

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: 03/02/2023 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 > 80%; Silver 0,5 - 10%; Copper < 5%

Further trade names

This MSDS covers the following products:

SnAg_{3,8}Cu_{0,7}; SnAg₃Cu_{0,5}; SnAg₄Cu_{0,5}; SnAg_{3,5}Cu_{0,7};SnAg₃; SnAg_{3,5}; SnAg_{3,7}; SnAg₄;

Sn96C; SN96Ce; SN97C; SN97Ce;

SAC305; SAC387; SAC300

Sn > 80%; Ag 0,5 - 10%; Cu 0 - 5%

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 - 1700
e-mail: cia@balverzinn.com
e-mail (Contact person): SDS@balverzinn.com
Internet: www.balverzinn.com
Responsible Department: Product Safety Department
Only available during office hours.

1.4. Emergency telephone number:

+49 700 24 112 122 (Contract-ID: BZW)
from USA / Canada please 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

For information or further instructions, see also section 11 or 12.

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****Hazardous components**

according to Regulation (EC) No 1907/2006

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CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
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, massive			< 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, massive	< 5 %
	dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 2500 mg/kg		

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.

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SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

In case of metal fire: 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 advice**

See protective measures under point 7 and 8.

For non-emergency personnel

Wear personal protection equipment (refer to 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**

Take up mechanically.
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
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 inhale dust/fumes.

Advice on protection against fire and explosion

No special fire protection measures are necessary.

Advice on general occupational hygiene

Keep away from food, drink and animal feedingstuffs. Wash hands before breaks and after work. Do not eat,

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drink, smoke or sneeze at the workplace.

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, moisture.

7.3. Specific end use(s)

See section 1.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Occupational exposure limits**

CAS No	Substance	ppm	mg/m ³	fib/cm ³	Category	Origin
7440-50-8	Copper, fume	-	0.2		TWA (8 h)	
7440-22-4	Silver (metallic)	-	0.1		TWA (8 h)	
7440-31-5	Tin (Metal)	-	2		TWA (8 h)	

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			
	Worker DNEL, long-term	inhalation	systemic	0,1 mg/m ³
	Consumer DNEL, long-term	inhalation	systemic	0,04 mg/m ³
	Consumer DNEL, long-term	oral	systemic	1,2 mg/kg bw/day
7440-50-8	Copper, massive			
	Worker DNEL, long-term	dermal	systemic	137 mg/kg bw/day
	Worker DNEL, acute	dermal	systemic	273 mg/kg bw/day
	Consumer DNEL, long-term	inhalation	local	1 mg/m ³
	Consumer DNEL, acute	inhalation	local	1 mg/m ³
	Consumer DNEL, long-term	dermal	systemic	137 mg/kg bw/day
	Consumer DNEL, acute	dermal	systemic	273 mg/kg bw/day
	Consumer DNEL, long-term	oral	systemic	0,041 mg/kg bw/day

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PNEC values

CAS No	Substance	Value
Environmental compartment		
7440-22-4	silver	
Freshwater		0,00004 mg/l
Marine water		0,00086 mg/l
Micro-organisms in sewage treatment plants (STP)		0,025 mg/l
Freshwater sediment		438,13 mg/kg
Marine sediment		438,13 mg/kg
Soil		1,41 mg/kg
7440-50-8	Copper, massive	
Freshwater		0,0078 mg/l
Marine water		0,0052 mg/l
Freshwater sediment		87 mg/kg
Marine sediment		676 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.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear eye/face protection.

Hand protection

Wear suitable gloves.

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.

Skin protection

Protective clothing.

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: Exceeding exposure limit values smoke generation

Suitable respiratory protective equipment: Particle filter device (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

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		Test method
Melting point/freezing point:	217 °C	N/A
Boiling point or initial boiling point and boiling range:	not determined	
Flammability		
Solid/liquid:	not determined	
Lower explosion limits:	not determined	
Upper explosion limits:	not determined	
Flash point:	not determined	
Auto-ignition temperature:	not determined	
Decomposition temperature:	not determined	
pH-Value:	not applicable	
Viscosity / kinematic:	not determined	
Water solubility:	The study does not need to be conducted because the substance is known to be insoluble in water.	

Solubility in other solvents

The study does not need to be conducted because the substance is known to be insoluble in water.

Vapour pressure:	not determined	
Density:	7,26 g/cm ³	N/A
Bulk density:	not determined	

9.2. Other information**Information with regard to physical hazard classes**Explosive properties
none

Self-ignition temperature

Solid: not determined

Oxidizing properties
none**Other safety characteristics**

Solid content:	not determined
Sublimation point:	not determined
Softening point:	not determined
Viscosity / dynamic:	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

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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****Toxicocinetics, 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	Method
7440-31-5	tin				
	oral	LD50 >2000 mg/kg	Rat	ECHA Dossier	
	dermal	LD50 >2000 mg/kg	Rat	ECHA Dossier	
	inhalation (4 h) dust/mist	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	
	inhalation (4 h) dust/mist	LC50 >5,16 mg/l	Rat	ECHA Dossier	
7440-50-8	Copper, massive				
	oral	LD50 > 2500 mg/kg	Rat	ECHA Dossier	WoE
	dermal	LD50 > 2000 mg/kg	Rat	ECHA Dossier	WoE

Irritation and corrosivity

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

Sensitising effects

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

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

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CAS No	Chemical name					
	Aquatic toxicity	Dose	[h][d]	Species	Source	Method
7440-50-8	Copper, massive					
	Acute fish toxicity	LC50 [0,004-1,1] mg/l	96 h	Fish	ECHA Dossier	READ ACROSS
	Acute algae toxicity	ErC50 [0,018-0,987] mg/l		algae (72-96h)	ECHA Dossier	READ ACROSS
	Acute crustacea toxicity	EC50 [0,001-0,792] mg/l	48 h	daphnia	ECHA Dossier	READ ACROSS
	Fish toxicity	NOEC [0,002-0,188] mg/l	12 d	Fish (4-330d)	ECHA Dossier	READ ACROSS
	Algae toxicity	NOEC [0,01-0,05] mg/l		algae (10-19d)	ECHA Dossier	READ ACROSS
	Crustacea toxicity	NOEC [0,004-0,145] mg/l		daphnia (4-240d)	ECHA Dossier	READ ACROSS

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.

BCF

CAS No	Chemical name	BCF	Species	Source
7440-50-8	Copper, massive	0,02 - 20	Crangon crangon	

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.

The aforementioned statement applies to substances contained in the product with a minimum content of 0.1%.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

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

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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)**

14.1. UN number or ID number: No dangerous good in sense of these transport regulations.

Inland waterways transport (ADN)

14.1. UN number or ID number: No dangerous good in sense of these transport regulations.

Marine transport (IMDG)

14.1. UN number or ID number: No dangerous good in sense of these transport regulations.

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number: No dangerous good in sense of these transport regulations.

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

not applicable

14.7. Maritime transport in bulk according to IMO instruments

not applicable

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 75

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**

This data sheet contains changes from the previous version in section(s): 16.

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

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Rev. 3,0/JTH 03.02.2023, 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

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: Règlement 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.)