



# SAFETY DATA SHEET

**MATERION**

## 1. Identification

<b>Product identifier</b>	<b>Silver pieces</b>
<b>Other means of identification</b>	
<b>SDS number</b>	1ZO
<b>Materion Code</b>	1ZO
<b>CAS number</b>	7440-22-4
<b>Synonyms</b>	SILVER, ELEMENTAL * Silver-metal

### Recommended use of the chemical and restrictions on use

<b>Recommended use</b>	Not available.
<b>Recommended restrictions</b>	None known.

### Manufacturer/Importer/Supplier/Distributor information

#### Manufacturer

<b>Company name</b>	Materion Electronic Materials
<b>Address</b>	6070 Parkland Blvd Mayfield Heights Ohio 44124 United States
<b>Telephone</b>	1.216.383.4019
<b>E-mail</b>	Materion-PS@materion.com
<b>Contact person</b>	Product Stewardship Director
<b>Emergency phone number</b>	See Section 16

## 2. Hazards identification

### GHS classification

<b>Physical hazards</b>	Not classified.
<b>Health hazards</b>	Not classified.
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard Category 1 Hazardous to the aquatic environment, long-term hazard Category 1

### GHS label elements, including precautionary statements

#### Pictograms



**Signal word** Warning

**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. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

### Precautionary statement

<b>Prevention</b>	Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
<b>Response</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTRE/doctor if you feel unwell. If skin irritation or redness occur: Get medical attention. If eye irritation persists: Get medical advice/attention. Collect spillage.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.

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

The Safety Information Sheet Chemicals of hazardous chemical can be obtained through phone, email or on the company website.

**Supplemental information**

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

**3. Composition/information on ingredients**

Substance or mixture	Substance		
Chemical name	Common name and synonyms	CAS Number	Concentration (%)
Silver	SILVER, ELEMENTAL Silver-metal	7440-22-4	100

**4. First-aid measures****Inhalation**

Move to fresh air. If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

**Skin contact**

Wash off with soap and plenty of water. Get medical attention if irritation develops and persists.

**Eye contact**

Flush eyes with water as a precaution. Remove contact lenses, if present and easy to do. If eye irritation persists: Get medical advice/attention.

**Ingestion**

Rinse mouth thoroughly. Get medical advice/attention if you feel unwell.

**Most important symptoms/effects, acute and delayed**

Headache. Dizziness. Dusts may irritate the respiratory tract, skin and eyes. Difficulty in breathing.

**Indication of immediate medical attention and special treatment needed**

Provide general supportive measures and treat symptomatically.

**General information**

If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

**5. Fire-fighting measures****Suitable extinguishing media**

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).

**Unsuitable extinguishing media**

None known.

**Specific hazards arising from the chemical**

During fire, gases hazardous to health may be formed.

**Fire fighting equipment/instructions**

Use water spray to cool unopened containers. Water runoff can cause environmental damage.

**Special protective equipment and precautions for firefighters**

Wear suitable protective equipment.

**Specific methods**

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

**General fire hazards**

No unusual fire or explosion hazards noted.

**6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. 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 SDS.

**Environmental precautions**

Avoid release to the environment. Refer to special instructions/safety data sheets. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

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

Collect spillage. The product is immiscible with water and will spread on the water surface. Prevent entry into waterways, sewer, basements or confined areas. 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 SDS. The product is insoluble in water.

**7. Handling and storage****Precautions for safe handling**

Avoid contact with eyes. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains. Use appropriate container to avoid environmental contamination. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities**

Store in a cool, dry place out of direct sunlight. Use appropriate container to avoid environmental contamination. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

**8. Exposure controls/personal protection****Occupational exposure limits**

**Singapore. PELs (Workplace Safety and Health (General Provisions) Regulations 2006 (S 134/2006), First Schedule: Permissible Exposure Limits of Toxic Substances)**

Material	Type	Value
Silver (CAS 7440-22-4)	TWA	0.1 mg/m3

**Control parameters/Occupational exposure limits**

**US. ACGIH Threshold Limit Values (TLV)**

Material	Type	Value	Form
Silver (CAS 7440-22-4)	TWA	0.1 mg/m3	Dust and fume.

**Appropriate engineering control 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. Provide eyewash station.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Wear eye/face protection. Wear safety glasses with side shields (or goggles).

**Skin protection****Hand protection**

Wear appropriate chemical resistant gloves. Wear gloves to prevent metal cuts and skin abrasions during handling.

**Other**

Wear appropriate chemical resistant clothing. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

**Respiratory protection**

In case of insufficient ventilation, wear suitable respiratory equipment.

