

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Silver and Tin-Silver-Copper Alloys \*\* Tin > 80%; Silver 0,5 - 10%; Copper < 5%**

Revision date: 27.04.2021

Product code: 950005

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Tin-Silver and Tin-Silver-Copper Alloys \*\* Tin &gt; 80%; Silver 0,5 - 10%; Copper &lt; 5%

**Further trade names**

This MSDS covers the following products:

SnAg3  
 SnAg3,8Cu0,7  
 SnAg3Cu0,5  
 SnAg4Cu0,5  
 SnAg3,5Cu0,7  
 SnAg3  
 SnAg3,5  
 SnAg3,7  
 SnAg4  
 Sn96C  
 SN96Ce  
 SN97C  
 SN97Ce  
 SAC305  
 SAC387  
 SAC300

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

soft solder lead free

**Uses advised against**

any non-intended use.

**1.3. Details of the supplier of the safety data sheet**

|                         |                                      |                           |
|-------------------------|--------------------------------------|---------------------------|
| Company name:           | Balver Zinn Josef Jost GmbH & Co. KG |                           |
| Street:                 | Blintroper Weg 11                    |                           |
| Place:                  | D-58802 Balve                        |                           |
| Telephone:              | +49 2375 915-0                       | Telefax: +49 2375 915-114 |
| Responsible Department: | cia@balverzinn.com                   |                           |

**1.4. Emergency telephone**

**number:** +49 (0) 700 24 112 112 (Contract-ID:BZW)  
 from USA/Canada pls call 011 49 700 24 112 112

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

This mixture is not classified as hazardous in accordance with Regulation (EC) No. 1272/2008.

**2.2. Label elements****Regulation (EC) No. 1272/2008****Special labelling of certain mixtures**

EUH210 Safety data sheet available on request.

**Additional advice on labelling**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]: none

**2.3. Other hazards**

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

No risks worthy of mention. Please observe the information on the safety data sheet at all times.

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**SECTION 3: Composition/information on ingredients****3.2. Mixtures****Chemical characterization**

solder alloy

**Hazardous components**

| CAS No    | Chemical name      |          |                  | Quantity   |
|-----------|--------------------|----------|------------------|------------|
|           | EC No              | Index No | REACH No         |            |
|           | GHS Classification |          |                  |            |
| 7440-31-5 | tin                |          |                  | > 80 %     |
|           | 231-141-8          |          | 01-2119486474-28 |            |
| 7440-22-4 | silver             |          |                  | 0,5 - 10 % |
|           | 231-131-3          |          | 01-2119555669-21 |            |
| 7440-50-8 | copper             |          |                  | <5 %       |
|           | 231-159-6          |          | 01-2119480154-42 |            |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No    | EC No  | Chemical name | Quantity   |
|-----------|--|---------------|------------|
|           | Specific Conc. Limits, M-factors and ATE   |               |            |
| 7440-31-5 | 231-141-8  | tin           | > 80 %     |
|           | inhalation: LC50 = (>4,75) mg/l (dusts or mists); dermal: LD50 = >2000 mg/kg; oral: LD50 = >2000 mg/kg |               |            |
| 7440-22-4 | 231-131-3  | silver        | 0,5 - 10 % |
|           | inhalation: LC50 = >5,16 mg/l (dusts or mists); dermal: LD50 = >2000 mg/kg; oral: LD50 = >2000 mg/kg   |               |            |
| 7440-50-8 | 231-159-6  | copper        | <5 %       |
|           | inhalation: LC50 = >5,11 mg/l (dusts or mists)   |               |            |

**Further Information**

Product does not contain listed SVHC substances > 0,1 % according to Regulation (EC) No. 1907/2006 Article 59 (REACH)

**SECTION 4: First aid measures****4.1. Description of first aid measures****General information**

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

**After inhalation**

In case of accident by inhalation: remove casualty to fresh air and keep at rest. When in doubt or if symptoms are observed, get medical advice.

**After contact with skin**

No special measures are necessary.

