



SAFETY DATA SHEET

MATERION

1. Product and company identification

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|--|--|-------------|
| Name of the chemical | Niobium Targets | |
| Other means of identification | | |
| SDS number | G23 | |
| Recommended use of the chemical and restrictions on use | | |
| Recommended use | Manufacture of computer, electronic and optical products, electrical equipment Scientific research and development Other: Manufacture of medical and defense equipment | |
| Recommended restrictions | Professional uses: Public domain (administration, education, entertainment, services, craftsmen) Consumer uses: Private households (= general public = consumers) | |
| Manufacturer/Importer/Supplier/ Distributor information | Materion Advanced Materials Germany GmbH | |
| Address | Borsigstrasse 10 Alzenau 63755 Germany | |
| Telephone | 49.60.23.91.82.0 | H. Schmiing |
| E-mail | Materion.Germany@materion.com | |
| Contact person | Hermann Schmiing | |
| Emergency telephone number | 49.60.23.91.82.0 | H. Schmiing |

2. Hazards identification

| | | |
|--------------------------|---|--|
| Hazard classification | | |
| Physical hazards | Not classified. | |
| Health hazards | Not classified. | |
| Environmental hazards | Not classified. | |
| Label elements | | |
| Symbols | None. | |
| Signal word | None. | |
| Hazard statement | The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated. | |
| Precautionary statement | | |
| Prevention | Observe good industrial hygiene practices. | |
| Response | Wash hands after handling. | |
| Storage | Store away from incompatible materials. | |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulations. | |
| Other hazards | None known. | |
| Supplemental information | For further information, please contact the Product Stewardship Department at +1.216.383.4019. | |

3. Composition/information on ingredients

| | | |
|---------------------|------------|-------------------|
| Substance | | |
| Chemical properties | CAS Number | Concentration (%) |
| Niobium | 7440-03-1 | 100 |

4. First aid measures

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| First aid measures for different exposure routes | | |
| Inhalation | Call a physician if symptoms develop or persist. | |
| Skin contact | Wash off with soap and water. Get medical attention if irritation develops and persists. | |

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| Eye contact | Rinse with water. Get medical attention if irritation develops and persists. |
| Ingestion | Rinse mouth. Get medical attention if symptoms occur. |
| Most important symptoms and effects | None known. |
| Personal protection for first-aid responders | Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. |
| Notes to physician | Treat symptomatically. |

5. Fire-fighting measures

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| Extinguishing media | Powder. Dry sand. |
| Extinguishing media to avoid | None known. |
| Specific hazards during fire fighting | This product is not flammable. |
| Special fire fighting procedures | Wear suitable protective equipment. |
| Protection of fire-fighters | Wear suitable protective equipment. |
| 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

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| Personal precautions | Keep unnecessary personnel away. Wear appropriate personal protective equipment. For personal protection, see section 8 of the SDS. |
| Environmental precautions | Collect spillage. |
| Spill cleanup methods | Collect spillage. For waste disposal, see section 13 of the SDS. |

7. Handling and storage

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|-----------------|--|
| Handling | Wash thoroughly after handling. Observe good industrial hygiene practices. |
| Storage | Not available. |

8. Exposure controls/personal protection

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| Exposure limits | 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. |
| 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. |

Individual protection measures, such as personal protective equipment

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|---------------------------------------|---|
| Eye/face protection | If contact is likely, safety glasses with side shields are recommended. |
| Skin protection | |
| Hand protection | Wear gloves to prevent metal cuts and skin abrasions during handling. |
| Other | Use personal protective equipment as required. |
| Respiratory protection | In case of insufficient ventilation, wear suitable respiratory equipment. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |
| General hygiene considerations | 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

| | |
|-------------------------------------|---------------------------------------|
| Appearance | |
| Physical state | Solid. |
| Form | Solid. |
| Color | Grey. |
| Odor | None. |
| Odor threshold | Not applicable. |
| Melting point/freezing point | 4474.4 °F (2468 °C) / Not applicable. |

| | |
|---|--------------------------------|
| pH | Not applicable. |
| Boiling point, initial boiling point, and boiling range | Not applicable. |
| Flammability (solid, gas) | None known. |
| Flash point | Not applicable. |
| Decomposition temperature | Not applicable. |
| Auto-ignition temperature | Not applicable. |
| Upper/lower flammability or explosive limits | |
| Explosive limit - lower (%) | Not applicable. |
| Explosive limit - lower (%) temperature | Not applicable. |
| Explosive limit - upper (%) | Not applicable. |
| Explosive limit - upper (%) temperature | Not applicable. |
| Vapor pressure | Not applicable. |
| Vapor density | Not applicable. |
| Density | 8.57 g/cm ³ at 25°C |
| Solubility(ies) | |
| Solubility (water) | Insoluble. |
| Partition coefficient (n-octanol/water) | Not applicable. |
| Evaporation rate | Not applicable. |
| Other data | |
| Explosive properties | Not explosive. |
| Molecular formula | Nb |
| Molecular weight | 92.91 g/mol |
| Oxidizing properties | Not oxidizing. |
| Viscosity | Not applicable. |

10. Stability and reactivity

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|------------------------------------|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong bases. Strong oxidizing agents. Halogens. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological information

Information on likely routes of exposure

| | |
|--------------|---|
| Inhalation | Not likely, due to the form of the product. |
| Skin contact | Not likely, due to the form of the product. |
| Eye contact | Not likely, due to the form of the product. |
| Ingestion | Expected to be a low ingestion hazard. |

Symptoms None known.

Information on toxicological effects

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|-----------------------------------|---|
| Acute toxicity | None known. |
| Skin corrosion/irritation | Not classified. |
| Serious eye damage/eye irritation | Not likely, due to the form of the product. |

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| Respiratory or skin sensitization | |
| Respiratory sensitization | Not a respiratory sensitizer. |
| Skin sensitization | Not a skin sensitizer. |
| Germ cell mutagenicity | Not classified. |
| Carcinogenicity | 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. |
| Chronic effects | No data recorded. |
| Other information | This product has no known adverse effect on human health. |

12. Ecological information

| | |
|--------------------------------------|---|
| Ecotoxicity | No ecotoxicity data noted for the ingredient(s). |
| Persistence and degradability | No data is available on the degradability of this product. |
| Bioaccumulation | No data available. |
| Mobility in soil | Not applicable. |
| Other hazardous 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

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| Disposal instructions | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. |
| Residual waste | Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal. |
| Local disposal regulations | Dispose in accordance with all applicable regulations. |

14. Transport information

| | |
|---|-----------------------------------|
| IATA | Not regulated as dangerous goods. |
| IMDG | Not regulated as dangerous goods. |
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |

15. Regulatory information

Applicable regulations

Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste

Not listed.

Priority Management Chemical List (Regulations on Handling Priority Managed Chemicals), as amended

Not listed.

Toxic Chemical Substances (TCS) List (EPA Toxic Substances Notice No. 0960095331E, Tables 1-3, Dec. 17, 2007, as amended)

Not listed.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Montreal Protocol

Not applicable.

Kyoto protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | No |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | No |
| Taiwan | Taiwan Chemical Substance Inventory (TCSI) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | 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**References**

Not available.

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Prepared by

Not available.