



# SAFETY DATA SHEET

**MATERION**

## 1. Product and company identification

**Name of the chemical** Silver Palladium Copper Targets

**Other means of identification**  
**SDS number** G61

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

**Recommended use** Manufacture of computer, electronic and optical products, electrical equipment  
Scientific research and development  
Other: Manufacture of medical and defense equipment

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

**Manufacturer/Importer/Supplier/  
Distributor information** Materion Advanced Materials

**Address** 6070 Parkland Boulevard  
Mayfield Heights OH 44124  
United States

**Telephone** EH&S 1.216.383.4019

**E-mail** ehs@materion.com

**Contact person** Theodore Knudson

**Emergency telephone  
number** See Section 16.

## 2. Hazards identification

**Hazard classification**

**Physical hazards** Not classified.

**Health hazards** Not classified.

**Environmental hazards** Hazardous to the aquatic environment, acute Category 3 hazard

**Label elements**

**Symbols** None.

**Signal word** None.

**Hazard statement** Harmful to aquatic life.

**Precautionary statement**

**Prevention** Avoid release to the environment.

**Response** Wash hands after handling.

**Storage** Store away from incompatible materials.

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

**Other hazards** None known.

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

## 3. Composition/information on ingredients

### Mixture

Chemical name	CAS Number	Concentration (%)
Silver	7440-22-4	94 - 98
Copper	7440-50-8	1 - 3
Palladium	7440-05-3	1 - 3

## 4. First aid measures

### First aid measures for different exposure routes

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.

**Most important symptoms and effects** None known.

**Personal protection for first-aid responders** Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

**Notes to physician** Treat symptomatically.

## 5. Fire-fighting measures

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

**Extinguishing media to avoid** None known.

**Specific hazards during fire fighting** This product is not flammable.

**Special fire fighting procedures** Use water spray to cool unopened containers.

**Protection of fire-fighters** Use protective equipment appropriate for surrounding materials.

## 6. Accidental release measures

**Personal precautions** Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

**Environmental precautions** Avoid discharge into drains, water courses or onto the ground.

**Spill cleanup methods** 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.

## 7. Handling and storage

**Handling** Observe good industrial hygiene practices.

**Storage** Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

### Exposure limits

#### OELs. (Standards on Workplace Atmosphere of Dangerous and Hazardous Materials)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	2 mg/m <sup>3</sup>	Dust and mist.
		0.6 mg/m <sup>3</sup>	Fume.
	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.2 mg/m <sup>3</sup>	Fume.
Silver (CAS 7440-22-4)	STEL	0.03 mg/m <sup>3</sup>	Dust and fume.
	TWA	0.01 mg/m <sup>3</sup>	Dust and fume.

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.2 mg/m <sup>3</sup>	Fume.
Silver (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).

**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.

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

**Eye/face protection** Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.

<b>Skin protection</b>	
<b>Hand protection</b>	Wear gloves to prevent metal cuts and skin abrasions during handling.
<b>Other</b>	Wear suitable protective clothing.
<b>Respiratory protection</b>	In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Thermal hazards</b>	None known.
<b>General hygiene considerations</b>	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.

## 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	Solid.
<b>Form</b>	Solid.
<b>Color</b>	Silver.
<b>Odor</b>	None.
<b>Odor threshold</b>	Not applicable.
<b>Melting point/freezing point</b>	1760.9 °F (960.5 °C) estimated / Not applicable.
<b>pH</b>	Not applicable.
<b>Boiling point, initial boiling point, and boiling range</b>	Not applicable.
<b>Flammability (solid, gas)</b>	None known.
<b>Flash point</b>	Not applicable.
<b>Decomposition temperature</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not applicable.

### Upper/lower flammability or explosive limits

<b>Flammability limit - lower (%)</b>	Not applicable.
<b>Flammability limit - upper (%)</b>	Not applicable.
<b>Explosive limit - lower (%)</b>	Not applicable.
<b>Explosive limit - lower (%) temperature</b>	Not applicable.
<b>Explosive limit - upper (%)</b>	Not applicable.
<b>Explosive limit - upper (%) temperature</b>	Not applicable.

