



上海匠稀金属有限公司
SHANGHAI JIANGXI METALS CO., LTD.
718 Huamu Road, Pudong New Zone,
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Tel : +86 21 5059 7606
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* sales@jxmetals.com

We are the leading Chinese Manufacturer of

- Tantalum rod
- Tantalum bar
- Tantalum wire
- Tantalum plate
- Tantalum sheet
- Tantalum foil
- Tantalum strip
- Tantalum ribbon
- Tantalum tube
- Tantalum pipe
- Tantalum capillary tube
- Tantalum sputtering target
- Tantalum powder

- Niobium bar
- Niobium rod
- Niobium wire
- Niobium plate
- Niobium sheet
- Niobium foil
- Niobium strip
- Niobium ribbon
- Niobium tube
- Niobium capillary tube
- Niobium sputtering target
- Niobium powder

etc., in conformity with ASTM with the following sizes :

----- Tantalum -----

- Tantalum rod per ASTM B365 - 98 R05200 & R05400
4.0mm up to 95mm max. Diameter x random length; (0.16" up to 3.74" dia. x R/L)
- Tantalum wire per ASTM B 365 - 98 R05200 & R05400 & ASTM F560
0.15mm up to 4.0mm Diameter x coil at random length; (.006" up to 0.16" dia. in coil)
- Tantalum plate per ASTM B708 - 98 R05200 & R05400
 - a) thin tantalum plate
3.175mm up to 6.35mm Thickness x Width up to 650mm max. x Length;
(0.125" up to 1/4" thickness x up to 25.60" width, length upon request).
 - b) thick tantalum plate
6.35mm up to 20mm Thickness x Width up to 650mm max. x Length;
(0.25" up to 0.8" thickness x up to 25.60" width, length upon request).
- Tantalum sheet per ASTM B708 - 98 R05200 & R05400
0.381mm up to 3.175mm Thickness x Width up to 508mm max. x Length
(.015" up to 0.125" thk x width up to 20", length upon request)
- Tantalum foil per ASTM B708 - 98 R05200 & R05400
 - a) thin tantalum foil
0.025mm up to 0.1016mm Thickness x Width up to 100mm max. x Length;
(.001" - .004" thk x width up to 3.93", length upon request)
 - b) thick tantalum foil
0.1016mm up to 0.381mm Thickness x Width up to 100mm max. x Length;
(.004" - .015" thk x width up to 3.93", length upon request)
- Tantalum Strip per ASTM B708 - 98 R05200 & R05400
0.0508mm up to 1.016mm Thickness x Width up to 130mm max. x Length in coil;
(.002" - .04" thk x width up to 5.11" x spool)



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- Tantalum seamless tube per ASTM B521 - 98 UNS Grade R05200
 - a) Thin wall tubing
4.0mm up to 25.4mm Outer Diameter x 0.254mm up to 0.51mm Wall thickness x Length 3700mm max.;
(.158 " - 1" O.D. x .01" - .02" Wall x Length up to 12.15 ft')
 - b) Thick wall tubing
4.0mm up to 80mm Outer Diameter x 0.51mm up to 6.35 mm Wall thickness x Length 6 meters max.;
(.158 " up to 3.15" O.D. x .02" up to 0.25" Wall x Length up to 20 ft')
- Tantalum capillary tube per ASTM B521 - 98 UNS Grade R05200
1.0mm up to 4.0mm Outer Diameter x 0.2mm up to 0.508mm Wall thickness x Length up to 1016mm;
(.041 " up to .158" O.D. x .008" up to .02" Wall x Length up to 40')

- Tantalum sputtering target (purity 99.95%min, 99.99%min).
Sputtering targets come in a variety of forms, including flat, elongated rectangles or hollow cylinders or tubes. The rectangular targets are generally used in planar magnetrons, while the tubular targets are mostly used in rotatable or cylindrical magnetrons, our sputtering targets are available for all sputtering systems such as RF, DC Magnetron, Planar, Laser Ablation, DC Cathodic Arc, S-Gun, Delta, ring, enhanced, round, rectangular and custom designed. with the following size :

Required specification :

Purity : 99.95%min
Density: 98%min
Surface finish: 32 Rms max. or Ra 0.4 (RMS64 or better)
Flatness: 0.1mm or 0.15%max
Grain size: ASTM 4 or finer.

