

**MATERION****1. Chemical and company identification**

Name of chemical (Product name)	Zinc Oxide/Aluminum Oxide Targets
Company name	Materion Advanced Materials Germany GmbH
Address	Borsigstrasse 10 Alzenau 63755 Germany
Contact person	Hermann Schmiing
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Emergency telephone number	49.60.23.91.82.0
Reference number	G26

**2. Hazards identification****GHS classification**

The product is not classified according to GHS.

**GHS label elements**

<b>Symbols</b>	None.
<b>Signal words</b>	None.
<b>Hazard statement</b>	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**

<b>Prevention</b>	Observe good industrial hygiene practices.
<b>Response</b>	Wash hands after handling.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other hazards which do not result in classification**

None known.

**Supplemental information**

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

**Main symptoms and emergency overview**

<b>Main symptoms</b>	None known.
<b>Emergency overview</b>	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.

**3. Composition/information on ingredients**

Substance or mixture Mixture

Components	CAS Number	Gazette notification		Concentration (%)
		ENCS no.	ISHL no.	
Zinc Oxide	1314-13-2	(1)-561	(1)-561	99
Aluminum Oxide	1344-28-1	(1)-23	(1)-23	1 - 5

Chemical formula O-Zn (1314-13-2), Al<sub>2</sub>O<sub>3</sub> (1344-28-1)

**4. First aid measures**

<b>If inhaled</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
<b>If on skin</b>	Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>If in eyes</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>If swallowed</b>	Rinse mouth. Get medical attention if symptoms occur.

<b>Most important symptoms/effects, acute and delayed</b>	None known.
<b>Protection of first-aid responders</b>	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). 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.
<b>Notes to physician</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

## 5. Fire-fighting measures

<b>Extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Extinguishing media to avoid</b>	None known.
<b>Specific hazards</b>	No unusual fire or explosion hazards noted.
<b>Special fire fighting procedures</b>	Use water spray to cool unopened containers.
<b>Protection of fire-fighters</b>	Wear suitable protective equipment.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency measures</b>	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. For personal protection, see section 8 of the SDS.
<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods or materials for containment and cleaning up</b>	Wear appropriate protective equipment and clothing during clean-up. Stop the flow of material, if this is without risk. For waste disposal, see section 13 of the SDS.

## 7. Handling and storage

<b>Handling</b>	
<b>Technical measures (e.g. Local and general ventilation)</b>	Provide appropriate exhaust ventilation at places where dust is formed.
<b>Safe handling advice</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid contact with eyes. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices. Use personal protection recommended in Section 8 of the SDS.
<b>Contact avoidance measures</b>	Phosphorus. Chlorine. For further information, please refer to section 10 of the SDS.
<b>Hygiene measures</b>	Observe any medical surveillance requirements. 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.
<b>Storage</b>	
<b>Safe storage conditions</b>	Store locked up. Keep container tightly closed. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).
<b>Safe packaging materials</b>	Store in original tightly closed container.

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

Components	Type	Value	Form
Aluminum Oxide (CAS 1344-28-1)	TWA	2 mg/m <sup>3</sup>	Total dust.
		0.5 mg/m <sup>3</sup>	Respirable dust.
Zinc Oxide (CAS 1314-13-2)	TWA	4 mg/m <sup>3</sup>	Total dust.

**Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)**

Components	Type	Value	Form
		1 mg/m3	Respirable dust.

**US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Aluminum Oxide (CAS 1344-28-1)	TWA	1 mg/m3	Respirable fraction.
Zinc Oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

**Engineering measures** Good general ventilation 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. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Provide eyewash station.

**Personal protective equipment**

- Respiratory protection** If ventilation is insufficient, suitable respiratory protection must be provided.
- Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.
- Eye protection** Wear safety glasses with side shields (or goggles).
- Skin and body protection** Wear suitable protective clothing. Use of an impervious apron is recommended.

**9. Physical and chemical properties**

**Appearance**

- Physical state** Solid.
- Form** Solid.
- Color** White.

