

**MATERION****1. Chemical and company identification**

Name of chemical (Product name) **Silver Targets**

Supplier's company name, address and phone number

Company name Materion Advanced Materials

Address 6070 Parkland Boulevard
Mayfield Heights, OH 44124 United States

Contact person Theodore Knudson

Telephone EH&S 1.216.383.4019

e-mail address ehs@materion.com

Emergency telephone number See Section 16.

Reference number G09

2. Hazards identification**GHS classification**

The product is not classified according to GHS.

GHS label elements

Pictograms None.

Signal words None.

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.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

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

Other hazards which do not result in classification None known.

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

Main symptoms and emergency overview

Main symptoms Direct contact with eyes may cause temporary irritation.

Emergency overview 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.

3. Composition/information on ingredients

Substance or mixture Substance

| Chemical name or generic name | CAS Number | Gazette notification | | |
|-------------------------------|------------|----------------------|----------|-------------------|
| | | ENCS no. | ISHL no. | Concentration (%) |
| Silver Targets | 7440-22-4 | | | 100 |

Chemical formula Ag (7440-22-4)

4. First aid measures

If inhaled Move to fresh air. Call a physician if symptoms develop or persist.

If on skin Wash off with soap and water. Get medical attention if irritation develops and persists.

If in eyes Rinse with water. Get medical attention if irritation develops and persists.

If swallowed Rinse mouth. Get medical attention if symptoms occur.

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| Most important symptoms/effects, acute and delayed | Direct contact with eyes may cause temporary irritation. |
| Protection of 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

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|---|---|
| Extinguishing media | Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). |
| Extinguishing media to avoid | Do not use water as an extinguisher. |
| Specific hazards | This product is not flammable. |
| Special fire fighting procedures | Use water spray to cool unopened containers. |
| Protection of fire-fighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |
| 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

| | |
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| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. |
| Environmental precautions | Avoid discharge into drains, water courses or onto the ground. |
| Methods and materials for containment and cleaning up | Stop the flow of material, if this is without risk. |

7. Handling and storage

Handling

| | |
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| Technical measures (e.g. Local and general ventilation) | No specific recommendations. |
| Safe handling advice | Observe good industrial hygiene practices. |
| Contact avoidance measures | Strong oxidizing agents. |
| Hygiene measures | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. |

Storage

| | |
|---------------------------------|---|
| Safe storage conditions | Not available. |
| Safe packaging materials | Store in original tightly closed container. |

8. Exposure controls/personal protection

| | |
|---------------------------|--|
| Control parameters | Follow standard monitoring procedures. |
|---------------------------|--|

Occupational exposure limits

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

| Material | Type | Value |
|--------------------------------|------|------------|
| Silver Targets (CAS 7440-22-4) | TWA | 0.01 mg/m3 |

US. ACGIH Threshold Limit Values

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

Engineering measures

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.

Personal protective equipment

| | |
|-------------------------------|---|
| Respiratory protection | In case of insufficient ventilation, wear suitable respiratory equipment. |
| Hand protection | Wear gloves to prevent metal cuts and skin abrasions during handling. |

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| Eye protection | Wear safety glasses with side shields (or goggles). |
| Skin and body protection | Wear suitable protective clothing. |

9. Physical and chemical properties

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| Physical state | Solid. |
| Form | Various shapes. |
| Color | Silver. |
| Odor | None. |
| Odor threshold | Not applicable. |
| Melting point/freezing point | 1760.9 °F (960.5 °C) / Not applicable. |
| Boiling point, initial boiling point, and boiling range | Not applicable. |
| Combustibility | None known. |
| Lower and upper explosion limit / flammability limit | |
| 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. |
| Flash point | Not applicable. |
| Auto-ignition temperature | Not applicable. |
| Decomposition temperature | Not applicable. |
| pH | Not applicable. |
| Kinematic viscosity | Not available. |
| Solubility(ies) | |
| Solubility (water) | Insoluble |
| Partition coefficient (n-octanol/water) (log value) | Not applicable. |
| Vapor pressure | Not applicable. |
| Density and/or relative density | |
| Density | 10.49 g/cm ³ estimated at 15 °C |
| Relative density | Not applicable. |
| Vapor density | Not applicable. |
| Particle characteristics | Not available. |
| Other information | |
| Evaporation rate | Not applicable. |
| Explosive limit | Not applicable. |
| Explosive properties | Not applicable. |
| Explosivity | Not applicable. |
| Molecular formula | Ag |
| Molecular weight | 107.86 g/mol |
| Oxidizing properties | Not oxidizing. |
| Viscosity (Coefficient of viscosity) | Not applicable. |

10. Stability and reactivity

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|-------------------|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
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| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong acids. May react with strong bases or oxidizing agents. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological information

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|---|---|
| Acute toxicity | None known. |
| Skin corrosion/irritation | Not relevant, due to the form of the product. |
| Serious eye damage/eye irritation | Not likely, due to the form of the product. |
| Respiratory or skin sensitization | |
| Respiratory sensitization | Not a respiratory sensitizer. |
| Skin sensitization | Not a skin sensitizer. |
| Germ cell mutagenicity | Not classified. |
| Carcinogenicity | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| Reproductive toxicity | Not classified. |
| Specific target organ toxicity - single exposure | Not classified. |
| Specific target organ toxicity - repeated exposure | Not classified. |
| Aspiration hazard | Not an aspiration hazard. |
| Other information | None known. |

12. Ecological information

| | |
|--------------------------------------|--|
| 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. |
| Persistence and degradability | No data is available on the degradability of this product. |
| Bioaccumulation | No data available. |
| Mobility in soil | No data available. |
| Hazardous to the ozone layer | No data available. |
| 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

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| 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 of waste material according to Local, State, Federal, and Provincial Environmental Regulations. |

14. Transport information

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| 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. |
| National regulations | Follow regulation in section 15 for domestic transportation. |

15. Regulatory information

Industrial Safety and Health Act

Notifiable substances

SILVER AND SILVER COMPOUNDS, WATER-SOLUBLE Table 9 Ordinance No. 137

Labeling substances

SILVER (POWDER)

SILVER AND SILVER COMPOUNDS, WATER-SOLUBLE

Poisonous and Deleterious Substances Control Act

Specified poisonous substances

Not regulated.

Poisonous substances

Not regulated.

Deleterious substances

Not regulated.

Act on the Regulation of Manufacture and Evaluation of Chemical Substances

Class I specified chemical substances

Not regulated.

Class II specified chemical substances

Not regulated.

Monitoring chemical substances

Not regulated.

Priority Assessment Chemical Substances (PACs)

Not regulated.

Reporting Exempted Substances

Not regulated.

Law concerning Pollutant Release and Transfer Register

Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 1 substances (substance name, ordinance number and content)

SILVER AND ITS WATER-SOLUBLE COMPOUNDS (AS AG) Ordinance No. 82 (Silver Targets)

Class 2 substances (substance name, ordinance number and content)

Not regulated.

Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule

Not regulated.

Air Law, Enforcement Rule

Not regulated.

Explosives Control Act

Not regulated.

16. Other information

Further information

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

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Other information

Revised information in Section 16.