

# Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31 and 2020/878/  
EU

Printing date 04.06.2025

Version number 7 (replaces version 6)

Revision: 13.05.2025

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

**1.1 Product identifier****Trade name: Ag 145, B-Ag45CuZnSn-640/680 (L-Ag45Sn, AG 104)**

UFI: not applicable.

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

No further relevant information available.

**Application of the substance / the mixture** Hard solder**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Felder GmbH

Im Lipperfeld 11

D-46047 Oberhausen

Tel.: +49 (0)208/ 85035-0

Fax.: +49 (0)208/ 26080

<http://www.felder.de>e-mail: [info@felder.de](mailto:info@felder.de)**Further information obtainable from:**

lab

(mo-thu. 8:00 a.m. - 4:00 p.m./ fr. 8:00 a.m. - 1:00 p.m.)

email: [mprobst@felder.de](mailto:mprobst@felder.de)**1.4 Emergency telephone number:** Not required as this product is not subject to labelling.

EuPCS: PC-TEC-24

## SECTION 2: Hazards identification

**2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

The product is not classified, according to the CLP regulation.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008** Void

Hazard pictograms Void

Signal word Void

Hazard statements Void

**Additional information:**

EUH210 Safety data sheet available on request.

**2.3 Other hazards****Results of PBT and vPvB assessment**

PBT: Not applicable.

vPvB: Not applicable.

## SECTION 3: Composition/information on ingredients

**3.2 Mixtures****Description:** Mixture: consisting of the following components.**Dangerous components:**

|  |   |            |
|--|---|------------|
| CAS: 7440-22-4<br>EINECS: 231-131-3<br>Reg.nr.: 01-2119555669-21                               | silver<br>substance with a Community workplace exposure limit | 44.0-46.0% |
| CAS: 7440-50-8<br>EINECS: 231-159-6<br>Index number: 029-024-00-X<br>Reg.nr.: 01-2119480154-42 | copper<br>⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410    | 26.0-28.0% |
| CAS: 7440-66-6<br>EINECS: 231-175-3<br>Index number: 030-001-01-9<br>Reg.nr.: 01-2119467174-37 | zinc<br>substance with a Community workplace exposure limit   | 23.5-27.5% |
| CAS: 7440-31-5<br>EINECS: 231-141-8<br>Reg.nr.: 01-2119486474-28                               | tin<br>substance with a Community workplace exposure limit    | 2.0-3.0%   |

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Additional information: For the wording of the listed hazard phrases refer to section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General information:

Take affected persons out into the fresh air.

No special measures required.

After inhalation: Supply fresh air; consult doctor in case of complaints.

#### After skin contact:

After contact with the molten product, cool rapidly with cold water.

Do not pull solidified product off the skin.

Seek medical treatment.

After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing: If symptoms persist consult doctor.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

### 4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing agents:

CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture No further relevant information available.

### 5.3 Advice for firefighters

Protective equipment: Do not inhale explosion gases or combustion gases.

## SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Wear protective clothing.

6.2 Environmental precautions: Do not allow product to reach sewage system or any water course.

6.3 Methods and material for containment and cleaning up: Allow to solidify. Pick up mechanically.

### 6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## SECTION 7: Handling and storage

7.1 Precautions for safe handling Ensure that suitable extractors are available on processing machines

Information about fire - and explosion protection: No special measures required.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage:

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Store away from foodstuffs.

Further information about storage conditions: Store in dry conditions.

Storage class: 13

7.3 Specific end use(s) No further relevant information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

#### 7440-22-4 silver

|                 |   |
|-----------------|---|
| IOELV (EU)      | Long-term value: 0.1 mg/m <sup>3</sup>                    |
| WES (Australia) | Long-term value: 0.1 mg/m <sup>3</sup>                    |
| AGW (Germany)   | Long-term value: 0.1 E mg/m <sup>3</sup><br>8(II);DFG, EU |

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|                         |  |
|-------------------------|--|
| WEL (Great Britain)     | Long-term value: 0.1 mg/m <sup>3</sup>   |
| OEL (Ireland)           | Long-term value: 0.1 mg/m <sup>3</sup><br>IOELV  |
| <b>7440-50-8 copper</b> |  |
| WES (Australia)         | Long-term value: 1* 0.2** mg/m <sup>3</sup><br>*dust & mists (as Cu) **fume  |
| AGW (Germany)           | Long-term value: 0.045 (A) 0.200 (E) mg/m <sup>3</sup><br>8 (II) (A) 4 (II) (E); AGS, 10, als Cu   |
| WEL (Great Britain)     | Short-term value: 2** mg/m <sup>3</sup><br>Long-term value: 0.2* 1** mg/m <sup>3</sup><br>*fume **dusts and mists (as Cu)                        |
| OEL (Ireland)           | Long-term value: 0.2* 1** mg/m <sup>3</sup><br>*fume **dusts and mists   |
| <b>7440-66-6 zinc</b>   |  |
| MAK (Germany)           | Long-term value: 0.1A* 2E** mg/m <sup>3</sup><br>*alveolengängig; **einatembare  |
| <b>7440-31-5 tin</b>    |  |
| WES (Australia)         | Long-term value: 2 mg/m <sup>3</sup>   |
| MAK (Germany)           | vgl. Abschn. IIb   |
| OEL (Ireland)           | Short-term value: 0.2** mg/m <sup>3</sup><br>Long-term value: 2* 0.1** mg/m <sup>3</sup><br>IOELV, *metal, oxide, inorg. compds., **org. compds. |