**Odor** None.

**Odor threshold** Not applicable.

**pH** Not applicable.

**Melting point/Freezing point** 3587 °F (1975 °C) estimated / Not applicable.

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

**Flash point** Not applicable.

**Combustion characteristics (solid, gas)** None known.

**Upper/lower 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.

<b>Explosive limit - upper (%) temperature</b>	Not applicable.
<b>Vapor pressure</b>	Not applicable.
<b>Vapor density</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable.
<b>Specific gravity</b>	Not applicable.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Insoluble.
<b>Partition coefficient (n-octanol/water)</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not applicable.
<b>Decomposition temperature</b>	Not applicable.
<b>Viscosity (Coefficient of viscosity)</b>	Not applicable.
<b>Other information</b>	
<b>Density</b>	5.53 g/cm3 estimated
<b>Explosive properties</b>	Not explosive.
<b>Oxidizing properties</b>	Not oxidizing.
<b>Relative density</b>	Not applicable.

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Contact with incompatible materials.
<b>Incompatible materials</b>	Acids. Chlorine.
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

## 11. Toxicological information

<b>Acute toxicity</b>	Not known.
<b>Skin corrosion/irritation</b>	Not likely, due to the form of the product.
<b>Serious eye damage/eye irritation</b>	Not likely, due to the form of the product.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Not a respiratory sensitizer.
<b>Skin sensitization</b>	Not a skin sensitizer.
<b>Germ cell mutagenicity</b>	Not classified.
<b>Carcinogenicity</b>	Not classifiable as to carcinogenicity to humans.
<b>ACGIH Carcinogens</b>	
Aluminum Oxide (CAS 1344-28-1)	A4 Not classifiable as a human carcinogen.
<b>Reproductive toxicity</b>	Not classified.
<b>Specific target organ toxicity - single exposure</b>	Not classified.
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not an aspiration hazard.

## 12. Ecological information

<b>Ecotoxicity</b>	Not relevant, due to the form of the product.
<b>Persistence and degradability</b>	No data is available on the degradability of any ingredients in the mixture.
<b>Bioaccumulation</b>	No data available.

<b>Mobility in soil</b>	No data available for this product.
<b>Hazardous to the ozone layer</b>	No data available.
<b>Other hazardous effects</b>	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

Dispose in accordance with all applicable regulations.

<b>Residual waste</b>	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).
<b>Contaminated packaging</b>	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.
<b>Local disposal regulations</b>	Contract with a disposal operator licensed by the Law on Disposal and Cleaning. 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 local/regional/national/international regulations. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

### 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.

**National regulations** Follow regulation in section 15 for domestic transportation.

### 15. Regulatory information

#### Industrial Safety and Health Act

##### Notifiable substances

ALUMINUM OXIDE	Table 9 Ordinance No. 189	1.0 - 5.0 %
ZINC OXIDE	Table 9 Ordinance No. 188	95 - 99 %

##### Labeling substances

ALUMINUM OXIDE		1.0 - 5.0 %
ZINC OXIDE		95 - 99 %

#### Poisonous and Deleterious Substances Control Act

##### Specified poisonous substances

Not regulated.

##### Poisonous substances

Not regulated.

##### Deleterious substances

INORGANIC ZINC SALTS EXCLUDING SOME SUBSTANCES

#### Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

##### Class I specified chemical substances

Not regulated.

##### Class II specified chemical substances

Not regulated.

##### Monitoring chemical substances

Not regulated.

##### Priority Assessment Chemical Substances (PACs)

Not regulated.

##### Reporting Exempted Substances

ALUMINUM OXIDE (2:3)

## Law concerning Pollutant Release and Transfer Register

### Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

### Class 1 substances (substance name, ordinance number and content)

Not regulated.

### Class 2 substances (substance name, ordinance number and content)

Not regulated.

**Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule** Not regulated.

**Air Law, Enforcement Rule** Not regulated.

### Explosives Control Act

Not regulated.

### Water Pollution Control Act

ZINC

### Sewage Act

ZINC AND ITS COMPOUNDS (AS ZN) 5 MG/L

## 16. Other information

### Bibliography

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  
HSDB® - Hazardous Substances Data Bank  
IARC Monographs. Overall Evaluation of Carcinogenicity  
National Toxicology Program (NTP) Report on Carcinogens  
Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits  
Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012  
JIS Z 7252:2014 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"  
JIS Z 7253:2012 Hazard communication of chemicals based on GHS - Labelling and Safety Data Sheet (SDS)

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