



PRODUCT INFORMATION SHEET

MATERION

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture	Niobium Oxide/Zirconium Oxide Targets
Registration number	-
Document number	G45
Synonyms	None.
Issue date	18-February-2019
Version number	02

1.3. Details of the supplier of the product information sheet

Supplier

Company name	Materion Advanced Materials Germany GmbH
Address	Borsigstrasse 10 63755 Alzenau DE

Division

Telephone	49.60.23.91.82.0	H. Schmiing
e-mail	Materion.Germany@materion.com	
Contact person	Hermann Schmiing	

1.4. Emergency telephone number	49.60.23.91.82.0	H. Schmiing
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Revision date	16-February-2021
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Supersedes date	18-February-2019
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1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Manufacture of computer, electronic and optical products, electrical equipment Scientific research and development Other: Manufacture of medical and defense equipment
Uses advised against	Professional uses: Public domain (administration, education, entertainment, services, craftsmen) Consumer uses: Private households (= general public = consumers)

1.3. Details of the supplier of the safety data sheet

Supplier

Company name	Materion Advanced Materials Germany GmbH
Address	Borsigstrasse 10 63755 Alzenau DE

Division

Telephone	49.60.23.91.82.0	H. Schmiing
e-mail	Materion.Germany@materion.com	
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1.4. Emergency telephone number	49.60.23.91.82.0	H. Schmiing
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended

Hazard summary	The products are classified as articles and, as such, do not present a physical or health hazard in the present form. If the products are processed or handled in ways that generate particles (dust, fume, particles or powder) and/or chemical compounds, a potential health hazard could exist and risk management measures must be taken to minimize risk.
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2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains:	Niobium Oxide, Zirconium oxide
Hazard pictograms	None.

Signal word None.
Hazard statements 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 statements

Prevention Observe good industrial hygiene practices.
Response Wash hands after handling.
Storage Store away from incompatible materials.
Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information For further information, please contact the Product Stewardship Department at +1.216.383.4019.

2.3. Other hazards None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Niobium Oxide	50	12034-57-0 234-808-1	-	-	
Classification: -					
Zirconium oxide	50	1314-23-4 215-227-2	-	-	
Classification: -					

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation Call a physician if symptoms develop or persist.
Skin contact Get medical attention if irritation develops and persists.
Eye contact Get medical attention if irritation develops and persists.
Ingestion Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed None known.

4.3. Indication of any immediate medical attention and special treatment needed Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media Powder. Dry sand. Use methods for the surrounding fire.
Unsuitable extinguishing media None known.

5.2. Special hazards arising from the substance or mixture This product is not flammable.

5.3. Advice for firefighters

Special protective equipment for firefighters Wear suitable protective equipment.
Special firefighting procedures Use water spray to cool unopened containers.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. For personal protection, see section 8 of the PIS.
For emergency responders	Use personal protection recommended in Section 8 of the PIS.

6.2. Environmental precautions Collect spillage.

6.3. Methods and material for containment and cleaning up Collect spillage. For waste disposal, see section 13 of the PIS.

6.4. Reference to other sections Not available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling Wash thoroughly after handling. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities Store away from incompatible materials (see Section 10 of the PIS).

7.3. Specific end use(s) Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Components	Type	Value	Form
Niobium Oxide (CAS 12034-57-0)	MAK	5 mg/m ³	Inhalable fraction.
	STEL	10 mg/m ³	Inhalable fraction.
Zirconium oxide (CAS 1314-23-4)	MAK	5 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	MAC	5 mg/m ³
	STEL	10 mg/m ³

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	TWA	5 mg/m ³

Denmark. Exposure Limit Values

Components	Type	Value
Niobium Oxide (CAS 12034-57-0)	TLV	5 mg/m ³
Zirconium oxide (CAS 1314-23-4)	TLV	5 mg/m ³

Finland. Workplace Exposure Limits

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	TWA	1 mg/m ³

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace			
Components	Type	Value	Form
Zirconium oxide (CAS 1314-23-4)	AGW	1 mg/m ³	Inhalable fraction.
Greece. OELs (Decree No. 90/1999, as amended)			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	
Hungary. OELs. Joint Decree on Chemical Safety of Workplaces			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	20 mg/m ³	
	TWA	5 mg/m ³	
Iceland. OELs. Regulation 154/1999 on occupational exposure limits			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	TWA	5 mg/m ³	
Ireland. Occupational Exposure Limits			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	
Italy. Occupational Exposure Limits			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	
Lithuania. OELs. Limit Values for Chemical Substances, General Requirements			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	TWA	6 mg/m ³	
Norway. Administrative Norms for Contaminants in the Workplace			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	TLV	5 mg/m ³	
Poland. Ordinance of the Minister of Labour and Social Policy on 6 June 2014 on the maximum permissible concentrations and intensities of harmful health factors in the work environment, Journal of Laws 2014, item 817			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	
Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	
Romania. OELs. Protection of workers from exposure to chemical agents at the workplace			
Components	Type	Value	
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	TWA	1 mg/m ³

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Components	Type	Value	Form
Niobium Oxide (CAS 12034-57-0)	TWA	5 mg/m ³	Inhalable fraction.
Zirconium oxide (CAS 1314-23-4)	TWA	1 mg/m ³	Inhalable dust.

Spain. Occupational Exposure Limits

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value	Form
Zirconium oxide (CAS 1314-23-4)	TWA	5 mg/m ³	Inhalable fraction.

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
Zirconium oxide (CAS 1314-23-4)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Biological limit values

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

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)

Not available.

Predicted no effect concentrations (PNECs)

Not available.

Exposure guidelines

This material does not have established exposure limits.

8.2. Exposure controls**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**General information**

As a standard hygiene practice, wash hands before eating or smoking.

Eye/face protection

Wear safety glasses with side shields (or goggles).

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.

Hygiene measures

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls

Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance**

Physical state Solid.

Form	Solid.
Colour	Silver.
Odour	None.
Odour threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	2200 - 2400 °C (3992 - 4352 °F) estimated / Not applicable.
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	None known.
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Relative density	Not applicable.
Solubility(ies)	
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not applicable.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
9.2. Other information	
Density	8,10 - 8,40 g/cm ³

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Contact with incompatible materials.
10.5. Incompatible materials	Strong bases. Strong oxidising agents. Halogens.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

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.

11.1. Information on toxicological effects

Acute toxicity	None known.
Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Not likely, due to the form of the product.
Respiratory sensitisation	Not a respiratory sensitizer.
Skin sensitisation	Not a skin sensitizer.
Germ cell mutagenicity	Not classified.
Carcinogenicity	Not classified.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

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.
Mixture versus substance information	No information available.
Other information	This product has no known adverse effect on human health.

SECTION 12: Ecological information

12.1. Toxicity	No toxicity data noted for the ingredient(s).
12.2. Persistence and degradability	No data is available on the degradability of this product.
12.3. Bioaccumulative potential	No data available.
Partition coefficient n-octanol/water (log Kow)	Not applicable.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
12.6. 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.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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.
EU waste code	Not available.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended.

National regulations

Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Information on evaluation method leading to the classification of mixture

Not applicable.

Revision information

SECTION 2: Hazards identification: Hazard summary

Training information

Follow training instructions when handling this material.

Disclaimer

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