The melted product can cause severe burns. After contact with molten product, cool skin area rapidly with cold water. Burns caused by molten material must be treated clinically.

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**After contact with eyes**

No special measures are necessary.

**After ingestion**

No special measures are necessary.

**4.2. Most important symptoms and effects, both acute and delayed**

No information available.

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

## SECTION 5: Firefighting measures

**5.1. Extinguishing media****Suitable extinguishing media**

Sand  
Extinguishing powder  
D -powder

**Unsuitable extinguishing media**

Extinguishing media which must not be used for safety reasons:  
Water  
High power water jet  
Water spray jet

**5.2. Special hazards arising from the substance or mixture**

Can be released in case of fire: Metal oxide smoke, toxic

**5.3. Advice for firefighters**

In case of fire and/or explosion do not breathe fumes.  
In case of fire: Wear self-contained breathing apparatus.

**Additional information**

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures****General measures**

See protective measures under point 7 and 8.

**For non-emergency personnel**

Personal protection equipment: see section 8

**For emergency responders**

No special measures are necessary.

**6.2. Environmental precautions**

No special measures are necessary.

**6.3. Methods and material for containment and cleaning up****For containment**

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).  
Treat the recovered material as prescribed in the section on waste disposal.

**For cleaning up**

Clean contaminated objects and areas thoroughly observing environmental regulations.

**Other information**

Take up mechanically, placing in appropriate containers for disposal.  
Clean contaminated objects and areas thoroughly observing environmental regulations.

**6.4. Reference to other sections**

Safe handling: see section 7

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Personal protection equipment: see section 8

Disposal: see section 13

**SECTION 7: Handling and storage****7.1. Precautions for safe handling****Advice on safe handling**

Provide adequate ventilation as well as local exhaust at critical locations.  
Do not breathe smoke. Do not breathe dust.

**Advice on protection against fire and explosion**

No special fire protection measures are necessary.

**Further information on handling**

General protection and hygiene measures: See section 8.

**7.2. Conditions for safe storage, including any incompatibilities****Requirements for storage rooms and vessels**

No special measures are necessary.

**Hints on joint storage**

Do not store together with: Explosives. Radioactive substances. Infectious substances.

**Further information on storage conditions**

Keep the packing dry and well sealed to prevent contamination and absorption of humidity.  
Recommended storage temperature: 20°C  
Protect against: frost. UV-radiation/sunlight. heat. Humidity

**7.3. Specific end use(s)**

See section 1.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Exposure limits (EH40)**

| CAS No    | Substance                       | ppm | mg/m <sup>3</sup> | fibres/ml | Category      | Origin |
|-----------|---------------------------------|-----|-------------------|-----------|---------------|--------|
| 7440-50-8 | Copper, dusts and mists (as Cu) | -   | 1                 |           | TWA (8 h)     | WEL    |
|           |                                 | -   | 2                 |           | STEL (15 min) | WEL    |
| 7440-50-8 | Copper, fume                    | -   | 0.2               |           | TWA (8 h)     | WEL    |
| 7440-22-4 | Silver, metallic                | -   | 0.1               |           | TWA (8 h)     | WEL    |

**DNEL/DMEL values**

| CAS No                   | Substance | Exposure route | Effect   | Value                   |
|--------------------------|-----------|----------------|----------|-------------------------|
| 7440-31-5                | tin       |                |          |                         |
| Consumer DNEL, long-term |           | inhalation     | systemic | 3,476 mg/m <sup>3</sup> |
| Consumer DNEL, acute     |           | inhalation     | systemic | 3,476 mg/m <sup>3</sup> |
| Worker DNEL, long-term   |           | inhalation     | systemic | 11,75 mg/m <sup>3</sup> |
| Worker DNEL, acute       |           | inhalation     | systemic | 11,75 mg/m <sup>3</sup> |
| Consumer DNEL, long-term |           | dermal         | systemic | 80 mg/kg bw/day         |
| Worker DNEL, acute       |           | dermal         | systemic | 133,3 mg/kg bw/day      |
| Consumer DNEL, acute     |           | dermal         | systemic | 80 mg/kg bw/day         |

