

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

## Tin-Lead Alloys, potential with additional of other alloying elements

Revision date: 17.04.2018

Product code: 950102

Page 1 of 11

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

Tin-Lead Alloys, potential with additional of other alloying elements

**Further trade names**

This MSDS covers the following products:

Sn63Pb37

Sn60Pb40

Sn50Pb50

Sn60Pb38Bi2

Sn60Pb39Cu1

Sn62Pb36Ag2

Pb 5-50% Sn &gt; 45% Ag 0-5% Cu 0-5% Bi 0-5%

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

soft solder

**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**

Hazard categories:

Reproductive toxicity: Repr. 1A

Reproductive toxicity: Lact.

Specific target organ toxicity - repeated exposure: STOT RE 1

Hazard Statements:

May damage fertility. May damage the unborn child.

May cause harm to breast-fed children.

Causes damage to organs through prolonged or repeated exposure.

**2.2. Label elements****Additional advice on labelling**

For this product, a hazard label is not required according to section 1.3.4 of the CLP regulation.

**2.3. Other hazards**

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

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

solder alloy

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

## Tin-Lead Alloys, potential with additional of other alloying elements

Revision date: 17.04.2018

Product code: 950102

Page 2 of 11

## 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			> 45 %
	231-141-8		01-2119486474-28	
7439-92-1	lead massive [particle diameter >= 1 mm]			50 - < 55 %
	231-100-4	082-014-00-7	01-2119513221-59	
	Repr. 1A, Lact., STOT RE 1; H360FD H362 H372			
7440-50-8	copper			0 - 5 %
	231-159-6			
7440-69-9	bismuth			0 - 5 %
	231-177-4		01-2119560575-33	
7440-22-4	silver			0 - 5 %
	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

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 3 of 11

**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, Lead oxide

**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**

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 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. Process within closed systems.  
Do not breathe smoke. Do not breathe dust.  
Wear suitable protective clothing. (See section 8.)

**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.

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 4 of 11

**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
			-		STEL (15 min)	WEL
-	Lead other than lead alkyls	-	0.15		TWA (8 h)	CLAW
			-		STEL (15 min)	CLAW
7440-22-4	Silver, metallic	-	0.1		TWA (8 h)	WEL
			-		STEL (15 min)	WEL
-	Tin compounds, inorganic, except SnH <sub>4</sub> , (as Sn)	-	2		TWA (8 h)	WEL
			4		STEL (15 min)	WEL

**Biological Monitoring Guidance Values (EH40)**

CAS No	Substance	Parameter	Value	Test material	Sampling time
7439-92-1	Lead (woman of reproductive capacity)	lead	20 µg/dl	blood	Random

**DNEL/DMEL values**

CAS No	Substance	DNEL type	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
7440-50-8	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>

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 5 of 11

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>
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	Value
Environmental compartment		Value
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
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**



**Appropriate engineering controls**

Provide adequate ventilation as well as local exhaust at critical locations.  
Process within closed systems.

**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.

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 6 of 11

**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.  
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: P3  
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.  
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

**Environmental exposure controls**

This material and its container must be disposed of in a safe way.

**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: Sn63Pb37: 183 °C N/A  
Initial boiling point and boiling range: N/A  
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

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 7 of 11

Decomposition temperature: not determined

**Oxidizing properties**

none

Vapour pressure: not determined

Density: Sn63Pb37: 8,4 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, Lead oxide

**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	Method
7440-31-5	tin				
	oral	LD50 >2000 mg/kg	Rat	ECHA Dossier	
	dermal	LD50 >2000 mg/kg	Rat	ECHA Dossier	
	inhalation (4 h) aerosol	LC50 (>4,75) mg/l	Rat	ECHA Dossier	
7439-92-1	lead massive [particle diameter >= 1 mm]				

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 8 of 11

	oral	LD50 mg/kg	> 2000	Rat	Study report (2003)	OECD Guideline 423
	dermal	LD50 mg/kg	> 2000	Rat	Study report (2003)	OECD Guideline 402
7440-50-8	copper					
	inhalation (4 h) aerosol	LC50 mg/l	>5,11	Rat	ECHA Dossier	
7440-69-9	bismuth					
	oral	LD50 mg/kg	2000	Rat	ECHA Dossier	
7440-22-4	silver					
	oral	LD50 mg/kg	>2000	Rat	ECHA Dossier	
	dermal	LD50 mg/kg	>2000	Rat	ECHA Dossier	
	inhalation (4 h) aerosol	LC50 mg/l	>5,16	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.

**BCF**

CAS No	Chemical name	BCF	Species	Source
7439-92-1	lead massive [particle diameter >= 1 mm]	40000	Asellus meridianus	Freshwater Biology 7

**12.4. Mobility in soil**

No data available

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



**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 9 of 11

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 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**

160303 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes containing hazardous substances; hazardous waste

**Waste disposal number of used product**

160303 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; inorganic wastes containing hazardous substances; hazardous waste

**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)**

**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

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 10 of 11

**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 63: lead massive [particle diameter  $\geq$  1 mm]Information according to 2012/18/EU Not subject to 2012/18/EU (SEVESO III)  
(SEVESO III):**Additional information**

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

REACH 1907/2006 Appendix XVII, No: 63

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe employment restrictions for women of child-bearing age.

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; 03.11.2016, Indication of changes - chapter: 1, 2, 3, 16.

Rev.2.0; 17.04.2018, Changes in chapter: 2, 3, 15.

**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

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

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**Tin-Lead Alloys, potential with additional of other alloying elements**

Revision date: 17.04.2018

Product code: 950102

Page 11 of 11

NOAEC: No observed adverse effect level  
 NTP: National Toxicology Program  
 N/A: not applicable  
 OSHA: Occupational Safety and Health Administration  
 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 fuerGefahrstoffe  
 TSCA: Toxic Substances Control Act  
 VOC: Volatile Organic Compounds  
 VwVwS: Verwaltungsvorschrift wassergefaehrdender Stoffe  
 WGK: Wassergefaehrungsklasse

**Classification for mixtures and used evaluation method according to Regulation (EC) No. 1272/2008 [CLP]**

Classification	Classification procedure
Repr. 1A; H360FD	Calculation method
Lact.; H362	Calculation method
STOT RE 1; H372	Calculation method

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

H360FD May damage fertility. May damage the unborn child.  
 H362 May cause harm to breast-fed children.

**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.

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