Size : a) Rectangular sputtering targets

1mm up to 12.7mm thickness x 600mm max. width x 1800mm max. length;
(.04 " up to 0.50" thick x width up to 23.62" x length up to 70')

b) Circular sputtering targets

25mm up to 650mm Diameter x 3mm up to 25.4mm Thickness
(1 " up to 25" diameter x 0.1181" up to 1" thickness)

c) Tubular sputtering targets (or Rotatable sputtering targets)

4.0mm up to 80mm Outer Diameter x 0.51mm up to 6.35 mm Wall thickness x
Length 6 meters max.;
(.158 " up to 3.15" O.D. x .02" up to 0.25" Wall x Length up to 20 ft')

----- Tantalum alloy-----

- Tantalum alloy (Ta10%W, Ta-10W, Ta10W) rod
4.0mm up to 95mm Diameter x random length,
90% tantalum, 10% tungsten, as per ASTM B365 - 92 R05255;
- Tantalum alloy (Ta2.5%W, Ta-2.5W, Ta2.5W) rod
4.0mm up to 95mm max. x random length.
97.5% tantalum, 2.5% tungsten, as per ASTM B365 - 92 R05252;
- Tantalum alloy (Ta10%W, Ta-10W, Ta10W) wire
0.15mm up to 3.0mm Diameter x coil at random length
90% tantalum, 10% tungsten, as per ASTM B 365 - 92 R05255;
- Tantalum alloy (Ta2.5%W, Ta-2.5W, Ta2.5W) wire
0.15mm up to 3.0mm Diameter x coil at random length
97.5% tantalum, 2.5% tungsten, as per ASTM B 365 - 92 R05252;



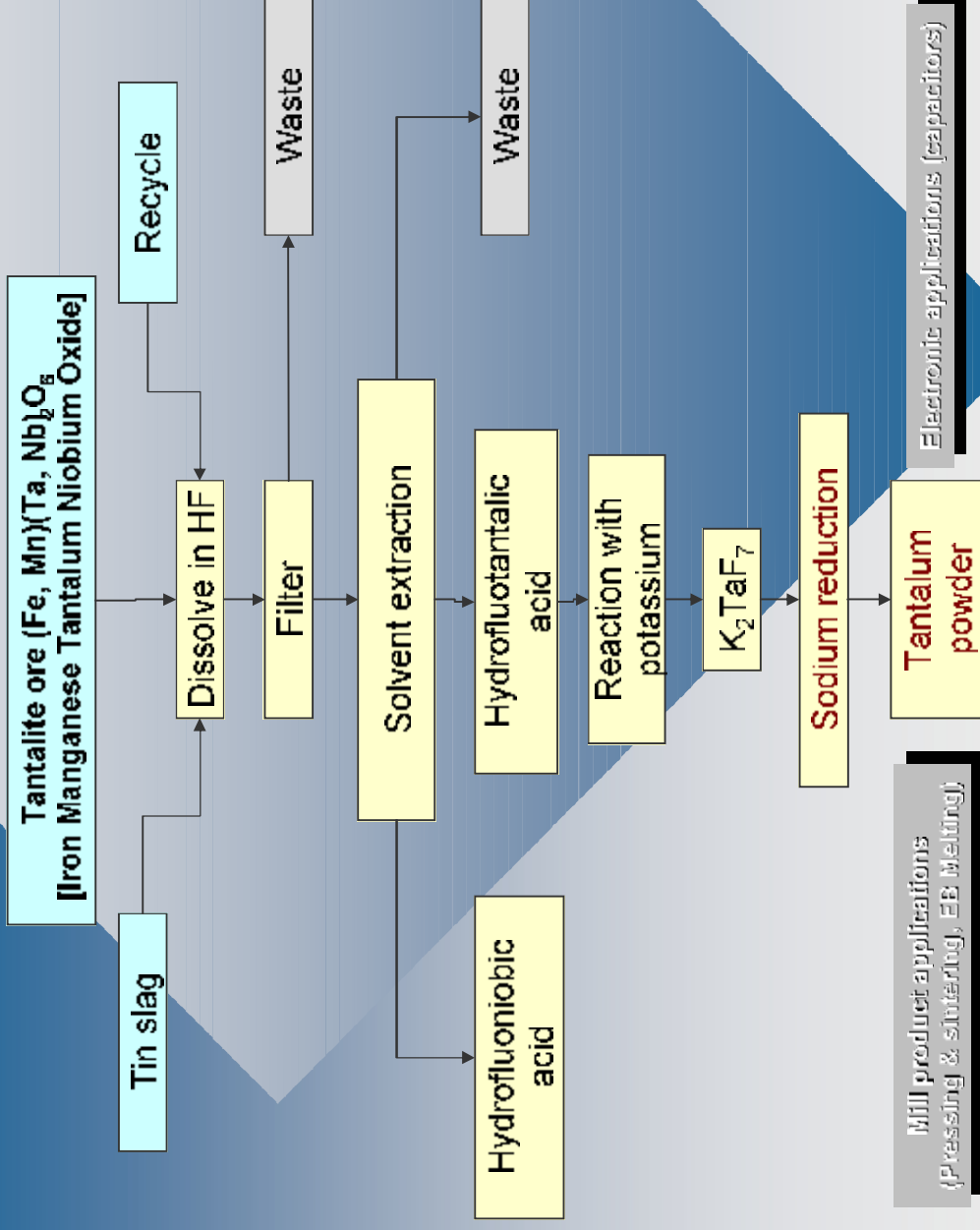
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-
- Tantalum alloy (Ta2.5%W, Ta-2.5W, Ta2.5W) Sheet
0.1mm up to 20mm thickness x Width up to 140mm x Length
Tantalum 97.5%, Tungsten 2.5%, as per ASTM B708 - 98 R05252;
 - Tantalum alloy (Ta2.5W, Ta-2.5W, Ta2.5W) seamless tube
OD2.0 up to 38 mm Outer Diameter x 0.2mm up to 5 mm Wall thickness x Length 6 meters max.
Tantalum 97.5%, Tungsten 2.5%, as per ASTM B521- 98 UNS Grade R05252;

