

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

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

Product identifier : Silver Solder [Ag, Cu, Sn, Zn]
Trade name : Ag 925 Spezial; 640/642; 600 Ag L3; 560/560; 5507 Ag-Lot;
L-Ag55Sn; L-Ag60Sn; Degussa 5600; 600/601 Lot cdf; L-
Ag40Sn
Product code : 300000002708

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Sub- : wires, sheets metal, tubes
stance/Mixture Metallurgy.

1.3 Details of the supplier of the safety data sheet

Company : Allgemeine Gold- und Silberscheideanstalt
Kanzlerstrasse 17
75175 Pforzheim
Germany

E-mail address of person : info.ipds@umicore.com
responsible for the SDS

1.4 Emergency telephone number

Poison Center

Telephone : +49 30 192 40

Hours of operation : 24HRS

Supplier

Emergency telephone num- : For transport in Europe, Central- and South America, Israel
ber and Africa (Non-Arabic speaking countries): +32 3 213 15 70
For transport in the Middle East (Israel excluded) & Arabic
speaking Africa: +32 3 213 33 79
For transport in the USA and Canada: 1-877 986 4267
For transport in Asian and the Pacific (China excluded): +65
62 64 78 36
For transport in China: (+86) 400 88 71 190

Hours of operation : This telephone number is available 24 hours per day, 7 days
per week.

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

Additional Labelling

EUH210 Safety data sheet available on request.

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 70 %

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Substances with a workplace exposure limit :			
silver	7440-22-4 01-2119555669-21		<= 100
tin	7440-31-5 231-141-8 01-2119486474-28		<= 15

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Do not leave the victim unattended.

If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.

In case of skin contact : Cover wound with sterile dressing.

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

- In case of eye contact : Remove contact lenses.
Protect unharmed eye.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Not combustible.
- Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

- Hazardous combustion products : Hazardous combustion products
Metal oxides

5.3 Advice for firefighters

- Special protective equipment for firefighters : No special protective equipment required.
- Further information : Standard procedure for chemical fires.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.2 Environmental precautions

- Environmental precautions : No special environmental precautions required.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Sweep up and shovel.
Pick up and transfer to properly labelled containers.

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

6.4 Reference to other sections

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Hygiene measures : General industrial hygiene practice. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

- Advice on common storage : No materials to be especially mentioned.
- Storage class (TRGS 510) : 13, Non Combustible Solids
- Further information on storage stability : Keep in a dry place. No decomposition if stored and applied as directed.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
silver	7440-22-4	TWA	0,01 mg/m ³ (Silver)	2006/15/EC
Further information	Indicative			
tin	7440-31-5	TWA	2 mg/m ³ (Tin)	91/322/EEC
Further information	Indicative, Existing scientific data on health effects appear to be particularly limited			
		TWA	2 mg/m ³	ACGIH

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
silver	Workers	Inhalation	Long-term systemic effects	0,1 mg/m ³
	Consumers	Inhalation	Long-term systemic effects	0,04 mg/m ³
	Consumers	Ingestion	Long-term systemic effects	1,2 mg/kg

