



MATERIAL SAFETY DATA SHEET

MATERION

1. Chemical product and company identification

A. Product name Niobium Powder

Other means of identification

SDS number H06
CAS number 7440-03-1
Synonym(s) C103

B. Recommended use and Limitations on use

Recommended use Manufacture of computer, electronic and optical products, electrical equipment
Scientific research and development
Other: Manufacture of medical and defense equipment

Limitations on use Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Consumer uses: Private households (= general public = consumers)

C. Supplier information

Company name Materion Newton Inc.
Address 6070 Parkland Boulevard
Mayfield Heights OH 44124
United States

Telephone 1+216.383.4019
Email ehs@materion.com
Contact person Theodore Knudson

Emergency telephone number See Section 16.

Importer
Company name See above.

MSDS number H06

2. Hazards identification

A. Hazard category/Classification

Physical hazards Flammable solids Category 2
Health hazards Not classified.
Environmental hazards Not classified.

B. Warning label items including precautionary statement

• **Pictogram**



• **Signal word** Danger

• **Hazard statement**
H228 Flammable solid.

• **Precautionary statement**

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P280 Wear protective gloves/eye protection/face protection.

Response

P370 + P378 Wash hands after handling.
In case of fire: Use appropriate media to extinguish.

Storage	Store away from incompatible materials.
C. Other hazards not included in the hazard category criteria (e.g. dust explosion hazard)	None known.
Supplemental information	For further information, please contact the Product Stewardship Department at +1.216.383.4019.

3. Composition/information on ingredients

Chemical identity	Common and alternative names	CAS number	ID number	Content in percent (%)
Niobium Powder	C103	7440-03-1	2013-3-5602	100

4. First aid measures

A. In case of eye contact	Flush eyes with water as a precaution.
B. In case of skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
C. In case of inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. Consult a physician for specific advice.
D. In case of swallowing	Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth. Consult a physician.
E. Note to physician	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
Most important symptoms/effects, acute and delayed	None known.
General advice	Consult a physician. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

A. Suitable (and unsuitable) extinguishing media	
Suitable extinguishing media	Water spray, fog, CO2, dry chemical, or alcohol resistant foam.
Unsuitable extinguishing media	None.
B. Specific hazards arising from the chemical (example: hazardous combustion products)	Niobium oxides.
C. Specific methods of fire-fighting	
Special protective equipment for firefighters	Wear suitable protective equipment.
Special fire fighting procedures	In the event of fire, wear self-contained breathing apparatus.
General fire hazards	No unusual fire or explosion hazards noted.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency measures	Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Evacuate the area promptly. Avoid inhalation of dust and vapors.
B. Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not allow to enter drains, sewers or watercourses.
C. Methods and materials for containment and cleaning up	Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container.

7. Handling and storage

A. Precautions for safe handling	Avoid formation of dusts and aerosols. Combustible dust clouds may be created where operations produce fine material (dust). Observe good industrial hygiene practices.
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B. Conditions for safe storage (including any incompatibilities) Storage class (TRGS 510): 4.2 (Pyrophoric or self-heating substances)
Keep container tightly closed in a cool, well-ventilated place. Keep container dry.

8. Exposure controls/personal protection

A. Exposure limit values, biological limit values, etc

No exposure limits noted for ingredient(s).

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines This material does not have established exposure limits.

B. Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

C. Personal protective equipment

- **Respiratory protection** In case of insufficient ventilation, wear suitable KOSHA Certified respiratory equipment.
- **Eye protection** Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.
- **Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.
- **Body protection** Wear suitable protective clothing.

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking.

9. Physical and chemical properties

A. Appearance

Physical state Solid.

Form Powder

Color Grey.

B. Odor None.

C. Odor threshold Not applicable.

D. pH Not applicable.

E. Melting point/freezing point

Melting point 4474.4 °F (2468 °C)

Freezing point Not applicable.

F. Boiling point, initial boiling point, and boiling range Not applicable.

G. Flash point Not applicable.

H. Evaporation rate Not applicable.

I. Flammability (solid, gas) None known.

J. Upper/lower limit on flammability or explosive limits

Flammability limit - lower (%) Not applicable.

Flammability limit - lower (%) temperature Not applicable.

Flammability limit - upper (%) Not applicable.

Flammability limit - upper (%) temperature Not applicable.

Explosive limit - lower (%) Not applicable.

Explosive limit - lower (%) temperature Not applicable.

Explosive limit - upper (%) Not applicable.

Explosive limit - upper (%) temperature Not applicable.

K. Vapor pressure Not applicable.

L. Solubility	
Solubility (water)	Insoluble.
M. Vapor density	Not applicable.
N. Specific gravity	Not available.
O. n-octanol/water partition coefficient	Not applicable.
P. Auto-ignition temperature	Not applicable.
Q. Decomposition temperature	Not applicable.
R. Viscosity	Not applicable.
S. Molecular weight	92.91 g/mol
Other data	
Density	8.57 g/cm ³ at 25°C
Molecular formula	Nb
Relative density	Not applicable.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
A. Stability and hazardous reaction potential	
Stability	Material is stable under normal conditions.
Hazardous reaction potential	No dangerous reaction known under conditions of normal use.
B. Conditions to avoid (e.g. static discharge, shock or vibration, etc)	Contact with incompatible materials.
C. Incompatible materials	Strong bases. Strong oxidizing agents. Halogens. Oxygen.
D. Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

