



MATERIAL SAFETY DATA SHEET

Prepared in accordance with ISO 11014-1/ ANSI standard
Z400.1-2004

Revision Date: 20/June/2007

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Niobium

Synonyms: Nb, Niobium Ingot, Niobium Billet, Niobium Rod, Niobium Tube, Niobium Wire, Niobium Bar, Niobium Sheet, Niobium Plate, Niobium Strip, Niobium Foil, Niobium Ring, Niobium Disc (Disk), Niobium Target

Use of the Substance/Preparation: Various, Industrial Products

Supplier: Cabot Supermetals
Administration Building
County Line Road
Boyertown, PA 19512
UNITED STATES
Tel: 1-610-367-1500
Fax: 1-610-369-8259

Emergency Telephone Number: US: CHEMTREC 1-800-424-9300 or 1-703-527-3887
US: Cabot 1-978-663-3455

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW - CAUTION: Gray metal. May cause irritation. Dust/air mixtures may ignite or explode.

Principle Routes of Exposure: Inhalation, Eye contact, Skin contact

POTENTIAL HEALTH EFFECTS

Eye Contact: Metal dusts may cause mechanical irritation.

Skin Contact: Metal dusts may cause mechanical irritation.

Inhalation: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

Ingestion: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

Carcinogenic Effects: Does not contain any substances listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union). See also Section 11.

Target Organ Effects: Lungs, Eyes, Skin

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorder

Potential Environmental Effects: No special environmental precautions required. See also Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS Number	Weight %	EU Classification
Niobium	7440-03-1	231-113-5	100	F (powder form)

4. FIRST AID MEASURES

Skin Contact:	Wash thoroughly with soap and water. Seek medical attention if redness, swelling, itching, or burning occurs.
Eye Contact:	Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if redness, swelling, itching, burning or visual disturbances occur.
Inhalation:	If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.
Ingestion:	Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.
Notes to Physician:	Treat symptomatically.

5. FIRE AND IGNITION INFORMATION

Flash Point:	Not determined
Explosion Limits in Air - Upper (%):	Not determined
Explosion Limits in Air - Lower (%):	Not determined
OSHA Flammability Classification:	Not determined
Extinguishing Media:	Dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride.
Special Protective Equipment for Firefighters:	Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus. Special protective equipment for firefighters.
Specific Hazards:	Negligible fire and explosion hazard in bulk form. Dust/air mixture may ignite or explode.
Hazardous Decomposition and/or Combustion Products:	Miscellaneous thermal decomposition products.
Risk of Dust Explosion:	Powdered material may form explosive dust-air mixtures.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. See also Section 8.
Methods for Cleaning Up:	Collect spilled material in appropriate container for disposal. Pick up and transfer to properly labelled containers. See Section 13.
Environmental Precautions:	No special environmental precautions required. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Take precautionary measures against static discharge. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts.

Storage: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Do not store together with strong oxidizing agents. Keep in properly labeled containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

There are no exposure limits identified for this product.

ENGINEERING CONTROLS

Ensure adequate ventilation to minimize exposures. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Approved respirator may be necessary if local exhaust ventilation is not adequate.

Hand Protection: Wear appropriate chemical resistant gloves.

Eye Protection: Wear eye/face protection. Safety glasses with side-shields. Goggles.

Skin and Body Protection: Wear suitable protective clothing.

Other: Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Gray metal
Odor:	Not determined
pH:	Not determined
Vapor Pressure:	Not determined
Boiling Point/Range:	4727°C
Melting Point/Range:	2468°C
Water Solubility:	Insoluble
Solvent Solubility:	Soluble in: fused alkali, nitric acid/hydrofluoric acid mixtures, hot hydrochloric acid, hot sulfuric acid, hot phosphoric acid Insoluble in: aqua regia, cold hydrochloric acid, cold nitric acid
Density:	Not determined
Specific Gravity:	8.57 g/cm ³ @ 20°C
Evaporation Rate:	Not determined
Viscosity:	Not determined

Partition Coefficient (n-octanol/water): Not determined

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous Polymerization: Hazardous polymerization does not occur.

Mechanical Sensitivity (shock): Not sensitive to mechanical impact.

Conditions to Avoid: Keep away from heat and sources of ignition. Avoid dust formation. Incompatible with: halogens, oxidizing materials, acids.