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

copper	Workers	Skin contact	Acute systemic effects	273 mg/kg
	Workers	Inhalation	Acute systemic effects	18,2 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	137 mg/kg
	Consumers	Skin contact	Acute systemic effects	273 mg/kg
	Consumers	Inhalation	Acute systemic effects	18,2 mg/m ³
	Consumers	Ingestion	Acute systemic effects	0,16 mg/kg
	Consumers	Ingestion	Long-term systemic effects	0,16 mg/kg
zinc	Workers	Inhalation	Long-term systemic effects	5 mg/m ³
	Workers	Skin contact	Long-term systemic effects	83 mg/kg
	Consumers	Inhalation	Long-term systemic effects	2,5 mg/m ³
	Consumers	Ingestion	Long-term systemic effects	0,83 mg/kg
	Consumers	Skin contact	Long-term systemic effects	83 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
silver	Fresh water	0,00004 mg/l
	Marine water	0,00086 mg/l
	Fresh water sediment	438 mg/kg dry weight (d.w.)
	Marine sediment	438 mg/kg dry weight (d.w.)
	Soil	1,41 mg/kg dry weight (d.w.)
	Sewage treatment plant	0,025 mg/l
copper	Fresh water	0,0078 mg/l
	Marine water	0,0052 mg/l
	Fresh water sediment	87 mg/kg dry weight (d.w.)
	Soil	65,5 mg/kg dry weight (d.w.)
	Sewage treatment plant	0,23 mg/l
zinc	Fresh water	0,0206 mg/l
	Marine water	0,0061 mg/l
	Sewage treatment plant	0,052 mg/l
	Fresh water sediment	117,8
	Marine sediment	56,5
	Soil	35,6

8.2 Exposure controls

Personal protective equipment

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

Eye protection	:	Safety glasses with side-shields conforming to EN166
Hand protection Material	:	Leather gloves
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	massive form
Colour	:	white, grey
Odour	:	odourless
Melting point/range	:	650 - 900 °C
Flash point	:	Not applicable
Flammability (solid, gas)	:	The product is not flammable.
Relative density	:	9,1 - 10,2
Density	:	9,1 - 10,2 g/cm ³

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : None known.

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

10.6 Hazardous decomposition products

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute dermal toxicity : Remarks: No data available

Components:

silver:

Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

LD50 (Rat, female): > 2.000 mg/kg
Method: OECD Test Guideline 423

LD50 (Mouse): > 5.000 mg/kg
Method: OECD Test Guideline 425

Acute inhalation toxicity : LC50 (Rat): > 5,16 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

tin:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

Components:

silver:

Species: Rabbit
Exposure time: 72 h
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation

Product:

Remarks: No data available

Components:

silver:

Species: Guinea pig
Exposure time: 72 h
Method: OECD Test Guideline 405
Result: No eye irritation

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

silver:

Exposure routes: Skin contact
Species: Guinea pig
Method: OPPTS 870.2600
Result: Does not cause skin sensitisation.
Remarks: Based on read across from structural related substance

Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
Remarks: Based on read across from structural related substance

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available

Components:

silver:

Genotoxicity in vitro : Test Type: Ames test
Test system: Bacteria

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

Method: OECD Test Guideline 471
Result: negative

Test system: mammalian cells
Method: OECD Test Guideline 476
Result: positive
Remarks: Based on read across from structural related substance

Test Type: Micronucleus test
Test system: mammalian cells
Method: OECD Test Guideline 487
Result: negative
Remarks: Based on read across from structural related substance

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mammalian-Animal
Method: OECD Test Guideline 474
Result: negative

Germ cell mutagenicity- Assessment : Overall, there is no consistent evidence of induction of genetic toxicity with relevance to humans.

Carcinogenicity

Product:

Remarks: No data available

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Components:

silver:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 62,5; 125, 250 milligram per kilogram
Duration of Single Treatment: 28 days
General Toxicity - Parent: NOAEL: > 250 mg/kg body weight
General Toxicity F1: NOAEL: > 250 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic development were detected.
GLP: yes

Effects on foetal development : Species: Rat
Strain: Sprague-Dawley
Application Route: Oral
Dose: 6,5; 19,4; 64,6 milligram per kilogram

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

General Toxicity Maternal: LOAEL: 19,4 mg/kg body weight
Developmental Toxicity: NOAEL: > 64,6 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects, Maternal toxicity
GLP: yes
Remarks: unit expressed as mg metal/kg
Based on read across from structural related substance

Species: Rat
Strain: Sprague-Dawley
Application Route: Oral
Dose: 6,5; 19,4; 64,6 milligram per kilogram
General Toxicity Maternal: NOAEL: 6,5 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects
GLP: yes
Remarks: unit expressed as mg metal/kg
Based on read across from structural related substance