<b>Vapor pressure</b>	Not applicable.
<b>Vapor density</b>	Not applicable.
<b>Density</b>	10.49 g/cm <sup>3</sup> estimated
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Insoluble.
<b>Partition coefficient (n-octanol/water)</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable.
<b>Other data</b>	
<b>Explosive limit</b>	Not applicable.
<b>Explosive properties</b>	Not explosive.
<b>Oxidizing properties</b>	Not oxidizing.
<b>Viscosity</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>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>	No adverse effects due to inhalation are expected.
<b>Skin contact</b>	No adverse effects due to skin contact are expected.
<b>Eye contact</b>	Not relevant, due to the form of the product.
<b>Ingestion</b>	Expected to be a low ingestion hazard.

**Symptoms** None known.

### Information on toxicological effects

<b>Acute toxicity</b>	None 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 classified.
<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.
<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.
<b>Chronic effects</b>	None known.

## 12. Ecological information

**Ecotoxicity** Harmful to aquatic life.

Product	Species		Test Results
Silver Palladium Copper Targets			
<b>Aquatic</b>			
Crustacea	EC50	Daphnia	5.7904 mg/l, 48 hours
Fish	LC50	Fish	85.201 mg/l, 96 hours
<i>Acute</i>			
Fish	LC50	Fish	1.0817 mg/l, 96 hours estimated
Components	Species		Test Results
Copper (CAS 7440-50-8)			
<b>Aquatic</b>			
<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

**Persistence and degradability** No data is available on the degradability of any ingredients in the mixture.

**Bioaccumulation** No data available.

**Mobility in soil** The product is insoluble in water.

**Other hazardous 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 instructions**

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 local/regional/national/international regulations.

**Residual waste**

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).

**Contaminated 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.

**Local disposal regulations**

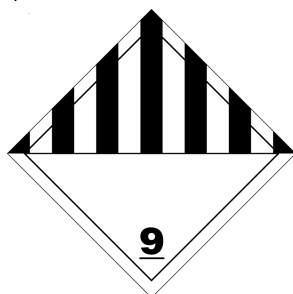
Dispose in accordance with all applicable regulations.

**14. Transport information****IATA**

<b>UN number</b>	UN3077
<b>UN proper shipping name</b>	Environmentally hazardous substance, solid, n.o.s.
<b>Transport hazard class(es)</b>	
<b>Class</b>	9
<b>Subsidiary risk</b>	-
<b>Packing group</b>	III
<b>Environmental hazards</b>	No.
<b>ERG Code</b>	9L
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Other information</b>	
<b>Passenger and cargo aircraft</b>	Allowed with restrictions.
<b>Cargo aircraft only</b>	Allowed with restrictions.

**IMDG**

<b>UN number</b>	UN3077
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
<b>Transport hazard class(es)</b>	
<b>Class</b>	9
<b>Subsidiary risk</b>	-
<b>Packing group</b>	III
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No.
<b>EmS</b>	F-A, S-F
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable.

**IATA; IMDG**

## 15. Regulatory information

### Applicable regulations

Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste  
Regulations for the Labeling and Hazard Communication of Hazardous Chemicals  
Toxic Chemical Substances Control Act  
Toxic Chemical Substances Labeling and Materials Safety Data Sheets Regulations  
This material safety data sheet was prepared in accordance with the Regulation of Labeling and Hazard Communication of Hazardous Chemicals.

### Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste

Copper (CAS 7440-50-8) Listed.

### Priority Management Chemical List (Regulations on Handling Priority Managed Chemicals), as amended

Not listed.

### Toxic Chemical Substances (TCS) List (EPA Toxic Substances Notice No. 0960095331E, Tables 1-3, Dec. 17, 2007, as amended)

Not listed.

### Standards on Workplace Atmosphere of Dangerous and Hazardous Materials

Copper (CAS 7440-50-8) Listed.

Silver (CAS 7440-22-4) Listed.

### GHS Classification List: GHS implementation phase 1, 2 and 3 (CLA No. 0980145063, 0990146707, and 1020146801)

Silver (CAS 7440-22-4)

### Rules on Road Transportation Safety

Regulated.

### International regulations

#### Stockholm Convention

Not applicable.

#### Rotterdam Convention

Not applicable.

#### Montreal Protocol

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 Chemical Substances (AICS)	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

Not available.

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**Prepared by**

Not available.