



# MATERIAL SAFETY DATA SHEET

**MATERION**

## 1. Chemical product and company identification

**A. Product name** Silver Targets

### Other means of identification

SDS number G09  
CAS number 7440-22-4

### B. Recommended use and Limitations on use

**Recommended use** Manufacture of computer, electronic and optical products, electrical equipment  
General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment  
Scientific research and development  
Other: Manufacture of medical and defense equipment

**Limitations on use** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
Consumer uses: Private households (= general public = consumers)

### C. Supplier information

**Company name** Materion Electronic 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.

**MSDS number** G09

## 2. Hazards identification

### A. Hazard category/Classification

**Physical hazards** Not classified.

**Health hazards** Sensitization, skin Category 1  
Specific target organ toxicity, single exposure Category 1  
Specific target organ toxicity, repeated exposure Category 1

**Environmental hazards** Not classified.

### B. Warning label items including precautionary statement

• Pictogram



• Signal word

Danger

• 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.

H317 May cause an allergic skin reaction.  
H370 Causes damage to organs.  
H372 Causes damage to organs through prolonged or repeated exposure.

• 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.  
 P272 Contaminated work clothing should not be allowed out of the workplace.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Response**

P302 + P352 IF ON SKIN: Wash with plenty of water.  
 P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage**

P405 Store locked up.

**Disposal**

Dispose of waste and residues in accordance with local authority requirements.

**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 (%)
Silver Targets		7440-22-4	KE-31261	100

**4. First aid measures**

**A. In case of eye contact** Rinse with water. Get medical attention if irritation develops and persists.  
**B. In case of skin contact** Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.  
**C. In case of inhalation** Move to fresh air. Call a physician if symptoms develop or persist.  
**D. In case of swallowing** Rinse mouth. Get medical attention if symptoms occur.  
**E. Note to physician** Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

**Most important symptoms/effects, acute and delayed** May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

**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. Wash contaminated clothing before reuse.

**5. Fire-fighting measures**

**A. Suitable (and unsuitable) extinguishing media**

**Suitable extinguishing media** Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

**Unsuitable extinguishing media** Do not use water as an extinguisher.

**B. Specific hazards arising from the chemical (example: hazardous combustion products)** This product is not flammable.

**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** Move containers from fire area if you can do so without risk.

**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. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the MSDS.
- B. Environmental precautions** Avoid discharge into drains, water courses or onto the ground.
- C. Methods and materials for containment and cleaning up** The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. Following product recovery, flush area with water. For waste disposal, see section 13 of the MSDS.

## 7. Handling and storage

- A. Precautions for safe handling** Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Provide adequate ventilation. 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 in tightly closed container. 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

Material	Type	Value	Form
Silver Targets (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	Dust and fume.

#### US. ACGIH Threshold Limit Values

Material	Type	Value	Form
Silver Targets (CAS 7440-22-4)	TWA	0.1 mg/m <sup>3</sup>	Dust and fume.

- Biological limit values** No biological exposure limits noted for the ingredient(s).
- B. Appropriate engineering controls** 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.
- C. Personal protective equipment**
- **Respiratory protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
  - **Eye protection** If contact is likely, safety glasses with side shields are recommended.
  - **Hand protection** Wear appropriate KOSHA Certified chemical resistant gloves. Suitable KOSHA Certified gloves can be recommended by the glove supplier. Wear gloves to prevent metal cuts and skin abrasions during handling.
  - **Body protection** Wear appropriate chemical resistant clothing. Use of an impervious KOSHA Certified apron is recommended.
- 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. Contaminated work clothing should not be allowed out of the workplace.

## 9. Physical and chemical properties

### A. Appearance

Physical state	Solid.
Form	Solid. Various shapes.
Color	Silver.

**B. Odor** None.

**C. Odor threshold** Not applicable.

**D. pH** Not applicable.

<b>E. Melting point/freezing point</b>	
Melting point	1760.9 °F (960.5 °C)
Freezing point	Not applicable.
<b>F. Boiling point, initial boiling point, and boiling range</b>	Not applicable.
<b>G. Flash point</b>	Not applicable.
<b>H. Evaporation rate</b>	Not applicable.
<b>I. Flammability (solid, gas)</b>	None known.
<b>J. Upper/lower limit on flammability or explosive limits</b>	
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.
<b>K. Vapor pressure</b>	Not applicable.
<b>L. Solubility</b>	
Solubility (water)	Insoluble
<b>M. Vapor density</b>	Not applicable.
<b>N. Specific gravity</b>	Not applicable.
<b>O. n-octanol/water partition coefficient</b>	Not applicable. Not applicable.
<b>P. Auto-ignition temperature</b>	Not applicable.
<b>Q. Decomposition temperature</b>	Not applicable.
<b>R. Viscosity</b>	Not applicable.
<b>S. Molecular weight</b>	107.86 g/mol
<b>Other data</b>	
Density	10.49 g/cm <sup>3</sup> estimated at 15 °C
Explosive limit	Not applicable.
Explosive properties	Not explosive. Not applicable.
Explosivity	Not applicable.
Molecular formula	Ag
Oxidizing properties	Not oxidizing.