NIOBIUM Incompatibilities:
Bromine Trifluoride: Incandescent reaction.
Chlorine: Ignites at 205 C.
Fluorine: Incandescent reaction.
Mineral Acids: Incompatible.
Oxidizers (Strong): Fire and explosion hazard.

Hazardous Decomposition and/or Combustion Products: Miscellaneous thermal decomposition products.

Static Discharge Effects: Take precautionary measures against static discharges.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral LD50: LD50/oral/rat = 10 g/kg.

Inhalation LC50: Not determined.

Dermal LD50: Not determined.

Eye Irritation: Not determined.

Skin Irritation: Not determined.

SUBCHRONIC TOXICITY

Not determined.

CHRONIC TOXICITY

Carcinogenic Effects: Does not contain any substances listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union).

Mutagenic Effects: Not determined.

Reproductive Toxicity: Not determined.

Sensitizing Effects: Contains no known sensitizers.

Synergistic Materials: None reasonably foreseeable.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity: Not determined

ENVIRONMENTAL FATE

Mobility:	Not expected to migrate. Insoluble.
Bioaccumulation:	Not determined.
Persistence / Degradability:	Not determined.
Distribution to Environmental Compartments:	Not determined.

13. DISPOSAL CONSIDERATIONS

Disclaimer: Information in this section pertains to the product as shipped in its intended composition as described in Section 2 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

Unused and Uncontaminated Product: Can be burned in suitable incineration plants or disposed of in a suitable landfill in accordance with the regulations issued by the appropriate federal, provincial, state and local authorities.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

Hazard Classification

United States - OSHA (29 CFR 1910.1200): Not hazardous.

Mexico - NOM-018-STPS-2000: Refer to HMIS Rating in Section 16.

Canada - WHMIS Classification (CPR, SOR/88-66): Not controlled.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International Inventories

All components of this product are listed on or exempt from the following inventories:

YES - Australian Inventory of Chemical Substances (AICS)

YES - Canadian Domestic Substances List (DSL)

NO - Chinese Inventory

YES - European Inventory of Existing Commercial Chemical Substances (EINECS)

YES - Japanese Existing and New Chemical Substances (ENCS)

NO - Korean Existing Chemicals List (KECL)

NO - New Zealand Hazardous Substances and New Organisms Act (HSNO)

NO - Philippines Inventory of Chemicals and Chemical Substances (PICCS)

YES - United States Toxic Substances Control Act (TSCA) Inventory

U.S. Federal Regulations

TSCA 12(b) Export Notification: This product does not contain any components that are subject to TSCA 12(b) Export Notification.

Clean Air Act Amendments of 1990 (CAA, Section 112, 40 CFR 82): This product does not contain any components listed as a Hazardous Air Pollutant, Flammable Substance, Toxic Substance, or Class 1 or 2 Ozone Depletor.

Clean Water Act (CWA, 40 CFR 116) Priority Pollutants: This product does not contain any listed Priority Pollutants.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 40 CFR 302): This product does not contain any listed Hazardous Substances.

Superfund Amendments and Reauthorization Act, Title III (SARA):

SARA Section 302 (40 CFR 355) Extremely Hazardous Substances: No components are listed as extremely hazardous chemicals under SARA Section 302.

SARA Sections 311/312 (40 CFR 370) Hazard Category: This product does not meet any of the MSDS Requirement definitions for a hazardous material under SARA Sections 311/312.

SARA Section 313 (40 CFR 372) Toxics Release Inventory: Does not contain any of the substances identified under Section 313 as toxic chemicals in excess of the de minimis concentrations necessary to be subject to the supplier notification requirements.

Pharmaceutical Information: Not permitted

U.S. State Regulations

California Proposition 65: This product does not contain any components listed on California Proposition 65.

US Coalition of NorthEastern Governors (CONEG) Metals List: Not determined.

16. OTHER INFORMATION

HMIS Rating

HMIS Index: * - chronic, 0 - minimal, 1 - slight, 2 - moderate, 3 - serious, 4 - severe

Health: 1
Flammability: 0
Physical Hazard: 0

Additional Contacts:

Prepared by: Cabot Corporation - Safety, Health and Environmental Affairs
Revision Date: 20/June/2007
Previous Revision Date: 23/June/2004
Reason for Revision: New format

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