

# SAFETY DATA SHEET

## 1. Identification

**Product identifier** Silver Palladium Alloys

**Other means of identification**  
SDS number W27, W37

**Manufacturer/Importer/Supplier/Distributor information**  
**Manufacturer**

**Company name** Materion Advanced Materials Technologies and Services Inc.  
**Address** 2978 Main Street  
Buffalo, NY 14214  
Buffalo, NY 14214  
United States

**Telephone** 716-837-1000  
**Website** materion.com  
**E-mail** ehs1@materion.com

**Emergency phone number** (800) 424-9300 Chemtrec

## 2. Hazard(s) identification

**Physical hazards** Not classified.

**Health hazards** Acute toxicity, oral Category 4  
Acute toxicity, inhalation Category 3  
Serious eye damage/eye irritation Category 2

**Environmental hazards** Hazardous to the aquatic environment, acute hazard Category 1  
Hazardous to the aquatic environment, long-term hazard Category 1

**OSHA defined hazards** Not classified.

### Label elements



**Signal word** Warning

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

**Precautionary statement**

**Prevention** Avoid release to the environment.

**Response** Collect spillage.

**Storage** Store away from incompatible materials.

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

**Hazard(s) not otherwise classified (HNOC)** None known.

**Supplemental information** 35% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 35% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

## 3. Composition/information on ingredients

### Mixtures

| Chemical name | Common name and synonyms | CAS number | %       |
|---------------|--------------------------|------------|---------|
| Silver        |                          | 7440-22-4  | 58 - 98 |
| Copper        |                          | 7440-50-8  | 1 - 35  |
| Palladium     |                          | 7440-05-3  | 1 - 35  |

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

#### 4. First-aid measures

|   |   |
|---|---|
| <b>Inhalation</b>   | 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. |
| <b>Skin contact</b>   | Rinse skin with water/shower. Get medical attention if irritation develops and persists.  |
| <b>Eye contact</b>  | Rinse with water. Get medical attention if irritation develops and persists.  |
| <b>Ingestion</b>  | Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.   |
| <b>Most important symptoms/effects, acute and delayed</b>                     | Direct contact with eyes may cause temporary irritation.  |
| <b>Indication of immediate medical attention and special treatment needed</b> | Provide general supportive measures and treat symptomatically.  |
| <b>General information</b>  | Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.  |

#### 5. Fire-fighting measures

|  |   |
|--|---|
| <b>Suitable extinguishing media</b>                                  | Water fog. Foam. Dry chemical powder. 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>Specific hazards arising from the chemical</b>                    | During fire, gases hazardous to health may be formed.   |
| <b>Special protective equipment and precautions for firefighters</b> | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |
| <b>Fire fighting equipment/instructions</b>                          | Use water spray to cool unopened containers.  |
| <b>Specific methods</b>  | Use standard firefighting procedures and consider the hazards of other involved materials.    |
| <b>General fire hazards</b>  | No unusual fire or explosion hazards noted.   |

#### 6. Accidental release measures

|  |   |
|--|---|
| <b>Personal precautions, protective equipment and emergency procedures</b> | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate personal protective equipment. 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. |
| <b>Methods and materials for containment and cleaning up</b>               | This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Stop the flow of material, if this is without risk. Collect spillage. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.          |
| <b>Environmental precautions</b>   | Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.  |

#### 7. Handling and storage

|                                      |  |
|--------------------------------------|--|
| <b>Precautions for safe handling</b> | Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Use care in handling/storage. Avoid release to the environment. Do not empty into drains. |
|--------------------------------------|--|

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

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components             | Type | Value  | Form                    |
|------------------------|------|--|-------------------------|
| Copper (CAS 7440-50-8) | PEL  | 1 mg/m <sup>3</sup><br>0.1 mg/m <sup>3</sup> | Dust and mist.<br>Fume. |
| Silver (CAS 7440-22-4) | PEL  | 0.01 mg/m <sup>3</sup>                       |                         |