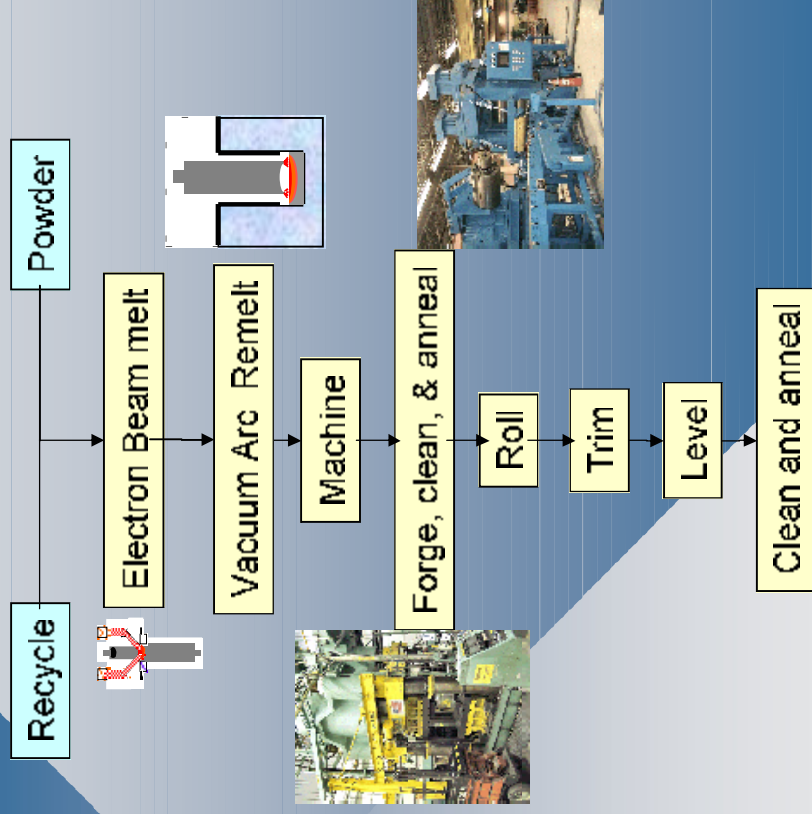
----- Niobium -----

- Niobium rod(ASTM B392 -95)
3mm up to 95mm Diameter x random length.
- Niobium wire (ASTM B 392 - 95)
0.5mm up to 3.0mm Diameter x R/L in coil
- Niobium 1% Zirconium wire (Nb-1Zr, Niobium alloy wire)
0.5mm up to 3.0mm Diameter x R/L in coil
- Niobium plate(ASTM B393 - 95 R04210)
Thick 0.1 up to 20mm x Width x Length
- Niobium sheet(ASTM B393 - 95 R04210)
Thickness 0.076 up to 0.15mm x Width 5 up to 130mm x Length
- Niobium foil(ASTM B393)
Thick 0.05 up to 0.10mm x Width 5-13mm x Length
- Niobium seamless tube per ASTM B394 99 R04210
 - a)Thin wall tubing
4.0mm up to 25.4mm Outer Diameter x 0.254mm up to 0.51mm Wall thickness x Length 3700mm max.;
(.158 " up to 1" O.D. x .01" up to .02" Wall x Length up to 12.15 ft")
 - b)Thick wall tubing
4.0mm up to 80mm Outer Diameter x 0.51mm up to 6.35 mm Wall thickness x Length 6 meters max.;
(.158 " up to 3.15" O.D. x .02" up to 0.25" Wall x Length up to 20 ft")
- Niobium capillary tube per ASTM B394- 99 R04210
1.0mm up to 4.0mm Outer Diameter x 0.2mm up to 0.508mm Wall thickness x Length up to 1016mm;
(.041 " up to .158" O.D. x .008" up to .02" Wall x Length up to 40')
- Niobium sputtering target (purity 99.95%min, or 99.99%min).
Required specification :
Purity : 99.95%min
Density: 98%min
Surface finish: 32 Rms max. or Ra 0.4 (RMS64 or better)
Flatness: 0.1mm or 0.15%max
Grain size: ASTM 4 or finer.
Size : a)Rectangular sputtering targets
1mm up to 12.7mm thickness x 600mm max. width x 1800mm max. length;
(.04 " up to 0.50" thick x width up to 23.62" x length up to 70')
- b)Circular sputtering targets
25mm up to 650mm Diameter x 3mm up to 25.4mm Thickness
(1 " up to 25" diameter x 0.1181" up to 1" thickness)