STOT - single exposure

Product:

Remarks: No data available

STOT - repeated exposure

Product:

Remarks: No data available

Repeated dose toxicity

Components:

silver:

Species: Rat
NOAEL: 30 mg/kg
LOAEL: 300 mg/kg
Application Route: Oral
Exposure time: 28 d
Dose: 30; 300; 1000
Method: OECD Test Guideline 407

Species: Rat
NOAEL: 30 mg/kg
LOAEL: 125 mg/kg
Application Route: Oral
Exposure time: 90 d
Number of exposures: 1/d
Dose: 30; 125; 500
Method: OECD Test Guideline 408

Species: Rat, male and female
NOAEL: 133 µg/m³

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

LOAEL: 515 µg/m³
Application Route: inhalation (dust/mist/fume)
Exposure time: 6 h/d 90 d
Number of exposures: 5/7 d
Method: OECD Test Guideline 413

Species: Rat
NOAEL: 9 mg/kg
Application Route: Oral
Exposure time: 28 d
Dose: 2,25; 4,5; 9

Further information

Product:

Remarks: No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Components:

silver:

Toxicity to fish : Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates : Remarks: No toxicity at the limit of solubility

Toxicity to fish (Chronic toxicity) : Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: No toxicity at the limit of solubility

Toxicity to soil dwelling organisms : EC10: 5,3 mg/kg
Exposure time: 28 d
Species: Eisenia fetida (earthworms)

NOEC: 22,5 mg/kg
Exposure time: 28 d
Species: Eisenia fetida (earthworms)

Plant toxicity : 0,13 mg/kg
Test period: 17 d
Species: Lactuca sativa (lettuce)

Sediment toxicity : NOEC: 12 mg/kg
Duration: 10 d

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

Species: Hyalella azteca
Remarks: Fresh water

tin:

Ecotoxicology Assessment

Acute aquatic toxicity : No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

Components:

silver:

Bioaccumulation : Bioconcentration factor (BCF): 70

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

Product:

Additional ecological information : No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of in accordance with the European Directives on waste and hazardous waste.
According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging : Dispose of as unused product.

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

Water contaminating class (Germany) : nwg not water endangering
Classification according to AwSV, Annex 1 (2.2)

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

- TA Luft List (Germany) : Total dust:
Not applicable
Inorganic substances in powdered form:
portion Class 1: 10 %
portion Class 3: 30 %

Inorganic substances in vapour or gaseous form:
Not applicable
Organic Substances:
Not applicable
Carcinogenic substances:
Not applicable
Mutagenic:
Not applicable
Toxic to reproduction:
Not applicable
- Volatile organic compounds : Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Not applicable

The components of this product are reported in the following inventories:

- CH INV : Not in compliance with the inventory
- DSL : This product contains the following components that are not on the Canadian DSL nor NDSL.
- AICS : Not in compliance with the inventory
- NZIoC : On the inventory, or in compliance with the inventory
- ENCS : Not in compliance with the inventory
- ISHL : Not in compliance with the inventory
- KECI : Not in compliance with the inventory
- PICCS : Not in compliance with the inventory
- IECSC : Not in compliance with the inventory
- TCSI : Not in compliance with the inventory
- TSCA : Not On TSCA Inventory

15.2 Chemical safety assessment

SECTION 16: Other information

Full text of other abbreviations

- 2006/15/EC : Europe. Indicative occupational exposure limit values

Silver Solder [Ag, Cu, Sn, Zn]

Version 2.3

DE

SDS Number: 300000002708

Revision Date: 21.07.2018

91/322/EEC	:	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
2006/15/EC / TWA	:	Limit Value - eight hours
91/322/EEC / TWA	:	Limit Value - eight hours
ACGIH / TWA	:	8-hour, time-weighted average

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

DE / EN