



# MATERIAL SAFETY DATA SHEET

## MATERION

### 1. Chemical product and company identification

A. Product name **Cu/Na<sub>2</sub>SeO<sub>3</sub> Targets**

Other means of identification

SDS number G11

B. Recommended use and Limitations on use

Recommended use Industrial uses: Uses of substances as such or in preparations at industrial sites

Limitations on use Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

C. Supplier information

Company name Materion Advanced Materials Germany GmbH

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Alzenau 63755  
Germany

Email Materion.Germany@materion.com

Contact person Hermann Schmiing

Emergency telephone number 49.60.23.91.82.0

MSDS number G11

### 2. Hazards identification

A. Hazard category/Classification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, inhalation	Category 3
	Serious eye damage/eye irritation	Category 2
	Sensitization, skin	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2

B. Warning label items including precautionary statement

• Pictogram



• Signal word Danger

• Hazard statement

H300	Fatal if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H411	Toxic to aquatic life with long lasting effects.

• Precautionary statement

Prevention

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.

## Response

P301 + P330 + P310	IF SWALLOWED: Rinse mouth. Immediately obtain medical assistance.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately get medical assistance.
P305 + P351 + P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.

## Storage

P405	Store locked up.
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## Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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**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 (%)
Copper		7440-50-8	KE-08896	76 - 95
Sodium Selenite (Na <sub>2</sub> SeO <sub>3</sub> )		10102-18-8	KE-31605	5 - 24
DISODIUM SELENITE * DISODIUM SELENIUM TRIOXIDE				

## 4. First aid measures

<b>A. In case of eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
<b>B. In case of skin contact</b>	Wash off with soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
<b>C. In case of inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
<b>D. In case of swallowing</b>	Rinse mouth. If swallowed, seek medical advice immediately and show this container or label.
<b>E. Note to physician</b>	Provide general supportive measures and treat symptomatically.
<b>Most important symptoms/effects, acute and delayed</b>	May cause respiratory irritation.
<b>General advice</b>	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.

## 5. Fire-fighting measures

<b>A. Suitable (and unsuitable) extinguishing media</b>	
<b>Suitable extinguishing media</b>	Water spray. Foam. Powder. Dry sand. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>B. Specific hazards arising from the chemical (example: hazardous combustion products)</b>	None known.
<b>C. Specific methods of fire-fighting</b>	
<b>Special protective equipment for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Special fire fighting procedures**

Use water spray to cool unopened containers.

**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**

Keep unnecessary personnel away. Ensure adequate ventilation.

**B. Environmental precautions**

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases.

**C. Methods and materials for containment and cleaning up**

Collect spillage. For waste disposal, see section 13 of the MSDS.

**7. Handling and storage**

**A. Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

**B. Conditions for safe storage (including any incompatibilities)**

Store locked up. Store away from incompatible materials (see Section 10 of the MSDS).

**8. Exposure controls/personal protection**

**A. Exposure limit values, biological limit values, etc**

**Korea. OELs. Standards for Exposure to Chemical Substances and Physically Hazardous Factors**

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	2 mg/m3	Dust and mist.
	TWA	1 mg/m3	Dust and mist.
		0.1 mg/m3	Fume.
Sodium Selenite (Na2SeO3) (CAS 10102-18-8)	TWA	0.2 mg/m3	

**US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Sodium Selenite (Na2SeO3) (CAS 10102-18-8)	TWA	0.2 mg/m3	

**Biological limit values**

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

**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. Provide eyewash station. Eye wash fountain and emergency showers are recommended.

**C. Personal protective equipment**

- **Respiratory protection** In case of insufficient ventilation, wear suitable respiratory equipment.
- **Eye protection** Wear safety glasses with side shields (or goggles).
- **Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.
- **Body protection** Wear suitable protective clothing.

**Hygiene measures**

Observe any medical surveillance requirements. Keep away from food and drink. 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	Solid.
Color	Copper
B. Odor	None.
C. Odor threshold	Not applicable.
D. pH	Not applicable.
E. Melting point/freezing point	
Melting point	1981.4 °F (1083 °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 - upper (%)	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	7.76 estimated
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	Not available.
Other data	
Density	7.76 g/cm <sup>3</sup> estimated
Explosive limit	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
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 oxidizing agents.
- D. Hazardous decomposition products** No hazardous decomposition products are known.