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|                          |            |          |                        |
|--------------------------|------------|----------|------------------------|
| Worker DNEL, long-term   | dermal     | systemic | 133,3 mg/kg bw/day     |
| Consumer DNEL, acute     | oral       | systemic | 80 mg/kg bw/day        |
| Consumer DNEL, long-term | oral       | systemic | 80 mg/kg bw/day        |
| 7440-22-4                | silver     |          |                        |
| Worker DNEL, long-term   | inhalation | systemic | 0,1 mg/m <sup>3</sup>  |
| Consumer DNEL, long-term | inhalation | systemic | 0,04 mg/m <sup>3</sup> |
| Consumer DNEL, long-term | oral       | systemic | 1,2 mg/kg bw/day       |
| 7440-50-8                | copper     |          |                        |
| Worker DNEL, acute       | dermal     | systemic | 273 mg/kg bw/day       |
| Consumer DNEL, acute     | dermal     | systemic | 273 mg/kg bw/day       |
| Consumer DNEL, acute     | inhalation | systemic | 20 mg/m <sup>3</sup>   |
| Worker DNEL, long-term   | inhalation | local    | 1 mg/m <sup>3</sup>    |
| Consumer DNEL, long-term | dermal     | systemic | 137 mg/kg bw/day       |
| Worker DNEL, long-term   | dermal     | systemic | 137 mg/kg bw/day       |
| Worker DNEL, acute       | inhalation | systemic | 20 mg/m <sup>3</sup>   |
| Consumer DNEL, long-term | inhalation | local    | 1 mg/m <sup>3</sup>    |

**PNEC values**

| CAS No   | Substance | Value        |
|--|-----------|--------------|
| Environmental compartment                        |           | Value        |
| 7440-22-4  | silver    |              |
| Freshwater                                       |           | 0,00004 mg/l |
| Marine sediment                                  |           | 438,13 mg/kg |
| Freshwater sediment                              |           | 438,13 mg/kg |
| Marine water                                     |           | 0,00086 mg/l |
| Micro-organisms in sewage treatment plants (STP) |           | 0,025 mg/l   |
| Soil   |           | 1,41 mg/kg   |
| 7440-50-8  | copper    |              |
| Freshwater                                       |           | 0,0078 mg/l  |
| Marine water                                     |           | 0,0052 mg/l  |
| Freshwater sediment                              |           | 87 mg/kg     |
| Marine sediment                                  |           | 678 mg/kg    |
| Micro-organisms in sewage treatment plants (STP) |           | 0,23 mg/l    |
| Soil   |           | 65 mg/kg     |

**8.2. Exposure controls****Appropriate engineering controls**

Provide adequate ventilation as well as local exhaust at critical locations.

**Protective and hygiene measures**

Keep away from food, drink and animal feedingstuffs. Wash hands before breaks and after work. When using do not eat, drink, smoke, sniff. Use protective skin cream before handling the product.

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**Eye/face protection**

Wear eye/face protection.

**Hand protection**

Wear suitable gloves.

for coarse soldering works: heat insulating.

The selected protective gloves have to satisfy the specifications of EU Directive EC/2016/425 and the standard EN 374 derived from it.

In the case of wanting to use the gloves again, clean them before taking off and air them well. Before using check leak tightness / impermeability.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Protective clothing (heat-resistant)

**Respiratory protection**

With correct and proper use, and under normal conditions, breathing protection is not required.

Provide adequate ventilation as well as local exhaust at critical locations.

Respiratory protection necessary at:

Insufficient ventilation

Exceeding exposure limit values

smoke generation

Suitable respiratory protective equipment: Particle filter device (DIN EN 143) Type: P1-3

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

**Environmental exposure controls**

No special environmental measures are necessary.