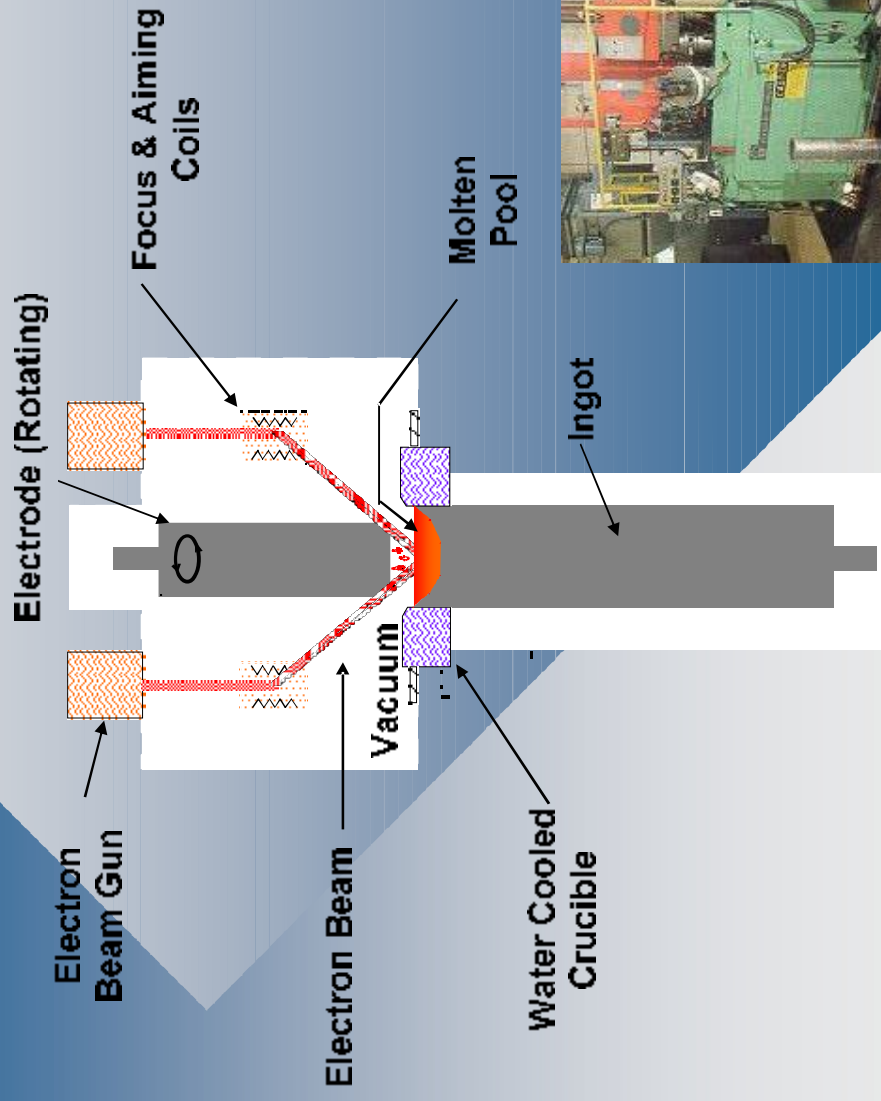
Tantalum Separation - Powder



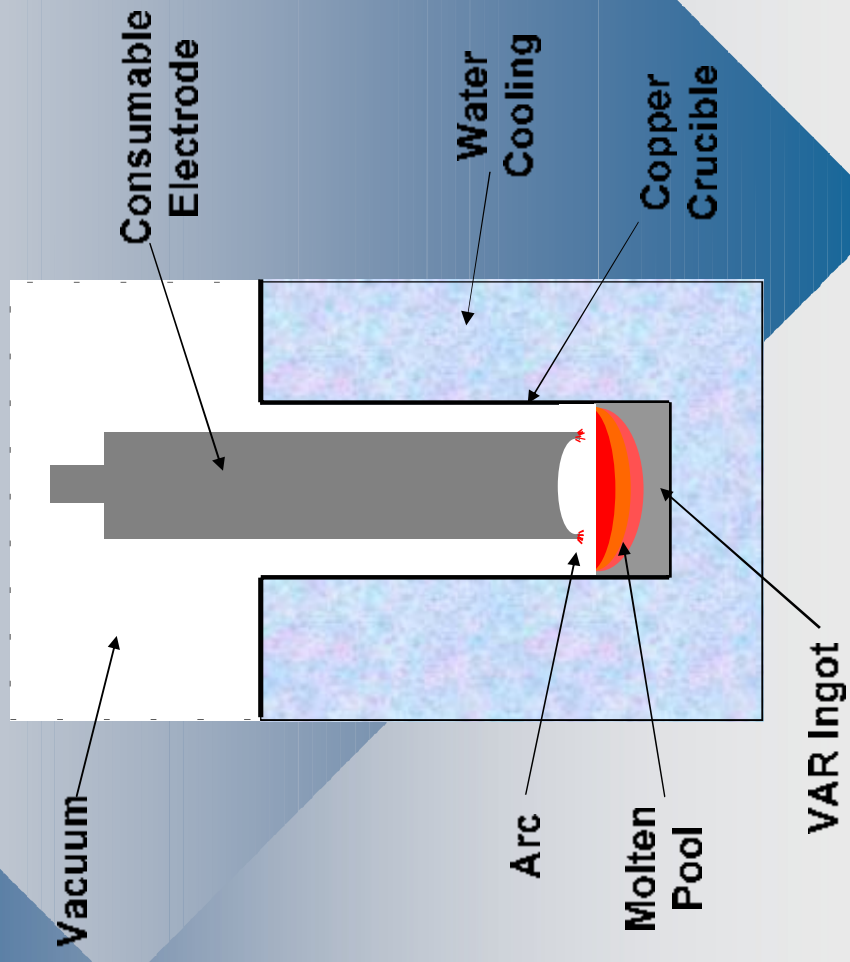
Process for Producing Ta Plate



Electron Beam Melting



Vacuum Arc Remelting





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MATERIAL SAFETY DATA SHEET

Tantalum

1. PRODUCT IDENTIFICATION

Trade Name : Tantalum
Chemical Family: Metal
Formula : Ta
Boiling Point: 5425 °C
Melting Point: 2996 °C
Vapor Density: N/A
Vapor Pressure: 0 @ 20 °C (mm/Hg)
%Volatiles by Weight N/A
Solubility in H₂O: Insoluble
Appearance and Odor: Gray to bluish, hard, malleable, ductile, no odor.
Specific Gravity: 16.69 gm/cc

2. FIRE AND EXPLOSION HAZARDS DATA

Flash Point (Method used) N/A
Autoignition Temperature: N/A
Flammable Limits Upper : N/A Lower: <0.2 oz/ft³ (powder)
Extinguishing Media To extinguish a metal powder fire use dry sand, dry graphite or other class "D" fire extinguishing powder. For fires involving bulk forms, use extinguishing media suitable for surrounding materials and type of fire.
Special Fire Fighting Procedures Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.
Unusual Fire & Explosion Hazard When heated, all forms of the metal (ingot, foil, powder) will react with water or steam to produce flammable/explosive H₂ (hydrogen gas). Avoid creating fine dusts, because as a powder, this product is capable of creating a dust explosion.