#### US. ACGIH Threshold Limit Values

| Components             | Type | Value  | Form                    |
|------------------------|------|--|-------------------------|
| Copper (CAS 7440-50-8) | TWA  | 1 mg/m <sup>3</sup><br>0.2 mg/m <sup>3</sup> | Dust and mist.<br>Fume. |
| Silver (CAS 7440-22-4) | TWA  | 0.1 mg/m <sup>3</sup>                        | Dust and fume.          |

#### US. NIOSH: Pocket Guide to Chemical Hazards

| Components             | Type | Value                  | Form           |
|------------------------|------|------------------------|----------------|
| Copper (CAS 7440-50-8) | TWA  | 1 mg/m <sup>3</sup>    | Dust and mist. |
| Silver (CAS 7440-22-4) | TWA  | 0.01 mg/m <sup>3</sup> | Dust.          |

#### US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants

| Components             | Type | Value  | Form                    |
|------------------------|------|--|-------------------------|
| Copper (CAS 7440-50-8) | PEL  | 1 mg/m <sup>3</sup><br>0.1 mg/m <sup>3</sup> | Dust and mist.<br>Fume. |
| Silver (CAS 7440-22-4) | PEL  | 0.01 mg/m <sup>3</sup>                       |                         |

### Biological limit values

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

### 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.

### Control parameters

Follow standard monitoring procedures.

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

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

#### Skin protection

**Hand protection** Wear protective gloves.

**Other** Wear appropriate chemical resistant clothing.

**Respiratory protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

**Thermal hazards** Wear appropriate thermal protective clothing, when necessary.

### General hygiene considerations

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

**Physical state** Solid.

**Form** Solid.

**Color** Not available.

**Odor** Not available.

**Odor threshold** Not available.

**pH** Not available.

|   |                                |
|---|--------------------------------|
| <b>Melting point/freezing point</b>                 | 1760.9 °F (960.5 °C) estimated |
| <b>Initial boiling point and boiling range</b>      | 3632 °F (2000 °C) estimated    |
| <b>Flash point</b>                                  | Not available.                 |
| <b>Evaporation rate</b>                             | Not available.                 |
| <b>Flammability (solid, gas)</b>                    | Not available.                 |
| <b>Upper/lower flammability or explosive limits</b> |                                |
| <b>Flammability limit - lower (%)</b>               | Not available.                 |
| <b>Flammability limit - upper (%)</b>               | Not available.                 |
| <b>Explosive limit - lower (%)</b>                  | Not available.                 |
| <b>Explosive limit - upper (%)</b>                  | Not available.                 |
| <b>Vapor pressure</b>                               | 0.14 hPa estimated             |
| <b>Vapor density</b>                                | Not available.                 |
| <b>Relative density</b>                             | Not available.                 |
| <b>Solubility(ies)</b>                              |                                |
| <b>Solubility (water)</b>                           | Not available.                 |
| <b>Partition coefficient (n-octanol/water)</b>      | Not available.                 |
| <b>Auto-ignition temperature</b>                    | Not available.                 |
| <b>Decomposition temperature</b>                    | Not available.                 |
| <b>Viscosity</b>                                    | Not available.                 |
| <b>Other information</b>                            |                                |
| <b>Density</b>                                      | 10.49 g/cm3 estimated          |
| <b>Specific gravity</b>                             | 10.49 estimated                |

## 10. Stability and reactivity

|   |   |
|---|---|
| <b>Reactivity</b>                         | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| <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> | No adverse effects due to skin contact are expected.     |
| <b>Eye contact</b>  | Direct contact with eyes may cause temporary irritation. |
| <b>Ingestion</b>    | Expected to be a low ingestion hazard.                   |

**Symptoms related to the physical, chemical and toxicological characteristics** Direct contact with eyes may cause temporary irritation.

