

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Leadfree Solder Wire Tin-Silver or Tin-Silver-Copper Alloy

Revision date: 24.11.2016

Product code: 950210

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

Leadfree Solder Wire Tin-Silver or Tin-Silver-Copper Alloy

Further trade names

possible alloys: SN96C; SN96Ce; SN97C; SnAg3,8Cu0,7; SnAg3,0Cu0,5; SnAg3,0; SnAg3,5; SnAg4,0

3237; F-SW21

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

Solder wire

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 915-1700 |
| Responsible Department: | sds@balverzinn.com | |

1.4. Emergency telephone number: Chemtrec: +44(0) 870-8200418**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**Additional advice on labelling**

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

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

Solder wire

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Hazardous components

| CAS No | Chemical name | | | Quantity |
|-----------|---|--------------|------------------|------------|
| | EC No | Index No | REACH No | |
| | Classification according to Regulation (EC) No. 1272/2008 [CLP] | | | |
| 7440-31-5 | tin | | | >90 % |
| | 231-141-8 | | | |
| 7440-22-4 | silver | | | 0,2 - 5 % |
| | 231-131-3 | | 01-2119555669-21 | |
| 7440-50-8 | copper | | | 0 - 1 % |
| | 231-159-6 | | | |
| 7440-02-0 | nickel | | | 0 - 0,05 % |
| | 231-111-4 | 028-002-00-7 | 01-2119438727-29 | |
| | Carc. 2, Skin Sens. 1, STOT RE 1; H351 H317 H372 | | | |

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

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.

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

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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: Gas/vapours, irritant. Carbon monoxide Carbon dioxide (CO₂). Nitrogen oxides (NO_x). Metal oxide smoke, toxic

5.3. Advice for firefighters

In case of fire and/or explosion do not breathe fumes.
Wear a self-contained breathing apparatus and chemical protective clothing.

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**

See protective measures under point 7 and 8.

6.2. Environmental precautions

No special measures are necessary.

6.3. Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal.
Clean contaminated articles and floor according to the environmental legislation.

6.4. Reference to other sections

Safe handling: see section 7
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.

Advice on storage compatibility

Do not store together with: Explosives. Oxidizing solids. Oxidizing liquids. Radioactive substances. Infectious substances.

7.3. Specific end use(s)

refer to chapter 1.

SECTION 8: Exposure controls/personal protection

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8.1. Control parameters

Exposure limits (EH40)

| CAS No | Substance | ppm | mg/m ³ | 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 |
| | | - | - | | STEL (15 min) | WEL |
| 56-81-5 | Glycerol, mist | - | 10 | | TWA (8 h) | WEL |
| | | - | - | | STEL (15 min) | WEL |
| - | Nickel and its inorganic compounds (except nickel tetracarbonyl): nickel and water-insoluble nickel compounds (as Ni) | - | 0.5 | | TWA (8 h) | WEL |
| | | - | - | | STEL (15 min) | WEL |
| 7440-22-4 | Silver, metallic | - | 0.1 | | TWA (8 h) | WEL |
| | | - | - | | STEL (15 min) | WEL |

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DNEL/DMEL values

| CAS No | Substance | Exposure route | Effect | Value |
|--------------------------|-----------|----------------|----------|--------------------------|
| 7440-31-5 | tin | | | |
| Consumer DNEL, long-term | | inhalation | systemic | 3,476 mg/m ³ |
| Consumer DNEL, acute | | inhalation | systemic | 3,476 mg/m ³ |
| Worker DNEL, long-term | | inhalation | systemic | 11,75 mg/m ³ |
| Worker DNEL, acute | | inhalation | systemic | 11,75 mg/m ³ |
| 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 |
| 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 | | | |
| Consumer DNEL, long-term | | oral | systemic | 1,2 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,1 mg/m ³ |
| Consumer DNEL, long-term | | inhalation | systemic | 0,04 mg/m ³ |
| 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 ³ |
| Worker DNEL, long-term | | inhalation | local | 1 mg/m ³ |
| 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 ³ |
| Consumer DNEL, long-term | | inhalation | local | 1 mg/m ³ |
| 7440-02-0 | nickel | | | |
| Worker DNEL, acute | | inhalation | systemic | 680 mg/m ³ |
| Worker DNEL, long-term | | inhalation | local | 0,05 mg/m ³ |
| Worker DNEL, long-term | | inhalation | systemic | 0,05 mg/m ³ |
| Worker DNEL, acute | | inhalation | local | 4 mg/m ³ |
| Worker DNEL, long-term | | dermal | local | 0,035 mg/cm ² |
| Consumer DNEL, long-term | | inhalation | systemic | 0,02 mg/m ³ |
| Consumer DNEL, acute | | inhalation | systemic | 408 mg/m ³ |
| Consumer DNEL, long-term | | inhalation | local | 0,02 mg/m ³ |
| Consumer DNEL, acute | | inhalation | local | 2,4 mg/m ³ |
| Consumer DNEL, long-term | | dermal | local | 0,035 mg/cm ² |
| Consumer DNEL, long-term | | oral | systemic | 0,02 mg/kg bw/day |
| Consumer DNEL, acute | | oral | systemic | 0,012 mg/kg bw/day |

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PNEC values

| CAS No | Substance | |
|--|-----------|--------------|
| Environmental compartment | | Value |
| 7440-22-4 | silver | |
| Soil | | 1,41 mg/kg |
| 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 |
| 7440-50-8 | copper | |
| Freshwater sediment | | 87 mg/kg |
| Marine water | | 0,0052 mg/l |
| Freshwater | | 0,0078 mg/l |
| 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 exhaustion 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.

