, rinse cautiously with water for several minutes.
 P308 + P311 If exposed or concerned, call a physician.
 P314 Get medical advice/attention if you feel unwell.
 P330 Rinse mouth.
 P363 Wash contaminated clothing before reuse.
 P390 Absorb spillage to prevent material damage.
 P405 Store locked up.
 P406 Store in corrosive resistant container.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3.COMPOSITION/INFORMATION ON INGREDIENTS

Material		Wt %	
Hydrofluoric Acid	CAS# 7664-39-3	8-15	3 ppm ACGIH TLV
Surfactant	Proprietary	< 0.5	
Water	CAS# 7732-18-5	85-92	
Total		100	

SECTION 4. FIRST AID MEASURES

EFFECTS OF OVEREXPOSURE

FIRST AID:

Eye Contact: Both liquid and vapor are corrosive to naked eye; in case of contact flush eyes well for 15 minutes, lifting the lower and upper eyelids occasionally. May cause permanent eye damage or blindness. Seek medical attention.

Skin Contact: Obtain medical attention: Both liquid and vapor are corrosive to exposed skin. Flush skin well with water for 15 minutes, wash with soap and water. Remove affected clothing, get medical attention. May cause deep, penetrating burns. May cause hypocalcemia which in rare cases is fatal. Special medical treatment is required.

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration. Seek medical attention. Inhalation of vapors may cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract. In severe cases, may pulmonary edema, circulatory failure, and death. Depletes calcium levels in the body if not promptly treated, resulting in death.

Ingestion: Will cause severe burns to the mouth and severe and permanent damage to the digestive tract. Causes gastrointestinal burns and perforation of the digestive tract. Get Medical Attention immediately. Do not induce vomiting; give large quantities of water. Can affect kidney function and be fatal if swallowed. Severe and possibly fatal hypocalcemia is likely to occur unless medical treatment is promptly initiated.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point and Method: Non-flammable

Autoignition Temperature: NA

Flammability Limits In Air: NA

Extinguishing media: Use water spray or suitable agent for surrounding fire. Do not use solid water streams. Acid reacts violently with water and can splatter acid onto personnel.

Special fire fighting procedures: Wear chemically retardant gear and NIOSH approved self-contained breathing apparatus. Thermal decomposition produces irritating and toxic fumes. Extreme heat or contact with metals can release flammable hydrogen gas.

Toxic gases released: Hydrogen fluoride, hydrogen gas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

SPILLS, LEAKS: Ventilate area of leak or spill. Stop leak if possible to do so without risk. Clean-up personnel must wear protective clothing and NIOSH approved respirator. Dike and cover the contaminated areas with absorbent, non-combustible material such as earth, sand, or vermiculite. Neutralize with alkaline material such as soda ash or lime. Do not use combustibles. Do not flush to sewer.

SECTION 7. HANDLING AND STORAGE

Wash thoroughly after handling. Remove contaminated clothing and wash before re-use. Do not breathe mist or vapor. Do not expose eyes, skin, or clothing. Keep container closed tightly. Avoid contact with combustibles. Do not use with metal tools or items. Use with adequate ventilation or respiratory protection. Do not store near combustibles or in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances. Separate from metals, alkali, and organics. Residue in empty containers may still be hazardous.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

Respiratory protection: Wear NIOSH/MESA approved full or half face piece (with goggles) respiratory protective equipment to avoid exposure to vapors above 0.1ppm. A respiratory protection program complying with requirements of 29CFR 1910.134 is recommended.

Ventilation: Where adequate ventilation is not available, use NIOSH approved vapor respirator with dust, fume and mist filters. Local ventilation through fume hoods or laminar flow stations is also preferred. Keep fumes away from strong bases.

Protective gloves: Skin contact should be minimized through use of acid resistant gloves.

Other protective equipment: Steel tipped shoes/eye wash station/chemical safety chemical retardant clothing.

Eye protection: Safety goggles / face shield. Do not wear contact lenses.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form :	Liquid
Appearance :	Colorless
Odor :	Acrid, pungent
pH :	< 1
Melting point:	-35 °C
Boiling point/Boiling range :	103-105 °C
Flash point :	Non-flammable.
Ignition point :	Will not ignite.
Danger of explosion:	Product is not explosive
Decomposition temperature:	> 150 °C
Vapor density (Air = 1) :	2.21 @ 70 °F
Volatiles, %:	80-85
Vapor pressure at 15° C, mm Hg:	~0.08
Specific gravity :	1.105
Solubility in / Miscibility:	Completely miscible in water

Evap. Rate (Water = 1):

No information found

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable. Conditions to avoid: Excess heat, sunlight, confined spaces.

Incompatible with: Glass, concrete, carbonates, sulfides, cyanides, common metals.

Hazardous decomposition products: Hydrogen fluoride fumes, hydrogen gas, silicon tetrafluoride gas.

Hazardous polymerization will not occur.

Conditions to avoid: Excess heat, direct sunlight.

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE:

LC_{Lo} (inhalation, human): 200 ppm/30 min

LC₅₀ (inhalation, rat): 5,000 ppm/1 hr

LC₅₀ (inhalation, mouse): 1400 ppm/1 hr

SUBCHRONIC and CHRONIC:

Effects include systemic fluoride toxicity, osteosclerosis, and mottling of the teeth.

Hypocalcemia, metabolic acidosis, pulmonary edema, and death can occur from high level chronic exposure.

OTHER DATA:

None.

SECTION 12. ECOLOGICAL INFORMATION

250 ppm/fish/lethal/freshwater (time period not specified)

SECTION 13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose of in accordance with all federal state and local regulations. Send waste to an approved waste disposal facility. If permitted by regulations, neutralize with alkali.

SECTION 14. TRANSPORTATION INFORMATION

Class 8, 6.1

PG II

UN1790

Shipping Name: Hydrofluoric Acid Solution

SECTION 15. REGULATORY

Symbol: C, Corrosive

R-Phrase: 35, causes severe burns

S-Phrases: 23-36/37/39-45 Do not breathe vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

The following component of this product is regulated as toxic chemicals under section 313 or Title III SARA, and 40CFR 372:

Hydrogen Fluoride CAS# 7664-39-3

SECTION 16. OTHER INFORMATION

NFPA Codes:

Health: 3

Flammability: 0

Reactivity: 0

WHMIS Codes:

Health: 4

Flammability: 0

Reactivity: 0

R35: Causes severe burns.

Ingredients are TSCA listed.