A. Information on likely routes of exposure	
• Respiratory organs	Not likely, due to the form of the product.
• Skin	Not likely, due to the form of the product.
• Eyes	Dust may irritate the eyes.
• Mouth	Expected to be a low ingestion hazard.
B. Information on health hazards	
• Acute toxicity (list all possible routes of exposure)	None known.
• Corrosivity or irritation to the skin	Not classified.
• Serious eye damage/eye irritation	Not likely, due to the form of the product.
• Respiratory sensitization	Not a respiratory sensitizer.
• Skin sensitization	Not a skin sensitizer.
• Carcinogenic properties /Carcinogenicity	Not classified.
• Mutagenic properties /Mutagenicity	Not classified.
• Reproductive toxicity	Not classified.
• Specific target organ toxicity - single exposure	Not classified.
• Specific target organ toxicity - repeated exposure	Not classified.

• Aspiration hazard Not an aspiration hazard.

12. Ecological information

A. Ecotoxicity

Hazardous to the aquatic environment, acute hazard

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

B. Persistence/degradability

No data is available on the degradability of this product.

C. Bioaccumulative potential

No data available.

D. Mobility in soil

The product is immiscible with water and will spread on the water surface.

E. Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

A. Method of disposal

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container (in accordance with related regulations).

B. Disposal considerations (including disposal of contaminated containers or packaging)

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

14. Transport information

IATA

A. UN number

UN3089

B. UN proper shipping name

Metal powder, flammable, n.o.s.

C. Transport hazard class(es)

Class

4.1

Subsidiary risk

-

D. Packing group

II

E. Environmental hazards

No.

ERG Code

3L

F. Special precautions for user

Read safety instructions, MSDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft

Allowed with restrictions.

Cargo aircraft only

Allowed with restrictions.

IMDG

A. UN number

UN3089

B. UN proper shipping name

METAL POWDER, FLAMMABLE, N.O.S.

C. Transport hazard class(es)

Class

4.1

Subsidiary risk

-

D. Packing group

II

E. Environmental hazards

Marine pollutant

No.

EmS

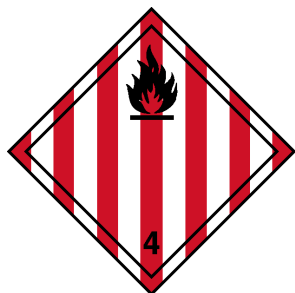
F-G, S-G

F. Special precautions for user

Read safety instructions, MSDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.



15. Regulatory information

A. Restrictions under the Industrial Safety and Health Law

Harmful Substances Prohibited from Manufacturing

Not regulated.

Harmful Substances Requiring Permission for Manufacture or Use

Not regulated.

Controlled Hazardous Substances

Not regulated.

Harmful Substances Requiring Special Medical Examination

Not regulated.

Workplace Environmental Monitoring Harmful Materials

Not regulated.

Occupational Exposure Limit

Not regulated.

B. Restrictions under the Chemicals Control Law (Previously Toxic Chemicals Control Law)

Accidental Release Prevention Substances

Not regulated.

Act on the Registration and Evaluation of Chemicals

Banned Toxic Chemicals

Not regulated.

Designated Existing Chemicals Subject to Registration (PEC) (MoE No. 2015-92)

Not listed.

Restricted Chemical Substances

Not regulated.

Toxic Chemicals

Not regulated.

C. Restrictions under the Dangerous Substance Safety Management Act

D. Restrictions under the Wastes Control Act

Halogenated Materials in Waste Organic Solvents

Not regulated.

Hazardous Substances

Not regulated.

E. Restrictions under other foreign or domestic laws

Clean Air Conservation Act

Air Pollutants

Not regulated.

Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides (Rules on PIC, MoE No. 2014-252, Dec. 31, 2014; Standards for Pesticides, RDA No. 2014-26), as amended

Not listed.

Specific Air Pollutants

Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Korea	Existing Chemicals List (ECL)	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

A. Source of information

ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
Korea. Accidental Release Prevention Substances (Presidential Decree of Toxic Chemical Control Law, Executive Order No. 19203)
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)
Korea. Harmful Substances Prohibited from Manufacturing (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 29)
Korea. Harmful Substances Requiring Permission for Manufacture or Use (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 30)
Korea. Non-Toxic Chemicals List (National Institute of Environment Research (NIER) Public Notice No. 1997-10, as amended)
Korea. Observational Chemicals (Ministerial Decree of TCCL Article 6)
Korea. OELs. Regulation for Permitted Concentration of Hazardous Substances (Ministry of Labor (MOL) Public Notice No. 1986-45, as amended)
Korea. Prohibited Chemical Substances (TCCL Article 11)
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)
Korea. Restricted Chemical Substances (TCCL Article 11)
Korea. Toxic Chemical Control Law (TCCL), Existing Chemicals Inventory (KECI)
Korea. Toxic Chemical Control Law (TCCL), pre-1997 List
Korea. Toxic Chemicals (TCCL Article 10)
Korea. Toxic Release Inventory (TRI) Chemicals (TCCL Article 14)

B. Issue date

05-12-2022

C. Number of revisions and date of most recent revision

Not applicable.

Further information

Transportation Emergency
Call Chemtrec at:
US: 800.424.9300
International: 703.741.5970
Spain: 900.868.538
Switzerland: 0800.564.402
Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059
South Korea Toll-free Number – 080-880-0468

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