



SAFETY DATA SHEET

MATERION

1. Identification

Product identifier Palladium Silver Copper Gold Platinum Zinc

Other means of identification
SDS number WPZ

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 Serious eye damage/eye irritation Category 2B
Sensitization, skin Category 1

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 May cause an allergic skin reaction. Causes eye irritation. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves.

Response If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Wash contaminated clothing before reuse. 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

55.55% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 55.55% 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	%
Palladium		7440-05-3	20 - 40
Silver		7440-22-4	20 - 40
Gold		7440-57-5	20 - 0
Platinum		7440-06-4	0 - 20
RM Copper - Solid		7440-50-8	0 - 10
Zinc		7440-66-6	0 - 10

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

4. First-aid measures**Inhalation**

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

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.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.

Most important symptoms/effects, acute and delayed

Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. May cause an allergic skin reaction. Dermatitis. Rash.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information

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**Suitable extinguishing media**

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Water.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

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

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. 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.

Methods and materials for containment and cleaning up

Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Provide adequate ventilation. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices. Use care in handling/storage.

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
RM Copper - Solid (CAS 7440-50-8)	PEL	1 mg/m3	Dust and mist.
Silver (CAS 7440-22-4)	PEL	0.1 mg/m3 0.01 mg/m3	Fume.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
Silver (CAS 7440-22-4)	TWA	0.1 mg/m3	Dust and fume.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
RM Copper - Solid (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
Silver (CAS 7440-22-4)	TWA	0.01 mg/m3	Dust.

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

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	PEL	1 mg/m3	
RM Copper - Solid (CAS 7440-50-8)	PEL	1 mg/m3	Dust and mist.
Silver (CAS 7440-22-4)	PEL	0.1 mg/m3 0.01 mg/m3	Fume.

Biological limit values

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

Control parameters

Follow standard monitoring procedures.

Individual protection measures, such as personal protective equipment

Eye/face protection

Face shield is recommended. Wear safety glasses with side shields (or goggles).

Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
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. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid.
Color	Not available.
Odor	Not applicable.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	787.15 °F (419.53 °C) estimated
Initial boiling point and boiling range	1664.6 °F (907 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	12.92 g/cm3 estimated
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Specific gravity	12.92 estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
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	Aluminum. Phosphorus. Ammonia. Chlorine.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	May cause an allergic skin reaction.
Eye contact	Causes eye irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity May cause an allergic skin reaction.

Product	Species	Test Results
Palladium Silver Copper Gold Platinum Zinc		
<u>Acute</u>		
Dermal		
LD50	Rat	6000 mg/kg estimated
Oral		
LD50	Rat	15000 mg/kg estimated
Components	Species	Test Results
Silver (CAS 7440-22-4)		
<u>Acute</u>		
Dermal		
LD50	Rat	> 2000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg

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

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Product	Species		Test Results
Palladium Silver Copper Gold Platinum Zinc			
Aquatic			
Crustacea	EC50	Daphnia	0.0145 mg/l, 48 hours estimated
Fish	LC50	Fish	6.7828 mg/l, 96 hours estimated
Components	Species		Test Results
RM Copper - Solid (CAS 7440-50-8)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.036 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	0.0319 - 0.0544 mg/l, 96 hours
Silver (CAS 7440-22-4)			
Aquatic			
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.

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 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.
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	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.

14. Transport information

DOT	
UN number	UN3077

UN proper shipping name Environmentally hazardous substances, solid, n.o.s. (Silver RQ = 3000 LBS, RM Copper - Solid RQ = 89928 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, RM Copper - Solid)

Transport hazard class(es)

Class 9

Subsidiary risk -

Packing group III

Environmental hazards Yes

ERG Code 9L

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft Allowed.

Cargo aircraft only Allowed.

IMDG

UN number UN3077

UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver, RM Copper - Solid), MARINE POLLUTANT

Transport hazard class(es)

Class 9

Subsidiary risk -

Packing group III

Environmental hazards

Marine pollutant Yes

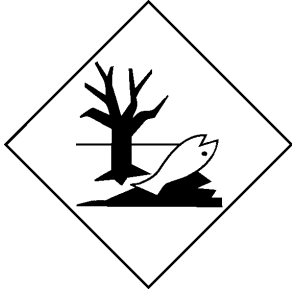
EmS F-A, S-F

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

DOT; IATA; IMDG



Marine pollutant



General information 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.

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

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

RM Copper - Solid (CAS 7440-50-8)	Listed.
Silver (CAS 7440-22-4)	Listed.
Zinc (CAS 7440-66-6)	Listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

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)

Chemical name	CAS number	% by wt.
Silver	7440-22-4	20 - 40
RM Copper - Solid	7440-50-8	0 - 10
Zinc	7440-66-6	0 - 10

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

US - New Jersey RTK - Substances: Listed substance

Platinum (CAS 7440-06-4)
RM Copper - Solid (CAS 7440-50-8)
Silver (CAS 7440-22-4)
Zinc (CAS 7440-66-6)

US - Pennsylvania RTK - Hazardous Substances: All compounds of this substance are considered environmental hazards

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

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

Platinum (CAS 7440-06-4)

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. Massachusetts RTK - Substance List

Platinum (CAS 7440-06-4)

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. New Jersey Worker and Community Right-to-Know Act

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. Pennsylvania RTK - Hazardous Substances

Platinum (CAS 7440-06-4)

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. Pennsylvania Worker and Community Right-to-Know Law

Platinum (CAS 7440-06-4)

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. Rhode Island RTK

RM Copper - Solid (CAS 7440-50-8)

Silver (CAS 7440-22-4)

Zinc (CAS 7440-66-6)

US. California Proposition 65

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.

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

Issue date 04-18-2016

Version # 01

Disclaimer Materion - Buffalo cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.