



SAFETY DATA SHEET

MATERION

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture Sterling Silver
Synonyms None.
Issue date 05-May-2015
Version number 02
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1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Not available.
Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Materials Technologies and Services Inc.
Address 5520 Midway Park Place NE
United States
Division
Telephone Not available.
e-mail ehs@materion.com
Contact person Not available.

1.4. Emergency telephone number Not available.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification N;R50/53

Classification according to Regulation (EC) No 1272/2008 as amended

Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard Category 1 H400 - Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term aquatic hazard Category 1 H410 - Very toxic to aquatic life with long lasting effects.

Hazard summary

Physical hazards Not classified for physical hazards.
Health hazards Not classified for health hazards.
Environmental hazards Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Specific hazards Not available.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Copper, Silver
Hazard pictograms None.
Signal word Warning
Hazard statements
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention
P273 Avoid release to the environment.
Response

P391	Collect spillage.
Storage	Not available.
Disposal	
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
Supplemental label information	None.
2.3. Other hazards	None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Silver	93	7440-22-4 231-131-3	-	-	# M=1000
Classification:	DSD: N;R50/53				
	CLP: Aquatic Acute 1;H400, Aquatic Chronic 1;H410				
Copper	7	7440-50-8 231-159-6	01-2119480154-42-0080	-	
Classification:	DSD: -				
	CLP: STOT SE 3;H335				

SECTION 4: First aid measures

General information Not available.

4.1. Description of first aid measures

Inhalation Not available.

Skin contact Not available.

Eye contact Not available.

Ingestion Not available.

4.2. Most important symptoms and effects, both acute and delayed Not available.

4.3. Indication of any immediate medical attention and special treatment needed Not available.

SECTION 5: Firefighting measures

General fire hazards Not available.

5.1. Extinguishing media

Suitable extinguishing media Not available.

Unsuitable extinguishing media Not available.

5.2. Special hazards arising from the substance or mixture Not available.

5.3. Advice for firefighters

Special protective equipment for firefighters Not available.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Not available.

For emergency responders	Not available.
6.2. Environmental precautions	Not available.
6.3. Methods and material for containment and cleaning up	Not available.
6.4. Reference to other sections	Not available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Not available.
7.2. Conditions for safe storage, including any incompatibilities	Not available.
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Components	Type	Value	Form
Copper (CAS 7440-50-8)	MAK	1 mg/m ³	Inhalable fraction.
	STEL	0,1 mg/m ³ 4 mg/m ³ 0,4 mg/m ³	Fume and respirable dust. Inhalable fraction. Fume and respirable dust.
Silver (CAS 7440-22-4)	MAK	0,1 mg/m ³	Inhalable fraction.
	STEL	0,1 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values.

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Components	Type	Value
Copper (CAS 7440-50-8)	TWA	0,1 mg/m ³
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Components	Type	Value	Form
Copper (CAS 7440-50-8)	MAC	0,21 mg/m ³	Dust and fume.
	STEL	2 mg/m ³	Dust and fume.
Silver (CAS 7440-22-4)	MAC	0,1 mg/m ³	

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0,2 mg/m ³	Fume.

Czech Republic. OELs. Government Decree 361

Components	Type	Value	Form
Copper (CAS 7440-50-8)	Ceiling	2 mg/m ³	Dust.
		0,2 mg/m ³	Fume.
	TWA	1 mg/m ³	Dust.
		0,1 mg/m ³	Fume.
Silver (CAS 7440-22-4)	Ceiling	0,3 mg/m ³	
	TWA	0,1 mg/m ³	

Denmark. Exposure Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TLV	1 mg/m ³	Dust.
		0,1 mg/m ³	Fume.

Denmark. Exposure Limit Values Components

Components	Type	Value	Form
Silver (CAS 7440-22-4)	TLV	0,01 mg/m ³	Dust.

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0,2 mg/m ³	Total dust. Respirable dust.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Finland. Workplace Exposure Limits Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0,1 mg/m ³	Respirable dust and/or fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984 Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	VLE VME	2 mg/m ³ 1 mg/m ³	Dust. Dust.
Silver (CAS 7440-22-4)	VME	0,2 mg/m ³ 0,1 mg/m ³	Fume.

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG) Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0,01 mg/m ³	Respirable fraction.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	Inhalable fraction.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace Components

Components	Type	Value	Form
Silver (CAS 7440-22-4)	AGW	0,1 mg/m ³	Inhalable fraction.

Greece. OELs (Decree No. 90/1999, as amended) Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL TWA	2 mg/m ³ 1 mg/m ³	Dust. Dust.
Silver (CAS 7440-22-4)	TWA	0,2 mg/m ³ 0,1 mg/m ³	Fume.

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL TWA	4 mg/m ³ 0,4 mg/m ³ 1 mg/m ³	Smoke.
Silver (CAS 7440-22-4)	STEL TWA	0,1 mg/m ³ 0,4 mg/m ³ 0,1 mg/m ³	Smoke.

Iceland. OELs. Regulation 154/1999 on occupational exposure limits Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0,1 mg/m ³	Total dust. Respirable dust.
Silver (CAS 7440-22-4)	TWA	0,01 mg/m ³	Dust.

Ireland. Occupational Exposure Limits Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL TWA	2 mg/m ³ 1 mg/m ³	Dust and mist. Dust and mist.
Silver (CAS 7440-22-4)	TWA	0,2 mg/m ³ 0,1 mg/m ³	Fume.