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>A. Stability and hazardous reaction potential</b>	
Stability	Material is stable under normal conditions.
Hazardous reaction potential	No dangerous reaction known under conditions of normal use.
<b>B. Conditions to avoid (e.g. static discharge, shock or vibration, etc)</b>	Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials.
<b>C. Incompatible materials</b>	Strong acids. Ammonia. Chlorine. May react with strong bases or oxidizing agents.
<b>D. Hazardous decomposition products</b>	No hazardous decomposition products are known.

## 11. Toxicological information

### A. Information on likely routes of exposure

- **Respiratory organs** Prolonged inhalation may be harmful.
- **Skin** May cause an allergic skin reaction.
- **Eyes** Not relevant, due to the form of the product.
- **Mouth** Expected to be a low ingestion hazard.

### B. Information on health hazards

- **Acute toxicity (list all possible routes of exposure)** Not known.
- **Corrosivity or irritation to the skin** Not relevant, due to the form of the product.
- **Serious eye damage/eye irritation** Not likely, due to the form of the product.
- **Respiratory sensitization** Not a respiratory sensitizer.
- **Skin sensitization** May cause an allergic skin reaction. Not a skin sensitizer.
- **Carcinogenic properties /Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
- **Mutagenic properties /Mutagenicity** Not classified.
- **Reproductive toxicity** Not classified.
- **Specific target organ toxicity - single exposure** Causes damage to organs.
- **Specific target organ toxicity - repeated exposure** Causes damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Not an aspiration hazard.

## 12. Ecological information

### A. Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

#### Hazardous to the aquatic environment, acute hazard

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### B. Persistence/degradability

No data is available on the degradability of this product.

### C. Bioaccumulative potential

No data available.

### D. Mobility in soil

The product is immiscible with water and will spread on the water surface.

### 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. Dispose of contents/container (in accordance with related regulations). Dispose of waste material according to Local, State, Federal, and Provincial Environmental 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.

**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**

Silver Targets (CAS 7440-22-4)

**Harmful Substances Requiring Special Medical Examination**

Not regulated.

**Workplace Environmental Monitoring Harmful Materials**

Silver Targets (CAS 7440-22-4)

**Occupational Exposure Limit**

Silver Targets (CAS 7440-22-4)

**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**

Not regulated.

**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

Not regulated.

## E. Restrictions under other foreign or domestic laws

### Clean Air Conservation Act

#### Air Pollutants

Not regulated.

**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

ACGIH  
EPA: AQUIRE database  
KECI, January 27, 2015, amended through MoE 2016-138, July 13, 2016  
Korea. Banned Chemicals (AREC "K-REACH" Article 27; Designation of Restricted or Banned Chemicals, Appendices 4 and 5)  
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)  
Korea. Existing Chemicals Inventory (KECI, January 27, 2015)  
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. OELs (ISHL Article 42; MOL Public Notice No. 1986-45, as amended through MOEL Notice 2013-38, August 14, 2013)  
Korea. OELs. Regulation for Permitted Concentration of Hazardous Substances (Ministry of Labor (MOL) Public Notice No. 1986-45, as amended)  
Korea. Prohibited Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 4 and 5)  
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)  
Korea. Restricted Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 2 and 3)  
Korea. Restricted Chemicals (AREC "K-REACH" Article 27; Designation of Restricted or Banned Chemicals, Appendices 2 and 3)  
Korea. Toxic Chemicals (AREC "K-REACH" Article 20; Designation of Toxic Chemicals, Appendix)  
Korea. Toxic Chemicals (AREC "K-REACH" Article 20; Designation of Toxic, Restricted or Banned Chemicals Appendix 1)  
Korea. Toxic Chemical Control Law (TCCL), pre-1997 List  
Korea. Toxic Release Inventory (TRI) Chemicals (MOE Public Notice No. 2002-166, Nov. 8, 2002)  
NLM: Hazardous Substances Data Base  
US. IARC Monographs on Occupational Exposures to Chemical Agents

### B. Issue date

09-04-2019

### C. Number of revisions and date of most recent revision

08-04-2023 (03 revision)

**Further information**

Transportation Emergency

Call Chemtrec at:

US: 800.424.9300

International: 703.741.5970

Spain: 900.868.538

Switzerland: 0800.564.402

Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059

South Korea Toll-free Number – 080-880-0468

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