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

|                 |                  |
|-----------------|------------------|
| Physical state: | solid            |
| Colour:         | metallic, silver |
| Odour:          | odourless        |

**Test method**

pH-Value: not applicable

**Changes in the physical state**

Melting point: 217 °C N/A

Boiling point or initial boiling point and boiling range: not determined

Sublimation point: not determined

Softening point: not determined

Flash point: not determined

**Flammability**

Solid/liquid: not determined

**Explosive properties**

none

Lower explosion limits: not determined

Upper explosion limits: not determined

Auto-ignition temperature: not determined

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**Self-ignition temperature**

Solid: not determined

Decomposition temperature: not determined

**Oxidizing properties**

none

Vapour pressure: not determined

Density: 7,26 g/cm<sup>3</sup> N/A

Bulk density: not determined

Water solubility: insoluble

**Solubility in other solvents**

insoluble

Viscosity / dynamic: not determined

Viscosity / kinematic: not determined

**9.2. Other information**

Solid content: not determined

**SECTION 10: Stability and reactivity****10.1. Reactivity**

No information available.

**10.2. Chemical stability**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.3. Possibility of hazardous reactions**

No known hazardous reactions.

**10.4. Conditions to avoid**

No information available.

**10.5. Incompatible materials**

No information available.

**10.6. Hazardous decomposition products**

Can be released in case of fire: Metal oxide smoke, toxic

**SECTION 11: Toxicological information****11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008****Toxicokinetics, metabolism and distribution**

No information available.

**Acute toxicity**

Based on available data, the classification criteria are not met.

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| CAS No    | Chemical name            |                      |         |              |        |
|-----------|--------------------------|----------------------|---------|--------------|--------|
|           | Exposure route           | Dose                 | Species | Source       | Method |
| 7440-31-5 | tin                      |                      |         |              |        |
|           | oral                     | LD50 >2000<br>mg/kg  | Rat     | ECHA Dossier |        |
|           | dermal                   | LD50 >2000<br>mg/kg  | Rat     | ECHA Dossier |        |
|           | inhalation (4 h) aerosol | LC50 (>4,75)<br>mg/l | Rat     | ECHA Dossier |        |
| 7440-22-4 | silver                   |                      |         |              |        |
|           | oral                     | LD50 >2000<br>mg/kg  | Rat     | ECHA Dossier |        |
|           | dermal                   | LD50 >2000<br>mg/kg  | Rat     | ECHA Dossier |        |
|           | inhalation (4 h) aerosol | LC50 >5,16<br>mg/l   | Rat     | ECHA Dossier |        |
| 7440-50-8 | copper                   |                      |         |              |        |
|           | inhalation (4 h) aerosol | LC50 >5,11<br>mg/l   | Rat     | ECHA Dossier |        |

**Irritation and corrosivity**

Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Not an irritant.

Serious eye damage/eye irritation: Not an irritant.

**Sensitising effects**

Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation: not sensitising.

**Carcinogenic/mutagenic/toxic effects for reproduction**

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.

**Specific effects in experiment on an animal**

No data available

**SECTION 12: Ecological information****12.1. Toxicity**

No data available

**12.2. Persistence and degradability**

The methods for determining the biological degradability are not applicable to inorganic substances.

**12.3. Bioaccumulative potential**

No indication of bioaccumulation potential.

**12.4. Mobility in soil**

No data available

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.



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**12.7. Other adverse effects**

No data available

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Disposal recommendations**

Dispose of waste according to applicable legislation. Consult the local waste disposal expert about waste disposal. Non-contaminated packages may be recycled. According to (EWC) European Waste Catalogue, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Control report for waste code/ waste marking according to (EWC) European Waste Catalogue:

**List of Wastes Code - residues/unused products**

160304 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes other than those mentioned in 16 03 03

**List of Wastes Code - used product**

160304 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes other than those mentioned in 16 03 03

**List of Wastes Code - contaminated packaging**

150106 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); mixed packaging

**Contaminated packaging**

Handle contaminated packages in the same way as the substance itself.

