

MATERIAL SAFETY DATA SHEET

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reviewed 04/04
emergency no (CHEMTREC) 1-800-424-9300

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME:

TANTALUM ETCH III TANTALUM-TUNGSTEN 532 TANTALUM NITRIDE SIE 8607
TANTALUM CTE-400-1

CHEMICAL FAMILY: Inorganic acid mixture

SECTION II. INGREDIENTS AND HAZARDS

| | CAS Number | % | HAZARD DATA |
|-----------------------|------------|---------|--|
| Hydrofluoric Acid, HF | 7664-39-3 | 5-15 | Toxicity (mg/M ³) 3ppm OSHA |
| Nitric Acid | 7697-37-2 | 25-40 | 2ppm |
| Water | 7732-18-5 | balance | |

SECTION III. PHYSICAL DATA

| | | | |
|-------------------------------|----------|--------------------------|------|
| Boiling point at 1 atm deg C | N/A | Specific gravity, 20/4°C | 1.02 |
| Vapor pressure at 15°C, mm Hg | N/A | Evap. Rate (BuAc = 1) | N/A |
| Vapor density (Air = 1) | N/A | Volatiles, % | 55 |
| Water solubility at 20°C | complete | Molecular weight | N/A |

Appearance & Odor: Clear colorless liquid with an acrid odor. Do not breathe fumes.

SECTION IV. FIRE AND EXPLOSION DATA

| | | | | |
|----------------------|---------------------|----------------------------|-------|-------|
| Flash point & method | Auto-ignition temp. | Flammability Limits in Air | Lower | Upper |
| Non-flammable | N/A | N/A | N/A | N/A |

Extinguishing media: Use water or carbon dioxide on fires in which HF is involved. In case of fire, the sealed container can be kept cool by spraying with water.

Special Fire Fighting procedures: Wear chemically retardant gear and NIOSH approved self-contained breathing apparatus. Keep up wind of fire and avoid getting water in drums or tanks, as it causes generation of heat and spattering.

SECTION V. REACTIVITY DATA

Stability: Unstable Conditions to avoid: In contact with air the HF gives off corrosive fumes which are heavier than air.
Stable X

Incompatible with: High temperatures, glass, silicon compounds, As₂O₃, P₂O₅, NH₃, CaO, NaOH, H₂SO₄, and reacts with bases to liberate H₂ on contact with metals. On heating could yield toxic fumes of fluorides

Hazardous decomposition products: Carbon monoxide and ammonia, oxides of nitrogen/fluorides.

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

SECTION VI. HEALTH HAZARD INFORMATION

Effects of exposure: Repeated ingestion may cause mottling on teeth and bone damage. Chronic overexposure could lead to fluorosis.

FIRST AID:

EYE CONTACT: Irritant to naked eye; in case of contact flush eyes well for 15 minutes. Obtain medical attention immediately. After washing affected area if no physician is available, apply one or two drops of .5% pontocaine solution or an equally effective aqueous topical anesthetic, followed by a second irrigation for 15 minutes.

SKIN CONTACT: Irritant to exposed skin. Flush skin well with water for 15 minutes. Obtain medical attention immediately. Apply iced aqueous or alcoholic solution of .13% of benzalkonium chloride; an iced 70% alcohol solution; or without delay cover the burn with a generous amount of 50:50 H₂O/MgSO₄ paste. Remove affected clothing and get medical attention.

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

INGESTION: Do not induce vomiting, contact physician immediately. Encourage patient to drink large quantities of water without delay. Then give milk or two ounces of milk of magnesia.

NFPA CODES

Health - 3

Flammability - 0

Reactivity - 1

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

SPILLS & LEAKS: Ventilate area of spill or leak. Remove ignition sources since hydrogen may be generated by reaction with metals. Do not flush into sewers or waterways. Apply MgSO₄ to the spill area. Follow up with an inert absorbent, and add soda ash or MgO.

DISPOSAL: Dispose of in accordance with all federal, state, and local regulations. The neutralized slurry can be scraped up for disposal in a RCRA approved waste facility. Porous material will absorb HF (concrete, wood, plastic, etc.) and become a hazard for an indefinite period of time.

SECTION VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH approved organic vapor respirators where adequate ventilation is not present. Wear self-contained breathing apparatus.

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.

PROTECTIVE GLOVES: Skin contact should be minimized through use of gloves (Neoprene or PVC).

OTHER PROTECTIVE EQUIPMENT: Steel tipped shoes / eye wash station / chemical safety shower / chemical retardant clothing.

EYE PROTECTION: Safety goggles / face shield.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

STORAGE AND HANDLING INFORMATION: Store in cool dry place with adequate ventilation separated from other chemicals. Do not store near incompatible products or open flame. Store away from direct sunlight and combustibles. Storage facility should be constructed

for containment and neutralization of spills.

DOT Class: Corrosive Liquids, Toxic, N.O.S.
(Nitric Acid & Hydrofluoric Acid)
UN 2922

APPROVALS: M.E. HECHT 5/4/87

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ADDENDUM TO MATERIAL SAFETY DATA SHEET REGULATORY STATUS

THIS ADDENDUM MUST NOT BE
DETACHED FROM THE MSDS
IDENTIFIES SARA 313 SUBSTANCE(S)
Any copying or redistribution of the MSDS
must include a copy of this addendum
(Chem.Key: PHACD)

HAZARD CATEGORIES FOR SARA

Section 311/312 Reporting

Acute Chronic Fire Pressure Reactive

| Product or Components Of Products | SARA EHS Sect. 302 | | SARA Section 313 Chemicals | | CERCLA Sec. 103 | RCRA |
|--------------------------------------|--------------------|------------|----------------------------|-------------------|-----------------|----------------|
| | RQ (lbs.) | TPQ (lbs.) | Name List | Chemical Category | RQ (lbs.) | Section 261.33 |
| HYDROGEN FLUORIDE (7664-39-3) | 100 | 100 | Yes | No | 100 | U134 |
| NITRIC ACID (7697-37-2) | No | No | Yes | No | No | No |

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity + 10,000 LBS.

SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center (800-424-8802); Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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