Italy. Occupational Exposure Limits Components

Components	Type	Value	Form
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Components	Type	Value
Copper (CAS 7440-50-8)	STEL	1 mg/m ³
	TWA	0,5 mg/m ³
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Inhalable fraction.
		0,2 mg/m ³	Respirable fraction.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)

Components	Type	Value
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³

Netherlands. OELs (binding)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0,1 mg/m ³	Inhalable fraction.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TLV	1 mg/m ³	Dust.
		0,1 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TLV	0,1 mg/m ³	Dust and fume.

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0,2 mg/m ³	Inhalable fraction.
Silver (CAS 7440-22-4)	TWA	0,05 mg/m ³	

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	1,5 mg/m ³	Dust.
		0,2 mg/m ³	Fume.
		0,5 mg/m ³	Dust.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Inhalable fraction.
		0,2 mg/m ³	Respirable fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Inhalable fraction.
		0,1 mg/m ³	Respirable fume.
Silver (CAS 7440-22-4)	TWA	0,01 mg/m ³	

Spain. Occupational Exposure Limits

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Sweden. Occupational Exposure Limit Values Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Total dust.
		0,2 mg/m ³	Respirable dust.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	Total dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	0,2 mg/m ³	Inhalable dust.
	TWA	0,1 mg/m ³	Inhalable dust.
Silver (CAS 7440-22-4)	STEL	0,8 mg/m ³	Inhalable dust.
	TWA	0,1 mg/m ³	Inhalable dust.

UK. EH40 Workplace Exposure Limits (WELs) Components

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	2 mg/m ³	Inhalable dusts and mists.
	TWA	1 mg/m ³	Inhalable dusts and mists.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU Components

Components	Type	Value
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³

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

Recommended monitoring procedures Not available.

Derived no-effect level (DNEL) Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls Not available.

Individual protection measures, such as personal protective equipment

Eye/face protection Not available.

Skin protection

- **Hand protection** Not available.

- **Other** Not available.

Respiratory protection Not available.

Thermal hazards Not available.

Hygiene measures Not available.

Environmental exposure controls Not available.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance**

Physical state Solid.

Form Not available.

Colour Not available.

Odour Not applicable.

Odour threshold Not available.

pH Not available.

Melting point/freezing point 960,5 °C (1760,9 °F) estimated

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

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits**Flammability limit - lower (%)** Not available.**Flammability limit - upper (%)** Not available.**Vapour pressure** 0,05 hPa estimated**Vapour density** Not available.**Relative density** Not available.**Solubility(ies)****Solubility (water)** Not available.**Solubility (other)** Not available.**Partition coefficient (n-octanol/water)** Not available.**Auto-ignition temperature** Not available.**Decomposition temperature** Not available.**Viscosity** Not available.**Explosive properties** Not available.**Oxidizing properties** Not available.**9.2. Other information****Density** 10,38 g/cm³ estimated**Specific gravity** 10,38 estimated**SECTION 10: Stability and reactivity****10.1. Reactivity** Not available.**10.2. Chemical stability** Not available.**10.3. Possibility of hazardous reactions** Not available.**10.4. Conditions to avoid** Not available.**10.5. Incompatible materials** Not available.**10.6. Hazardous decomposition products** Not available.**SECTION 11: Toxicological information****General information** Not available.**Information on likely routes of exposure****Inhalation** Not available.**Skin contact** Not available.**Eye contact** Not available.**Ingestion** Not available.**Symptoms** Not available.**11.1. Information on toxicological effects**

Components	Species	Test results
Silver (CAS 7440-22-4)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Not available.	
Serious eye damage/eye irritation	Not available.	
Respiratory sensitisation	Not available.	
Skin sensitisation	Not available.	
Germ cell mutagenicity	Not available.	
Carcinogenicity	Not available.	

Reproductive toxicity	Not available.
Specific target organ toxicity - single exposure	Not available.
Specific target organ toxicity - repeated exposure	Not available.
Aspiration hazard	Not available.
Mixture versus substance information	Not available.
Other information	Not available.

SECTION 12: Ecological information

12.1. Toxicity

Components	Species	Test results
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

12.2. Persistence and degradability Not available.

12.3. Bioaccumulative potential Not available.

Partition coefficient n-octanol/water (log Kow) Not available.

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil Not available.

12.5. Results of PBT and vPvB assessment Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Not available.

Contaminated packaging Not available.

EU waste code Not available.

SECTION 14: Transport information

ADR

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s) 9

Hazard No. (ADR) 90

Tunnel restriction code E

14.4. Packing group III

14.5. Environmental hazards Yes

14.6. Special precautions for user Not available.

RID

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s)	9
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Not available.

ADN

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally Hazardous Solid, N.o.s.
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Not available.

IATA

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally hazardous substance, solid, n.o.s.
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
ERG Code	9L
14.6. Special precautions for user	Not available.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

14.1. UN number	UN3077
14.2. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MARINE POLLUTANT
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
14.4. Packing group	III
14.5. Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-F
14.6. Special precautions for user	Not available.

ADN; ADR; IATA; IMDG; RID





SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I, as amended

Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II, as amended

Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Not regulated.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Not listed.

Directive 94/33/EC on the protection of young people at work, as amended

Not listed.

National regulations

Not available.

15.2. Chemical safety assessment

Not available.

SECTION 16: Other information

List of abbreviations	Not available.
References	Not available.
Information on evaluation method leading to the classification of mixture	Not available.
Training information	Not available.