



PRODUCT INFORMATION 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 Copper Silver Slug Product
Synonyms None.
Document number WCS
Issue date 15-February-2017
Version number 02
Revision date 16-February-2017
Supersedes date 15-February-2017

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 product information sheet

Supplier

Company name Materion Advanced Materials Technologies and Services Inc.
Address 2978 Main Street
Buffalo, NY 14214
United States
Division Buffalo
Telephone 716-837-1000
e-mail Not available.
Contact person Not available.

1.4. Emergency telephone number 800-424-9300 Chemtrec

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Environmental hazards

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

Hazard summary Not available.

2.2. Label elements

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

Contains: copper, Silver
Hazard pictograms None.
Signal word None.
Hazard statements The mixture does not meet the criteria for classification.

Precautionary statements

Prevention Not available.
Response Not available.
Storage Not available.
Disposal Not available.

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
copper	90 - 99,5	7440-50-8 231-159-6	-	-	M=100
Classification:	Aquatic Chronic 1;H410				
Silver	0,5 - 10	7440-22-4 231-131-3	-	-	# M=1000
Classification:	Aquatic Acute 1;H400, Aquatic Chronic 1;H410				

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 Powder. Dry sand.

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.

Special firefighting procedures Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

For emergency responders Not available.

6.2. Environmental precautions Not available.

6.3. Methods and material for containment and cleaning up Prevent entry into waterways, sewer, basements or confined areas. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

6.4. Reference to other sections For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Not available.

7.2. Conditions for safe storage, including any incompatibilities

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

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.
		0,1 mg/m ³	Fume and respirable dust.
	STEL	4 mg/m ³	Inhalable fraction.
		0,4 mg/m ³	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.
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	Total dust.
		0,2 mg/m ³	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	Respirable dust and/or fume.
		0,1 mg/m ³	
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	2 mg/m ³	Dust.
	VME	1 mg/m ³	Dust.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	VME	0,1 mg/m ³	

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	2 mg/m ³	Dust.
	TWA	1 mg/m ³	Dust.
		0,2 mg/m ³	Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

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

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

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

Components	Type	Value	Form
copper (CAS 7440-50-8)	TWA	1 mg/m ³	Total dust.
		0,1 mg/m ³	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	2 mg/m ³	Dust and mist.
	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	

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

Components	Type	Value	Form
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

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

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

Components	Type	Value	Form
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	Form
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 0,1 mg/m ³	Dust. 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	
Silver (CAS 7440-22-4)	TWA	0,05 mg/m ³	Inhalable fraction.

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 0,2 mg/m ³	Dust and mist. 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 0,2 mg/m ³	Dust. Fume.
	TWA	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 0,2 mg/m ³	Inhalable fraction. 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 0,1 mg/m ³	Inhalable fraction. 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 0,2 mg/m ³	Dust and mist. Fume.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	

Sweden. Occupational Exposure Limit Values

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	Total dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value	Form
copper (CAS 7440-50-8)	STEL	0,2 mg/m ³	Inhalable dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value	Form
Silver (CAS 7440-22-4)	TWA	0,1 mg/m ³	Inhalable dust.
	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 Follow standard monitoring procedures.

Derived no effect levels (DNELs) 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

General information Not available.

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 Solid.

Colour Not available.

Odour Not available.

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 available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapour pressure	0,00001 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.
Oxidising properties	Not available.

9.2. Other information

Density	9,08 g/cm3 estimated
Specific gravity	9,08 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	Contact with incompatible materials.
10.5. Incompatible materials	Ammonia. Chlorine.
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

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

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

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

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
copper (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.

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	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.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally hazardous substance, solid, n.o.s. (copper, Silver)
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	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally hazardous substance, solid, n.o.s. (copper, Silver)
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally Hazardous Solid, N.o.s. (copper, Silver)
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

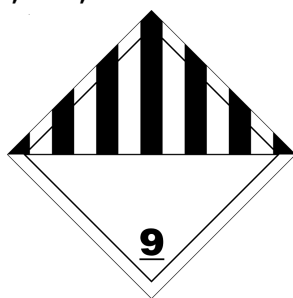
IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

ADN; ADR; 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 and II, as amended

Not listed.

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

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

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

copper (CAS 7440-50-8)

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.

Restrictions on use

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

Not regulated.

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

Not listed.

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.

Other EU regulations

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

Not listed.

National regulations

Follow national regulation for work with chemical agents.

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

The classification for health and environmental hazards is derived by a combination of calculator methods and test data, if available.

Training information

Follow training instructions when handling this material.

Disclaimer

Materion Advanced Materials Technologies and Services Inc. 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.