### Information on toxicological effects

#### Acute toxicity

| Components             | Species | Test Results |
|------------------------|---------|--------------|
| Silver (CAS 7440-22-4) |         |              |
| <b>Acute</b>           |         |              |
| <b>Dermal</b>          |         |              |
| LD50                   | Rat     | > 2000 mg/kg |

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

|   |  |
|---|--|
| <b>Skin corrosion/irritation</b>                                      | Prolonged skin contact may cause temporary irritation.   |
| <b>Serious eye damage/eye irritation</b>                              | Direct contact with eyes may cause temporary irritation.   |
| <b>Respiratory or skin sensitization</b>                              |  |
| <b>Respiratory sensitization</b>                                      | Not available.   |
| <b>Skin sensitization</b>   | This product is not expected to cause skin sensitization.  |
| <b>Germ cell mutagenicity</b>   | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. |
| <b>Carcinogenicity</b>  | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.                                  |
| <b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>         |  |
|   | Not listed.  |
| <b>OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</b> |  |
|   | Not regulated.   |
| <b>US. National Toxicology Program (NTP) Report on Carcinogens</b>    |  |
|   | Not listed.  |
| <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 available.   |
| <b>Chronic effects</b>  | Prolonged inhalation may be harmful.   |

## 12. Ecological information

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

| Product                 | Species                                   | Test Results                    |
|-------------------------|---|---------------------------------|
| Silver Palladium Alloys |   |                                 |
| <b>Aquatic</b>          |   |                                 |
| Crustacea               | EC50 Daphnia                              | 0.0049 mg/l, 48 hours estimated |
| Fish                    | LC50 Fish                                 | 1.9973 mg/l, 96 hours estimated |
| <b>Components</b>       | <b>Species</b>                            | <b>Test Results</b>             |
| Silver (CAS 7440-22-4)  |   |                                 |
| <b>Aquatic</b>          |   |                                 |
| Crustacea               | EC50 Water flea (Daphnia magna)           | 0.0002 mg/l, 48 hours           |
| Fish                    | LC50 Fathead minnow (Pimephales promelas) | 0.0023 - 0.0033 mg/l, 96 hours  |

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

|                                      |  |
|--------------------------------------|--|
| <b>Persistence and degradability</b> | No data is available on the degradability of this product. |
| <b>Bioaccumulative potential</b>     | No data available.   |
| <b>Mobility in soil</b>              | 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 instructions** 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 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.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products** 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** Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### 14. Transport information

#### DOT

**UN number** UN3077  
**UN proper shipping name** Environmentally hazardous substances, solid, n.o.s. (Silver RQ = 1020 LBS)  
**Transport hazard class(es)**  
    **Class** 9  
    **Subsidiary risk** -  
    **Label(s)** 9  
**Packing group** III  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**Special provisions** 8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33  
**Packaging exceptions** 155  
**Packaging non bulk** 213  
**Packaging bulk** 240

#### IATA

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

#### IMDG

**UN number** UN3077  
**UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver)  
**Transport hazard class(es)**  
    **Class** 9  
    **Subsidiary risk** -  
**Packing group** III

**Environmental hazards**

**Marine pollutant**

No.

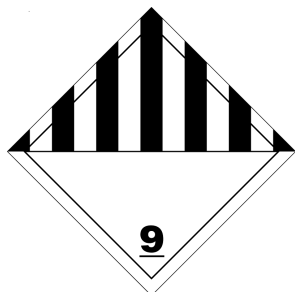
**EmS**

F-A, S-F

**Special precautions for user**

Read safety instructions, SDS and emergency procedures before handling.

**DOT; IATA; IMDG**



**General information**

DOT Regulated Marine Pollutant. IMDG Regulated Marine Pollutant.

**15. Regulatory information**

**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Copper (CAS 7440-50-8)

Listed.

Silver (CAS 7440-22-4)

Listed.

**SARA 304 Emergency release notification**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not regulated.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical**

No

**SARA 313 (TRI reporting)**

| <b>Chemical name</b> | <b>CAS number</b> | <b>% by wt.</b> |
|----------------------|-------------------|-----------------|
| Copper               | 7440-50-8         | 1 - 35          |
| Silver               | 7440-22-4         | 58 - 98         |

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Safe Drinking Water Act (SDWA)**

Not regulated.

**US state regulations**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))**

Copper (CAS 7440-50-8)

Silver (CAS 7440-22-4)

**16. Other information, including date of preparation or last revision**

**Issue date** 07-12-2017

**Version #** 01

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**Revision information** Product and Company Identification: Product and Company Identification  
Composition / Information on Ingredients: Ingredients