3. HEALTH HAZARD INFORMATION

Effects Of Exposure

Acute Effects:

Inhalation: No information available on significant adverse effects.
Ingestion: Evidence suggests low toxicity potential due to poor absorption by the oral route.
Skin : May cause irritation.
Eye : May cause mild irritation.
Other: Has anticoagulant effect when given intravenously.



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Chronic Effects

Inhalation: Repeated or prolonged exposure to tantalum alloys may have caused a mild fibrosis and chronic rhinitis in exposed workers and may play a role in producing hard metal pneumoconiosis in workers exposed to tantalum as well as other metals.

Ingestion: Animal studies indicate absorption may occur.

Skin : No data available.

Eye : No chronic effects are reported.

Target Organs: No significant target effects reported.

Carcinogenicity: NTP: No IARC: No OSHA: No

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Breathing difficulty caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

INGESTION: Swallowing metal powder or dust can be treated by having the affected person swallow large quantities of water and attempting to induce vomiting if conscious. Obtain medical assistance at once.

SKIN: Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed by washing with soap and water. If irritation persists obtain medical assistance.

EYES: Dust or powder should be flushed from the eyes with copious amounts of clean water. If irritation persists obtain medical assistance. Contact lenses should not be worn if working with metal dust sand powders.

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid None reported

Incompatibility (Material to Avoid) Tantalum powders react violently with fluorine, chlorine and bromine trifluoride. Contact of metallic dust with strong oxidizers may cause fire/explosions.

Hazardous Decomposition Products Various elemental metals and oxides may be generated from melting or gross handling operations.

Hazardous Polymerization Will not occur.

5. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled In solid form this material poses no special clean-up problems. If this material is in powder or dust form, clean-up should be conducted with a vacuum system utilizing a high efficiency particulate air filtration system. Caution should be taken To minimize airborne generation of powder or dust and avoid contamination of air and water. Properly label all materials collected in waste container.

Waste Disposal Method In accordance with Local, State and Federal Waste Disposal Regulations.



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Environmental Hazards In solid form this material poses no special environmental problems. Metal powders or dusts may have significant impact on air and water quality. Airborne emissions, spills and releases to the environment (discharge to streams, sewer systems, ground water, surface soil, etc) should be controlled immediately. If such potential for a spill or release exists it is advisable to develop an emergency spill response plan.

6. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use NIOSH approved respirators as specified by an industrial hygienist or qualified safety professional. Lung function tests are recommended for users of negative pressure devices.

Ventilation: Local exhaust ventilation should be used to control exposure to airborne dust and fume whenever possible.

Protective Gloves Wear gloves to prevent metal cuts and skin abrasions particularly during handling of wrought forms, solid metal, sheet, strip or tube.

Eye Protection: Wear safety glasses when risk of eye injury is present particularly during machining, grinding, welding, powder handling, etc.

Other Protective Equipment Protective clothing such as uniforms, disposable coveralls, safety shoes, etc may be required during metal handling operations as appropriate to the circumstances of exposure.

7. SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storage Store and handle in accordance with all current regulations and standards. Store finely-divided material in original shipping container or in metal containers. Store finely-divided material away from oxidizers and mineral acids.

Work Practices Implement engineering and work practice controls to reduce and maintain concentration of exposure. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air. Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

MSDS Creation Date: 1993.8.13 Revision #1 Date: 2003.12.28

Note :
The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Endusers should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.



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MATERIAL SAFETY DATA SHEET

NIOBIUM

1. PRODUCT IDENTIFICATION

TradeName:	Niobium	Synonyms :	Columbium
Formula :	Nb		
Boiling Point 760 mm Hg :	5127°C	Melting Point:	2468°C
Specific Gravity (Water=1)	8.57 gm/cc	Vapor Density:	N/A
Vapor Pressure (mm Hg) :	N/A		
% Volatiles :	N/A		
Appearance and Odor :	Lustrous, steel gray metal, no odor.		
Solubility in H ₂ O :	Insoluble		

2. FIRE AND EXPLOSION HAZARDS DATA

Autoignition Temperature Solid metal will not ignite. High surface area material such as 5 micron powder may autoignite at room temperature.

