

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Alloy with Bismut, Tin and with or without Silver**

Revision date: 23.11.2016

Product code: 950006

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

Alloy with Bismut, Tin and with or without Silver

**Further trade names**

This MSDS covers the following products:

Bi58Sn42

Bi57Sn43

Bi57Sn42Ag1

Sn50Bi50

Sn60Bi40

Sn50Bi48Ag2

Sn78Bi20Ag2

Sn &gt; 30% Bi 10 - 70% Ag 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 &amp; 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 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.

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

solder alloy

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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			100 %
	231-141-8			
7440-69-9	bismuth			70 - < 75 %
	231-177-4			
7440-22-4	silver			5 - < 10 %
	231-131-3		01-2119555669-21	

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  
Extinguishing powder  
D - powder

## Unsuitable extinguishing media

Extinguishing media which must not be used for safety reasons:

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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.  
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 exhaustion 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. Radioactive substances. Infectious substances.

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

refer to chapter 1.

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

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**Exposure limits (EH40)**

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
7440-22-4	Silver, metallic	-	0.1		TWA (8 h)	WEL
		-	-		STEL (15 min)	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
	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
7440-69-9	bismuth			
	Worker DNEL, long-term	inhalation	systemic	13,1 mg/m <sup>3</sup>
	Consumer DNEL, long-term	oral	systemic	13,3 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 <sup>3</sup>
	Consumer DNEL, long-term	inhalation	systemic	0,04 mg/m <sup>3</sup>

**PNEC values**

CAS No	Substance	Environmental compartment	Value
7440-69-9	bismuth		
		Micro-organisms in sewage treatment plants (STP)	17,5 mg/l
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

**8.2. Exposure controls**

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**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:

exceeding exposure limit values

Suitable respiratory protection apparatus: Particle filter device (DIN EN 143) Type: P-2/3

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.

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

**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:	silver grey
Odour:	odourless

pH-Value:	not applicable	<b>Test method</b>
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**Changes in the physical state**

Melting point:	Bi58Sn42: 139 °C	N/A
Initial boiling point and boiling range:	not determined	
Sublimation point:	not determined	
Softening point:	not determined	
Flash point:	not determined	

**Flammability**

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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: Bi58Sn42: 8,72 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 toxicological effects****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
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
7440-69-9	bismuth			
	oral	LD50 2000 mg/kg	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

**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.

**12.6. Other adverse effects**

No data available

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

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**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.

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

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

**Inland waterways transport (ADN)**

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

**Marine transport (IMDG)**

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

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

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



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## 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**

The 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):      - - not water contaminating

**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; 23.11.2016, Indication of changes - chapter: 1, 2, 3, 6, 8, 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

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VwVwS: Verwaltungsvorschrift wassergefährdender Stoffe

WGK: Wassergefährdungsklasse

**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 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.

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