



MATERIAL SAFETY DATA SHEET

MATERION

1. Chemical product and company identification

A. Product name Cu/Na₂SeO₃ 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

Address 6070 Parkland Boulevard
Mayfield Heights OH 44124
United States

Telephone EH&S 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 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.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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 ₂ SeO ₃)		10102-18-8	KE-31605	5 - 24
DISODIUM SELENITE * DISODIUM SELENIUM TRIOXIDE				

4. First aid measures

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

A. Suitable (and unsuitable) extinguishing media
Suitable extinguishing media Water spray. Foam. Powder. Dry sand. Carbon dioxide (CO₂).
Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.
B. Specific hazards arising from the chemical (example: hazardous combustion products) None known.

C. Specific methods of fire-fighting

Special protective equipment for firefighters 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/m ³	Dust and mist.
	TWA	1 mg/m ³	Dust and mist.
		0.1 mg/m ³	Fume.
Sodium Selenite (Na ₂ SeO ₃) (CAS 10102-18-8)	TWA	0.2 mg/m ³	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
	Sodium Selenite (Na ₂ SeO ₃) (CAS 10102-18-8)	TWA	0.2 mg/m ³

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** Not available.
- **Eye protection** Not available.
- **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/cm³ 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 (Na₂SeO₃) (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.

Product	Species		Test Results
Cu/Na ₂ SeO ₃ Targets			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Daphnia	100.1019 mg/l, 48 hours estimated
Fish	LC50	Fish	0.0341 mg/l, 96 hours estimated
Components	Species		Test Results
Copper (CAS 7440-50-8)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Blue crab (<i>Callinectes sapidus</i>)	0.0031 mg/l
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	0.0219 - 0.0446 mg/l, 96 hours

Components	Species	Test Results
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Sodium Selenite (Na₂SeO₃) (CAS 10102-18-8)

Aquatic

Acute

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

Hazardous to the aquatic environment, acute hazard

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Hazardous to the aquatic environment, long-term hazard

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

A. Method of disposal

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

IMDG

A. UN number	Not applicable.
B. UN proper shipping name	Not applicable.
C. Transport hazard class(es)	
Class	Not applicable.
Subsidiary risk	-
D. Packing group	Not applicable.
E. Environmental hazards	
Marine pollutant	No.
EmS	Not applicable.
F. Special precautions for user	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 (Na₂SeO₃) (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 (Na₂SeO₃) (CAS 10102-18-8)

Occupational Exposure Limit

Copper (CAS 7440-50-8)

Sodium Selenite (Na₂SeO₃) (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 (Na₂SeO₃) (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 (Na₂SeO₃) (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

A. Source of information

EPA: ACQUIRE 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

10-17-2019

C. Number of revisions and date of most recent revision

06-29-2021 (02 revision)

Further information

Transportation Emergency
Call Chemtrec at:
International: 703.741.5970
Spain: 900.868.538
Switzerland: 0800.564.402

Disclaimer

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Other information

Revised information in Section 16.