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 89/686/EEC 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.

Respiratory protection necessary at:

insufficient ventilation.

exceeding exposure limit values

Suitable respiratory protective equipment: Particle filter device (DIN EN 143) Type: P2/3

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates)

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that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

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: not determined
 Initial boiling point and boiling range: not determined
 Sublimation point: not determined
 Softening point: not determined
 Flash point: not determined

Flammability

Solid: not determined

Explosive properties

none

Lower explosion limits: not determined
 Upper explosion limits: not determined
 Ignition temperature: not determined

Auto-ignition temperature

Solid: not determined

Decomposition temperature: not determined

Oxidizing properties

none

Vapour pressure: not determined

Density: not determined

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

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10.1. Reactivity

No information available.

10.2. Chemical stability

Stable under normal storage and handling conditions.

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 toxicological effects****Toxicokinetics, metabolism and distribution**

No information available.

Acute toxicity

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

| CAS No | Chemical name | Exposure route | Dose | Species | Source |
|-----------|--------------------------|----------------|--------------|---------|--------------|
| 7440-31-5 | tin | | | | |
| | oral | LD50 | >2000 mg/kg | Rat | ECHA Dossier |
| | dermal | LD50 | >2000 mg/kg | Rat | ECHA Dossier |
| | inhalative (4 h) aerosol | LC50 | (>4,75) mg/l | Rat | ECHA Dossier |
| 7440-22-4 | silver | | | | |
| | oral | LD50 | >2000 mg/kg | Rat | ECHA Dossier |
| | dermal | LD50 | >2000 mg/kg | Rat | ECHA Dossier |
| | inhalative (4 h) aerosol | LC50 | >5,16 mg/l | Rat | ECHA Dossier |
| 7440-50-8 | copper | | | | |
| | inhalative (4 h) aerosol | LC50 | >5,11 mg/l | Rat | ECHA Dossier |
| 7440-02-0 | nickel | | | | |
| | oral | LD50 | > 5000 mg/kg | Rat | ECHA Dossier |
| | inhalative aerosol | LC50 | 10,2 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.

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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

| CAS No | Chemical name | | | | |
|-----------|--------------------------|------------------|-----------|---------------------------|--------------|
| | Aquatic toxicity | Dose | [h] [d] | Species | Source |
| 7440-02-0 | nickel | | | | |
| | Acute fish toxicity | LC50 > 100 mg/l | 96 h | Danio rerio | ECHA Dossier |
| | Acute algae toxicity | ErC50 > 100 mg/l | 72 h | Selenastrum capricornutum | ECHA Dossier |
| | Acute crustacea toxicity | EC50 > 100 mg/l | 48 h | Daphnia magna | ECHA Dossier |

12.2. Persistence and degradability

No data available

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.

12.6. Other adverse effects

No data available

SECTION 13: Disposal considerations**13.1. Waste treatment methods****Advice on disposal**

Dispose of waste according to applicable legislation. Consult the appropriate local waste disposal expert about waste disposal. Non-contaminated packages may be recycled. According to EAKV, 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 EAKV:

Waste disposal number of waste from 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

Waste disposal number of 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

Waste disposal number of 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.

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SECTION 14: Transport information

Land transport (ADR/RID)

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

Inland waterways transport (ADN)

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

Marine transport (IMDG)

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

Air transport (ICAO-TI/IATA-DGR)

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

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

14.6. Special precautions for user

Not restricted

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

Not restricted

SECTION 15: Regulatory information

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

Restrictions on use (REACH, annex XVII):

Entry 27: nickel

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

Additional information: 0

Additional informationThe mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].
REACH 1907/2006 Appendix XVII, No: not relevant**National regulatory information**

Water contaminating class (D): 1 - slightly water contaminating

Additional information

Observe technical data sheet.

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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; 30.10.2015, Initial release

Rev. 1.1; 24.11.2016, Indication of changes - chapter: 1, 2, 3, 6, 15, 16.

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route

CAS Chemical Abstracts Service

DNEL: Derived No Effect Level

IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

International Carriage of Dangerous Goods by Road)

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)

LOAEL: Lowest observed adverse effect level

LOAEC: Lowest observed adverse effect concentration

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NOAEL: No observed adverse effect level

NOAEC: No observed adverse effect level

NTP: National Toxicology Program

N/A: not applicable

OSHA: Concerning the International Transport of Dangerous Goods by Rail)

PNEC: predicted no effect concentration

PBT: Persistent bioaccumulative toxic

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

SARA: Superfund Amendments and Reauthorization Act

SVHC: substance of very high concern

TRGS Technische Regeln für Gefahrstoffe

TSCA: Toxic Substances Control Act

VOC: Volatile Organic Compounds

VwVwS: Verwaltungsvorschrift wassergefährdender Stoffe

WGK: Wassergefährdungsklasse

Relevant H and EUH statements (number and full text)

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

Further Information

Classification according EC regulation 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

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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.)