**Regulatory information**

IOELV (EU): (EU) 2019/1831

WES (Australia): Workplace exposure standards for airborne contaminants

AGW (Germany): TRGS 900

WEL (Great Britain): EH40/2020

OEL (Ireland): 2024 CoP for the Safety, Health and Welfare at Work

MAK (Germany): MAK- und BAT-Liste

**recommended monitoring procedures in accordance with 2020/878/EU no. 8.1.2:**

7440-50-8 copper: BIA 7755 (D), NIOSH 7301(E), MétroPol Fiche 003(F), MTA/MA-025/A92(ESP)

7440-22-4 silver: ISO 15202(F, E), BIA 8600(D), NIOSH 7301(E)

7440-66-6 zinc: NIOSH 7300, 7301, 7303(E), OSHA ID 121(E)

7440-31-5 tin: NIOSH 7300, 7301, 7303(E), OSHA ID-121, ISO15202(E,F), MTA/MA-025/A92(ESP)

**Additional information:** The lists valid during the making were used as basis.**8.2 Exposure controls****Appropriate engineering controls** No further data; see section 7.**Appropriate engineering controls:**

Ensure adequate ventilation.

Remove the fumes by means of suitable suction devices.

**Individual protection measures, such as personal protective equipment****General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.

**Respiratory protection:**

Use suitable respiratory protective device in case of insufficient ventilation.

Filter P2

**Hand protection**

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

**Material of gloves** Leather gloves.**Penetration time of glove material** Value for the permeation: Level ≤ -**Eyeface protection** Safety glasses**Body protection:** Protective work clothing**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Colour:**

Silver-coloured

**Odour:**

Odourless

**Odour threshold:**

Not determined.

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|  |   |
|--|---|
| <b>Melting point/freezing point:</b>   | 640-680 °C                                    |
| <b>Boiling point or initial boiling point and boiling range</b>                      | Undetermined.                                 |
| <b>Flammability</b>  | Not determined.                               |
| <b>Lower and upper explosion limit</b>   |   |
| Lower:   | Not determined.                               |
| Upper:   | Not determined.                               |
| <b>Flash point:</b>  | Not applicable.                               |
| <b>Decomposition temperature:</b>  | Not determined.                               |
| <b>pH</b>  | Not applicable.                               |
| <b>Viscosity:</b>  |   |
| Kinematic viscosity  | Not applicable.                               |
| Dynamic:   | Not applicable.                               |
| <b>Solubility</b>  |   |
| water:   | Insoluble.                                    |
| <b>Partition coefficient n-octanol/water (log value)</b>                             | Not determined.                               |
| <b>Vapour pressure:</b>  | Not applicable.                               |
| <b>Density and/or relative density</b>   |   |
| Density at 20 °C:  | 9.2 g/cm <sup>3</sup>                         |
| Relative density   | Not determined.                               |
| Vapour density   | Not applicable.                               |
| <b>Particle characteristics</b>  | See section 3.                                |
| <b>9.2 Other information</b>   |   |
| <b>Appearance:</b>   |   |
| Form:  | Solid   |
| <b>Important information on protection of health and environment, and on safety.</b> |   |
| <b>Ignition temperature:</b>   | Product is not selfigniting.                  |
| <b>Explosive properties:</b>   | Product does not present an explosion hazard. |
| <b>Solvent content:</b>  |   |
| Organic solvents:  | 0.0 %   |
| VOC (EC)   | 0.00 %  |
| <b>Change in condition</b>   |   |
| <b>Evaporation rate</b>  | Not applicable.                               |
| <b>Information with regard to physical hazard classes</b>                            |   |
| <b>Explosives</b>  | Void  |
| <b>Flammable gases</b>   | Void  |
| <b>Aerosols</b>  | Void  |
| <b>Oxidising gases</b>   | Void  |
| <b>Gases under pressure</b>  | Void  |
| <b>Flammable liquids</b>   | Void  |
| <b>Flammable solids</b>  | Void  |
| <b>Self-reactive substances and mixtures</b>   | Void  |
| <b>Pyrophoric liquids</b>  | Void  |
| <b>Pyrophoric solids</b>   | Void  |
| <b>Self-heating substances and mixtures</b>  | Void  |
| <b>Substances and mixtures, which emit flammable gases in contact with water</b>     | Void  |
| <b>Oxidising liquids</b>   | Void  |
| <b>Oxidising solids</b>  | Void  |
| <b>Organic peroxides</b>   | Void  |
| <b>Corrosive to metals</b>   | Void  |
| <b>Desensitised explosives</b>   | Void  |

## SECTION 10: Stability and reactivity

**10.1 Reactivity** No further relevant information available.

### 10.2 Chemical stability

**Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

Stable up to melting point.