Extinguishing Media Dolomite, dry powder for metal fires, sand, graphite, soda ash, sodium chloride.

Special Fire Fighting Procedures Isolate burning material. It is advisable to allow fires to burn out, keeping the fire from spreading. Wear reflective heat resistant suit. Small fires can be controlled by smothering with dry table salt or using Type D dry-powder fire extinguishing materials.

Unusual Fire and Explosion Hazards Do not spray water on burning fines, chips or powder as a violent explosion may result. The hazard increases with finer particles. Carbon dioxide is not effective in extinguishing burning niobium.

3. HEALTH HAZARD INFORMATION

Effects of Exposure

Acute Effects:

Inhalation: May cause irritation of the mucous membranes. Inhaled particles may be retained in the lungs.

Ingestion: Metallic niobium has a low order of toxicity due to poor absorption from stomach and intestines.

Skin: May cause irritation.

Eye : May cause transient, mechanical irritation.

Chronic Effects: Chronic eye exposure may cause conjunctivitis. Niobium crosses the placental barrier in animals.

Corrosive: No **Carcinogen:** No **Sensitizer:** No

4. EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove from exposure immediately. Perform artificial respiration if needed. Get medical attention.

INGESTION: If vomiting occurs, keep head lower than hips to help prevent aspiration. Get medical attention, if needed.



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SKIN : Wash with soap or mild detergent and large amounts of water. Get medical attention, if needed.
EYES : Wash eyes immediately with large amounts of water, lifting upper and lower lids. Get medical attention immediately.

5. REACTIVITY DATA

Stability : Stable

Conditions to Avoid None reported.

Incompatibility (materials to avoid) Niobium metal is rapidly dissolved by hydrofluoric acid or hydrofluoric-nitric acid mixtures. Niobium ignites in cold fluorine, and above 20°C will react exothermically with chlorine, bromine, and halocarbons such as carbon tetrachloride, carbon tetrafluoride and freons.

Hazardous Decomposition Products The above reaction with incompatible materials will generate hazardous reaction products such as flammable hydrogen, toxic fumes of nitrogen oxides or corrosive niobium halide vapors.

Hazardous Polymerization Will not occur

6. SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled Collect spilled material in appropriate container for disposal.

Waste Disposal Method Dispose of in accordance with Local, State and Federal regulations.

7. SPECIAL PROTECTION INFORMATION

Respiratory Protection Wear appropriate NIOSH-approved respirator if dust or fume exposure levels are exceeded.

Ventilation: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Protective Gloves Chemical resistant gloves

Eye Protection: Safety goggles

Other Protective Clothing or Equipment Wear appropriate chemical resistant clothing.

8. SPECIAL PRECAUTIONS

Precautions To Be Taken During Handling & Storage Store and handle in accordance with all current regulations and standards. Store away from incompatible substances, such as oxidizers and mineral acids. Use methods to minimize dust. Machining of niobium may result in fine turnings, chips or dust. Any material with a dimension of less than .001" is flammable. Keep away from any source of ignition. Do not accumulate large quantities of fines or machining residues. Dispose of these materials daily.

Work Practices: Implement engineering and work practice controls to reduce and maintain concentration of exposure. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Provide and emergency eye wash fountain and quick drench shower in the immediate work area. Do not blow dust off clothing or skin with compressed air.



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MECHANICAL TEST EQUIPMENTS

Tensile Strength Testing

Our works can provide cold tensile strength testing at loads ranging from 1Kg to 500 Kg (Extension Testing Only) on one of our two tensile strength machines. We can give you peak break loads, elongation percentages, PSI ranges and other parameters assuring conformance of your starting materials before they get used in production.



Tensile Strength Testing



Eddy Current Testing

Our works can perform Eddy Current Testing on our most Ta wires and Ta rods to ensure that our products can be suitable for use in your production. We have two testers available that offer testing frequencies from 100 khz to 3 mhz. We regularly test all of our Ta wires and Ta rods to ensure the highest quality products available anywhere.



Eddy Current Testing

Metallographic Inspection

Our works can perform metallographic inspection of critical materials to determine grain size, surface conditions, edge conditions and more. We can use one of our three microscopes, two optical comparators or other equipment to help ensure our products meet the most rigid specifications that may be required for electronics, aerospace, nuclear or other applications.



Inverted Microscope



Optical Comparator



Stereo Microscope