## CHEMICAL IDENTITY

<table>
<thead>
<tr>
<th>LABEL IDENTITY</th>
<th>TANTALUM NITRIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEMICAL NAME/SYNONYMS</td>
<td>TANTALUM NITRIDE</td>
</tr>
<tr>
<td>FORMULA</td>
<td>TaN</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
<td>METAL NITRIDE</td>
</tr>
<tr>
<td>HAZARDOUS INGREDIENTS</td>
<td>%: 100  CAS: 12033-62-4  TLV: 5 mg/m3  OSHA/PEL: 5 mg/m3</td>
</tr>
</tbody>
</table>

## PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR, FORM AND ODOR</td>
<td>Bronze or black powder, odorless</td>
</tr>
<tr>
<td>BOILING POINT (°C)</td>
<td>ND</td>
</tr>
<tr>
<td>DENSITY (gm/cc)</td>
<td>16.3</td>
</tr>
<tr>
<td>VAPOR PRESSURE (mm Hg)</td>
<td>NA</td>
</tr>
<tr>
<td>% VOLATILE BY VOLUME (%)</td>
<td>NE or NA</td>
</tr>
<tr>
<td>REACTION WITH WATER</td>
<td>None</td>
</tr>
<tr>
<td>EVAPORATION RATE (H2O=1)</td>
<td>NA</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER</td>
<td>Insoluble, soluble in nitric acid and HF</td>
</tr>
<tr>
<td>MELTING POINT</td>
<td>3310.0°C</td>
</tr>
</tbody>
</table>

## FIRE AND EXPLOSION HAZARD DATA

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLASH POINT</td>
<td>NE or NA</td>
</tr>
<tr>
<td>AUTOIGNITION TEMPERATURE (°C)</td>
<td>NA</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>EXTINGUISHING MEDIA</td>
<td>Not applicable. Use suitable extinguishing media for surrounding materials and type of fire.</td>
</tr>
</tbody>
</table>

**SPECIAL FIRE FIGHTING PROCEDURES**

Firefighters must wear full face, self-contained breathing apparatus with full protection clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

**UNUSUAL FIRE & EXPLOSION HAZARDS**

When heated to decomposition, tantalum nitride may emit toxic fumes of ammonia. Contact with moisture may evolve ammonia, which can form explosive mixtures with air.
TANTALUM NITRIDE  
MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:  
Pre-existing respiratory and skin disorders

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION:
- **Acute:** May cause irritation to the respiratory system, nose, throat and lungs and possible chemical burns to the mucous membranes.
- **Chronic:** May cause lung edema, laryngeal and bronchial spasms and possibly death.

INGESTION:
- **Acute:** May cause chemical burns to the mouth, throat and gastrointestinal tract.
- **Chronic:** No chronic health effects recorded.

DERMAL/EYE:
- **Acute:** May be corrosive and an irritant.
- **Chronic:** May cause irreversible damage to tissues, such as the conjunctiva, lens and cornea.

TARGET ORGANS: May affect the respiratory system, skin and eyes.

SKIN:
- **Acute:** May be corrosive and an irritant.
- **Chronic:** May cause dermatitis.

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SKIN:
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- **Chronic:** May cause dermatitis.

CARCINOGENICITY: None  
NTP: No  
IARC MONOGRAPHS: NO  
OSHA REGULATE: NO

EMERGENCY FIRST AID PROCEDURES:

**INGESTION:** Administer 1-2 cups of water or milk and induce vomiting, seek medical attention. Never give anything by mouth to an unconscious person.

**INHALATION:** Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention.

**SKIN CONTACT:** Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention if symptoms persist.

**EYE CONTACT:** Immediately flush eyes for at least 15 minutes with lukewarm water, lifting upper and lower eyelids. Seek medical attention if symptoms persist.

REACTIVITY DATA

STABILITY: Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY:

INCOMPATIBILITY (MATERIALS TO AVOID):

Water, moisture and strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS:

Ammonia fumes.

HAZARDOUS POLYMERIZATION:

Will Not Occur

CONDITIONS TO AVOID:

None
SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Wear self-contained breathing apparatus and full protective clothing. Isolate the area where the spill occurred and insure that proper ventilation is available and that water/moisture is kept out of the area. Vacuum up spill using a high efficiency unit and place in a container for proper disposal. Take care not to raise dust.

WASTE DISPOSAL METHOD:
Consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
NIOSH approved dust-mist-fume respirator

LOCAL EXHAUST
Maintain below TLV

MECHANICAL (general)
Not Recommended

SPECIAL
Handle in a controlled atmosphere.

OTHER
Handle in an inert gas.

PROTECTIVE GLOVES
Rubber gloves.

EYE PROTECTION
Safety glasses

OTHER PROTECTIVE EQUIPMENT
Wear protective clothing to prevent contamination of skin and clothes.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:
Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

Store in cool, dry area in tightly sealed container. Wash thoroughly after handling. Tantalum nitride may react in moist air. Handle and store in a controlled and inert gas such as argon.

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL. ANGSTROM SCIENCES MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

NA = NOT APPLICABLE
NE = NOT ESTABLISHED