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**10.3 Possibility of hazardous reactions***Reacts with strong acids and alkali.**Reacts with strong oxidising agents.***10.4 Conditions to avoid** *No further relevant information available.***10.5 Incompatible materials:** *No further relevant information available.***10.6 Hazardous decomposition products:** *Hydrogen***SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity** *Based on available data, the classification criteria are not met.***Primary irritant effect:****Skin corrosion/irritation** *Based on available data, the classification criteria are not met.***Serious eye damage/irritation** *Based on available data, the classification criteria are not met.***Respiratory or skin sensitisation** *Based on available data, the classification criteria are not met.***Germ cell mutagenicity** *Based on available data, the classification criteria are not met.***Carcinogenicity** *Based on available data, the classification criteria are not met.***Reproductive toxicity** *Based on available data, the classification criteria are not met.***STOT-single exposure** *Based on available data, the classification criteria are not met.***STOT-repeated exposure** *Based on available data, the classification criteria are not met.***Aspiration hazard** *Based on available data, the classification criteria are not met.***11.2 Information on other hazards****Endocrine disrupting properties***None of the ingredients is listed.***SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:** *No further relevant information available.***chronic aquatic toxicity:***Classification conditions Copper (029-024-00-X) Environmental hazard not fulfilled.**Classification conditions Copper (029-026-00-0) specific surface area < 0,67 mm<sup>2</sup>/mg.***12.2 Persistence and degradability** *No further relevant information available.***12.3 Bioaccumulative potential** *No further relevant information available.***12.4 Mobility in soil** *No further relevant information available.***12.5 Results of PBT and vPvB assessment****PBT:** *Not applicable.***vPvB:** *Not applicable.***12.6 Endocrine disrupting properties***The product does not contain substances with endocrine disrupting properties.***12.7 Other adverse effects****Additional ecological information:****General notes:***The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary**Not hazardous for water.***SECTION 13: Disposal considerations****13.1 Waste treatment methods****Recommendation** *Contact manufacturer for recycling information.***European waste catalogue***17 04 07: mixed metals***Cardboard packaging:***15 01 01: paper and cardboard packaging***Plastic packaging, inner foil:***15 01 02: plastic packaging*

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**Uncleaned packaging:****Recommendation:** *Disposal must be made according to official regulations.*

## SECTION 14: Transport information

|   |                 |
|---|-----------------|
| <b>14.1 UN number or ID number</b><br>ADR, ADN, IMDG, IATA              | Void            |
| <b>14.2 UN proper shipping name</b><br>ADR, ADN, IMDG, IATA             | Void            |
| <b>14.3 Transport hazard class(es)</b><br>ADR, ADN, IMDG, IATA<br>Class | Void            |
| <b>14.4 Packing group</b><br>ADR, IMDG, IATA                            | Void            |
| <b>14.5 Environmental hazards:</b><br>Marine pollutant:                 | No              |
| <b>14.6 Special precautions for user</b>                                | Not applicable. |
| <b>14.7 Maritime transport in bulk according to IMO instruments</b>     | Not applicable. |
| <b>UN "Model Regulation":</b>   | Void            |

## SECTION 15: Regulatory information

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

Directive 2012/18/EU

Named dangerous substances - ANNEX I *None of the ingredients is listed.*REGULATION (EU) 2019/1021 on persistent organic pollutants (POP) *None of the ingredients are included.***DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II***None of the ingredients is listed.*

REGULATION (EU) 2019/1148

**Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))***None of the ingredients is listed.***Annex II - REPORTABLE EXPLOSIVES PRECURSORS***None of the ingredients is listed.***Regulation (EC) No 273/2004 on drug precursors***None of the ingredients is listed.***Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors***None of the ingredients is listed.***National regulations:****Information about limitation of use:** *Employment restrictions concerning juveniles must be observed.***Waterhazard class:** *Generally not hazardous for water.***15.2 Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

## SECTION 16: Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.***Reasons for changes:**25.08.2015: *adaption to regulation 453/2010/EC, 830/2015/EU, 2012/18/EU*23.02.2017: *chapter 3, 8.1, 8.2*15.03.2018: *chapter 13*19.05.2022: *chapter 1, 3, 8, 15, 16*09.07.2024: *chapter 1, 12*13.05.2025: *chapter 1, 3, 8, 12*

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**Information referred to in Annex I, point 1.3.4.2 of Regulation 1272/2008/EC:****Relevant phrases***H400 Very toxic to aquatic life.**H410 Very toxic to aquatic life with long lasting effects.***Contact:** Dr. M. Probst**Version number of previous version:** 6**Abbreviations and acronyms:***RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)**ICAO: International Civil Aviation Organisation**ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)**IMDG: International Maritime Code for Dangerous Goods**IATA: International Air Transport Association**GHS: Globally Harmonised System of Classification and Labelling of Chemicals**EINECS: European Inventory of Existing Commercial Chemical Substances**ELINCS: European List of Notified Chemical Substances**CAS: Chemical Abstracts Service (division of the American Chemical Society)**VOC: Volatile Organic Compounds (USA, EU)**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative**Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1**Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1***Safety data sheet SD3101**

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