## 11. Toxicological information

### A. Information on likely routes of exposure

- **Respiratory organs** Toxic if inhaled.
- **Skin** Causes skin irritation.
- **Eyes** Causes serious eye irritation.
- **Mouth** Toxic if swallowed.

### B. Information on health hazards

- **Acute toxicity (list all possible routes of exposure)** Toxic if inhaled. Toxic if swallowed.
- **Corrosivity or irritation to the skin** Causes skin irritation.
- **Serious eye damage/eye irritation** Causes serious eye irritation.
- **Respiratory sensitization** Not a respiratory sensitizer.
- **Skin sensitization** This product is not expected to cause skin sensitization.
- **Carcinogenic properties /Carcinogenicity**

#### IARC Monographs. Overall Evaluation of Carcinogenicity

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8) 3 Not classifiable as to carcinogenicity to humans.

- **Mutagenic properties /Mutagenicity** Suspected of causing genetic defects.
- **Reproductive toxicity** Suspected of damaging fertility or the unborn child.
- **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** Based on available data, the classification criteria are not met for hazardous to the aquatic environment, acute hazard.

Components	Species	Test Results
Sodium Selenite (Na <sub>2</sub> SeO <sub>3</sub> ) (CAS 10102-18-8)		
<b>Aquatic</b>		
Crustacea	EC50 Water flea (Daphnia magna)	1.1 mg/l, 48 hours
Fish	LC50 Rainbow trout, donaldson trout (Oncorhynchus mykiss)	1.8 mg/l, 96 hours
<b>Hazardous to the aquatic environment, acute hazard</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.	
<b>Hazardous to the aquatic environment, long-term hazard</b>	Toxic to aquatic life with long lasting effects.	

### B. Persistence/degradability

### C. Bioaccumulative potential

No data available.

### D. Mobility in soil

No data available for this product.

### 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

<b>A. Method of disposal</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. 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>B. Disposal considerations (including disposal of contaminated containers or 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>Waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

### 14. Transport information

#### IATA

<b>A. UN number</b>	Not applicable.
<b>B. UN proper shipping name</b>	Not applicable.
<b>C. Transport hazard class(es)</b>	
<b>Class</b>	Not applicable.
<b>Subsidiary risk</b>	-
<b>D. Packing group</b>	Not applicable.
<b>E. Environmental hazards</b>	No.
<b>F. Special precautions for user</b>	Not applicable.

#### IMDG

<b>A. UN number</b>	Not applicable.
<b>B. UN proper shipping name</b>	Not applicable.
<b>C. Transport hazard class(es)</b>	
<b>Class</b>	Not applicable.
<b>Subsidiary risk</b>	-
<b>D. Packing group</b>	Not applicable.
<b>E. Environmental hazards</b>	
<b>Marine pollutant</b>	No.
<b>EmS</b>	Not applicable.
<b>F. Special precautions for user</b>	Not applicable.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

**General information** IMDG Regulated Marine Pollutant.

### 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

Copper (CAS 7440-50-8)

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8)

##### Harmful Substances Requiring Special Medical Examination

Copper (CAS 7440-50-8)

##### Workplace Environmental Monitoring Harmful Materials

Copper (CAS 7440-50-8)

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8)

##### Occupational Exposure Limit

Copper (CAS 7440-50-8)

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8)

**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**

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8) 97-1-134

**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**

Copper (CAS 7440-50-8)

Hazardous substances in slag, dust, waste molding sand & sand from sand blast, waste refractories & ceramic pieces, residues of incineration, materials treated for stabilization, & waste catalysts 3 MG/L

Hazardous substances in sludge, waste absorbers and absorbers 3 MG/L

**E. Restrictions under other foreign or domestic laws**

**Clean Air Conservation Act**

**Air Pollutants**

Copper (CAS 7440-50-8)

Sodium Selenite (Na<sub>2</sub>SeO<sub>3</sub>) (CAS 10102-18-8)

**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.

**Further information**

This material safety data sheet was prepared in accordance with Article 41 of the Industrial Safety and Health Law.

**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

### Bibliography

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)

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