**SECTION 14: Transport information****Land transport (ADR/RID)**

|   |                |
|---|----------------|
| <b><u>14.1. UN number:</u></b>                  | Not restricted |
| <b><u>14.2. UN proper shipping name:</u></b>    | Not restricted |
| <b><u>14.3. Transport hazard class(es):</u></b> | Not restricted |
| <b><u>14.4. Packing group:</u></b>              | Not restricted |

**Inland waterways transport (ADN)**

|   |                |
|---|----------------|
| <b><u>14.1. UN number:</u></b>                  | Not restricted |
| <b><u>14.2. UN proper shipping name:</u></b>    | Not restricted |
| <b><u>14.3. Transport hazard class(es):</u></b> | Not restricted |
| <b><u>14.4. Packing group:</u></b>              | Not restricted |

**Marine transport (IMDG)**

|   |                |
|---|----------------|
| <b><u>14.1. UN number:</u></b>                  | Not restricted |
| <b><u>14.2. UN proper shipping name:</u></b>    | Not restricted |
| <b><u>14.3. Transport hazard class(es):</u></b> | Not restricted |
| <b><u>14.4. Packing group:</u></b>              | Not restricted |

**Air transport (ICAO-TI/IATA-DGR)**

|   |                |
|---|----------------|
| <b><u>14.1. UN number:</u></b>                  | Not restricted |
| <b><u>14.2. UN proper shipping name:</u></b>    | Not restricted |
| <b><u>14.3. Transport hazard class(es):</u></b> | Not restricted |
| <b><u>14.4. Packing group:</u></b>              | Not restricted |

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

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**14.6. Special precautions for user**

Not restricted

**14.7. Maritime transport in bulk according to IMO instruments**

Not restricted

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Information according to 2012/18/EU                      Not subject to 2012/18/EU (SEVESO III)  
(SEVESO III):

**Additional information**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (amended by Regulation (EU) No 2020/878)  
The mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].  
REACH 1907/2006 Appendix XVII, No (mixture): not relevant

**National regulatory information**

Water hazard class (D):                                      - - non-hazardous to water

**Additional information**

Observe technical data sheet.

**15.2. Chemical safety assessment**

Chemical safety assessments for substances in this mixture were not carried out.

**SECTION 16: Other information****Changes**

Rev. 1.00; 06.05.2015, Initial release  
Rev.1.1; 03.11.2016, Indication of changes - chapter: 1, 2, 3, 16.  
Rev. 2,0; 16.04.2018, Changes in chapter: 15  
Rev. 2,1; 27.04.2021, Changes in chapter: 1-16

**Abbreviations and acronyms**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
AGW: Arbeitsplatzgrenzwert  
CAS: Chemical Abstracts Service  
CLP: Classification, Labelling and Packaging of substances and mixtures  
DNEL: Derived No Effect Level  
d: day(s)  
EINECS: European INventory of Existing Commercial chemical Substances  
ELINCS: European List of Notified Chemical Substances  
ECHA: European Chemicals Agency  
EWC: European Waste Catalogue  
IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
GefStoffV: Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)  
h: hour  
LOAEL: Lowest observed adverse effect level  
LOAEC: Lowest observed adverse effect concentration

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LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
NOAEL: No observed adverse effect level  
NOAEC: No observed adverse effect concentration  
NLP: No-Longer Polymers  
N/A: not applicable  
OECD: Organisation for Economic Co-operation and Development  
PNEC: predicted no effect concentration  
PBT: Persistent bioaccumulative toxic  
RID: Reglement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail )  
REACH: Registration, Evaluation, Authorisation of Chemicals  
SVHC: substance of very high concern  
TRGS: Technische Regeln für Gefahrstoffe  
UN: United Nations  
VOC: Volatile Organic Compounds

**Relevant H and EUH statements (number and full text)**

EUH210 Safety data sheet available on request.

**Further Information**

Classification according to Regulation (EC) No 1272/2008 [CLP] - Classification procedure:

Health hazards: Calculation method.

Environmental hazards: Calculation method.

Physical hazards: On basis of test data and / or calculated and / or estimated.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*