



Material Data Safety Sheet

Quick Identifier: Niobium

I. PRODUCT IDENTIFICATION

Trade Name:	Niobium	Formula:	Nb
Synonyms:		Molecular Weight:	
CAS #:	7440-03-1		

II. HAZARDOUS INGREDIENTS

<u>Hazardous Components:</u>	<u>OSHA PEL:</u>	<u>ACGIH TLV:</u>	<u>Other Limits:</u>
Niobium	None	None	None
Sec. 302 (EHS):	No	Sec. 304 RQ: No	Sec. 313: No
HMIS Ratings (0-4): Health:	0	Flammability: 0	Reactivity: 0
HMIS Protective Equipment:	N/A		

III. PHYSICAL DATA

Boiling Point:	4927 C	Melting Point:	2468 C
Specific Gravity (H₂O=1):	N/A	Vapor Density (Air=1):	N/A
Vapor Pressure (mm Hg):	0 @ 20 C	Evaporation Rate:	N/A
% Volatiles by Volume:	N/A	Solubility in H₂O:	Insoluble

Appearance and Odor: Grey/Silver color – no odor

IV. FIRE AND EXPLOSION HAZARDS DATA

Flash Point/Method: Not applicable

Explosive Limits: LEL: N/A UEL: N/A

Extinguishing Media: Non-combustible. Use extinguishing media appropriate to surroundings.

Special Fire Fighting Procedures: To extinguish a metal powder fire, use dry sand, dry graphite or other class "D" fire extinguishing powder.

Unusual Fire and Explosion Hazards: No unusual fire or explosion hazards are associated with this material.

V. HEALTH HAZARD INFORMATION

Routes of Entry: Inhalation, Skin and Eyes.

Target Organs: N/A

Carcinogenicity: NTP: No **IARC Monographs:** No **OSHA Regulated:** No

LD50/LC50: No toxicity data recorded.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: Dust or powder may cause irritation to the mucous membranes.

Chronic: N/A

Ingestion:

Acute: N/A

Chronic: N/A

Skin:

Acute: Dust or powder may cause irritation to the skin.

Chronic: N/A

Eye:

Acute: Dust or powder may cause irritation to the eyes.

Chronic: N/A

Signs and Symptoms of Exposures:

Inhalation: Irritation or dermatitis

Ingestion: N/A

Skin: Irritation or dermatitis

Eye: Irritation of eyes.

Medical Conditions Generally

Aggravated by Exposure:

Persons with impaired pulmonary function, airway diseases and conditions such as asthma, emphysema, chronic bronchitis, etc. May incur further disability if excessive concentrations of dust or fume are inhaled.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove to fresh air. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

INGESTION: Swallow large quantities of water to attempt to induce vomiting if conscious. Obtain medical assistance at once.

SKIN: Remove dust or powder by washing with soap and water.

EYE: Flush with copious amounts of clean water. If irritation persists, obtain medical assistance. Contact lenses should not be worn if working with metal dusts and powders.

VI. REACTIVITY DATA

Stability:	Stable
Incompatibility (Material to avoid):	Niobium powders react violently with fluorine, chlorine & bromine trifluoride. Contact of metallic dust with strong oxidizers may cause fire/explosions.
Hazardous Decomposition Products:	Various elemental metals and metal oxides may be generated from melting or dross handling operations.
Hazardous Polymerization:	N/A
Conditions to Avoid:	Not Applicable

VII. SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled:	Powder or dust 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.
Waste Disposal Method:	Properly label all materials collected in waste container. Consult an Environmental engineer or consultant familiar with waste disposal regulations.
Precautions to Be Taken in Handling and Storing:	Solid must be handled according to size, shape and quantity of material. Powders should be moved or transported to minimize spill or release potential.
Other precautions	Store metal and metal powder in a dry area. Do not store adjacent to mineral acids. Fine metal powder should be kept away from flames and sources of ignition.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection:	Use NIOSH approved respirators. Lung function tests are recommended for users of negative pressure devices.
Ventilation: Local Exhaust:	Should be utilized
Mechanical (General):	N/A
Protective Gloves:	Should be used if appropriate
Eye Protection:	Safety glasses should be worn during machining, grinding, welding, powder handling.
Other Protective Clothing or Equipment:	May be required as appropriate to the circumstance of exposure.
Work/Hygienic/Maintenance Practices:	Normal hygienic practices.

IX. ADDITIONAL COMMENTS

Some of the chemicals listed herein are research or experimental substances which may be toxic, as defined by various governmental regulations. In accordance with Environmental Protection Agency regulations and the Toxic Substance Control Act (TSCA), these materials should only be handled by, or under the direct supervision of a "technically qualified individual", as defined in 40 CFR 710.2(aa).

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