**Thermal hazards**

Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**

Do not get in eyes. Wash contaminated clothing before reuse. 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****Appearance**

**Physical state** Solid.

**Form** Solid.

**Colour** Silver

**Odour** None.

**Odour threshold** Not applicable.

**pH** Not available.

**Melting point/freezing point** 960.5 °C (1760.9 °F)

**Initial boiling point and boiling range** 2000 °C (3632 °F)

**Flash point** Not applicable.

**Evaporation rate** Not applicable.

**Flammability (solid, gas)** None known.

**Explosive limit - lower ( %)** Not applicable.

**Explosive limit - lower ( %)** Not applicable.

**Explosive limit – upper (%)** Not applicable.

**Explosive limit - upper ( %)** Not applicable.

**Vapour pressure** <0.0000001 kPa (25 °C (77 °F))

**Vapour density** Not applicable.

**Relative density** 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</b>	Not applicable.
<b>Other data</b>	
<b>Density</b>	10.49 g/cm3 estimated at 15 °C
<b>Explosive properties</b>	Not explosive.
<b>Kinematic viscosity</b>	Not applicable.
<b>Molecular formula</b>	Ag
<b>Molecular weight</b>	107.86 g/mol
<b>Oxidising properties</b>	Not oxidising.
<b>Specific gravity</b>	10.49 at 15 °C

## 10. Stability and reactivity

<b>Reactivity</b>	None known.
<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>	Ammonia. Chlorine.
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Prolonged inhalation may be harmful.
<b>Skin contact</b>	May be harmful in contact with skin. May cause an allergic skin reaction.
<b>Eye contact</b>	Causes eye irritation.
<b>Ingestion</b>	Based on available data, the classification criteria are not met.

<b>Acute toxicity</b>	May cause irritation.
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Product	Species	Test Results
Silver (CAS 7440-22-4)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rat	> 2000 mg/kg
<b>Oral</b>		
LD50	Rat	> 5000 mg/kg

\* Estimates for product may be based on additional component data not shown.

<b>Symptoms</b>	Corneal damage. Conjunctivitis.
<b>Skin corrosion/irritation</b>	Irritating to skin.
<b>Serious eye damage/eye irritation</b>	Causes eye irritation.
<b>Respiratory or skin sensitisation</b>	
<b>Respiratory sensitisation</b>	Due to lack of data the classification is not possible.
<b>Skin sensitisation</b>	May cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	Due to lack of data the classification is not possible.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	Due to lack of data the classification is not possible.
<b>Specific target organ toxicity - single exposure</b>	Not classified.

**Specific target organ toxicity  
- repeated exposure** Not classified.

**Aspiration hazard** Due to lack of data the classification is not possible.

**Chronic effects** Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

## 12. Ecological information

**Ecotoxicity** Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Product		Species	Test Results
Silver (CAS 7440-22-4)			
<b>Aquatic</b>			
<i>Acute</i>			
Crustacea	EC50	Water flea (Daphnia magna)	0.0002 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	0.0019 - 0.003 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential** No data available.

**Mobility in soil** No data available.

**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

**Disposal methods/information** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. After recovery of solvent dispose of residue as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Special precautions** Dispose in accordance with all applicable regulations.

## 14. Transport information

### ADR

Not regulated as dangerous goods.

### RID

Not regulated as dangerous goods.

### ADN

Not regulated as dangerous goods.

### 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.

## 15. Regulatory information

**Safety, health and environmental regulations specific for the product in question**

**Prior Informed Consent (PIC) Substances (Environment Protection and Management Act, 2nd Schedule, Part 1, Jul. 1, 2013)**

Not regulated.

**Chemical Weapons Prohibition (Act)**

Not applicable.

**Environmental Protection and Management (Hazardous Substances) Regulations**

Not applicable.

**Environmental Public Health Act**

Not applicable.

**Misuse of Drugs Act**

**Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III, as amended)**

Not regulated.

**Drug Precursors (Misuse of Drugs Act, Third Schedule, Parts I & II, as amended)**

Not regulated.

**Controlled Specified Drugs (Misuse of Drugs Act, Fourth Schedule, as amended)**

Not regulated.

**International regulations****Montreal Protocol**

Not applicable.

**Stockholm Convention**

Not applicable.

**Rotterdam Convention**

Not applicable.

**Kyoto Protocol**

Not applicable.

**Basel Convention**

Not applicable.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	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****References**

ACGIH  
EPA: AQUIRE database  
NLM: Hazardous Substances Data Base  
US. IARC Monographs on Occupational Exposures to Chemical Agents

**Issued by**

Not available.

**Prepared by**

Not available.

**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

**Disclaimer**

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**Issue date**

26-April-2024

**Key/legend**

Not applicable.

**Revision information**

Product and Company Identification: Synonyms

Hazards Identification: US Hazard Categories

Transport Information: Material Transportation Information

GHS: Classification