

SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

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MATERIAL NAME: **Palladium Etchant TFP**
REVISED: March 1, 2022
CHEMICAL FAMILY: Aqueous Acid Mixture
Product Number: 060-0031000

SECTION 2. HEALTH HAZARD INFORMATION

Hazard Statements

H290 Corrosive to Metals: Category 1
H302 Acute toxicity Oral : Category 4
H330 Acute toxicity Inhalation : Category 2
H314 Skin corrosion / Skin irritation : Category 1B
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.

Harmful if swallowed. Harmful if inhaled.

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

Health hazard. Causes damage to liver through prolonged or repeated exposure.

Precautionary Statements

P234 Keep only in original container.
P260 Do not breathe fume/gas/mist/vapors.
P264 Wash thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves, clothing, and eye and face protection.
P284 In case of inadequate ventilation, wear respiratory protection.
P301 + P312 If swallowed, call a physician if you feel unwell.
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.
P310 Seek medical assistance if exposed.
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.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
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 %
Ferric Chloride	CAS# 7705-08-0	25-35
Hydrochloric Acid	CAS# 7647-01-0	3-4
Water	CAS# 7732-18-5	> 60
Total		100

SECTION 4. FIRST AID MEASURES

EFFECTS OF OVEREXPOSURE

FIRST AID:

Eye Contact: Corrosive to naked eye; in case of contact flush eyes well for 15 minutes, lifting the lower and upper eyelids occasionally. May cause blindness. Seek medical attention.

Skin Contact: Obtain medical attention: Corrosive to exposed skin. Flush skin well with water for 15 minutes, wash with soap and water. Remove affected clothing, get medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration. Seek medical attention.

Ingestion: May cause 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.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	<u>LOWER</u>	<u>UPPER</u>
non-flammable	NA		NA	NA

Extinguishing media: Water spray or fog, carbon dioxide and dry chemical, anything suitable for surroundings

Special fire fighting procedures: Wear chemically retardant gear and NIOSH approved self-contained breathing apparatus. Thermal decomposition produces irritating and toxic fumes.

Toxic gases released: Hydrogen chloride, 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

should wear protective clothing and NIOSH approved respirator. Dike and cover the contaminated areas with absorbent, non-combustible material such as earth, sand, or vermiculite.

SECTION 7. HANDLING AND STORAGE

Wash thoroughly after handling. Remove contaminated clothing and wash before re-use. Do not breathe dust, 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.

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 rubber gloves.

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

Eye protection: Safety goggles / face shield

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form :	Liquid
Appearance :	Dark amber-brown
Odor :	Acrid
pH :	< 1
Melting point:	Not available
Boiling point/Boiling range :	Not available
Flash point :	Non-flammable.
Ignition point :	Will not ignite.
Danger of explosion:	Product is not explosive
Decomposition temperature:	> 150 °C
Vapor density (Air = 1) :	1.3
Volatiles, %:	80-85
Vapor pressure at 15° C, mm Hg:	51 mm Hg at 25 °C
Specific gravity :	1.19 (CE-200); 1.33 (CE-100)
Solubility in / Miscibility:	Completely miscible in water
Evap. Rate (Water = 1):	> 1

SECTION 10. STABILITY AND REACTIVITY

Stability Stable X Conditions to avoid: Excess heat , light, confined spaces
Unstable

Incompatible with:

Most common metals, strong bases, metal oxides, amines, and carbonates.

Hazardous decomposition products: Hydrogen chloride

Hazardous	May occur	Conditions to avoid: Excess heat, damp.
polymerization:	Will not occur	X

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE:

Ferric Chloride (TLV/TWA) 900 mg/m³

Hydrochloric Acid (TLV/TWA) 5 ppm

Permissible Exposure Limit (PEL, HCl): 5 ppm

Toxicity: LD₅₀ (ipr-mouse) (mg/kg) -40 (HCl)

LD₅₀ (oral-rabbit) (mg/kg) -900 (HCl)

LC₅₀ (inhl-rat-lH) (ppm) -3124 (HCl)

Carcinogenicity: NTP: No IARC: No Z List: No OSHA reg: No

OTHER DATA:

Strongly corrosive. Vapor inhalation burns mucous membranes; causes coughing, dyspnoea. Inhalation may lead to oedemas in the respiratory tract. Burns skin, eyes (risk of blindness). Swallowing results in damage to mouth esophagus, and gastrointestinal tract; risk of perforation; bloody vomiting; death.

SECTION 12. ECOLOGICAL INFORMATION

Bioaccumulation : There is no evidence of bioaccumulation.

SECTION 13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose of in accordance with all federal state and local regulations. Send waste to an approved waste disposal facility.

SECTION 14. TRANSPORTATION INFORMATION

Class 8

PG III

UN2582

Shipping Name: Ferric Chloride, 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 a toxic chemical under section 313 or Title III SARA, and 40CFR 372:

Hydrochloric Acid CAS# 7647-01-0

SECTION 16. OTHER INFORMATION

NFPA Codes:

Health: 3

Flammability: 0

Reactivity: 0

R8: Contact with combustible material may cause fire.

R35: Causes severe burns.