

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Bismuth and Tin Alloy, with or without Silver

Further trade names

This SDS covers the following products:

Bi58Sn42
Bi57Sn43
Bi57Sn42Ag1
Sn50Bi50
Sn60Bi40
Sn50Bi48Ag2
Sn78Bi20Ag2

Sn > 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:	DKL Metals Ltd	
Street:	Avontoun Works	
Place:	Linlithgow, EH49 6QD	
Telephone:	+44 (0) 1506 847710	Fax: +44 (0) 1506 848199
Responsible Department:	sales@dklmetals.co.uk	

1.4. Emergency telephone

+44 (0) 1506 847710

number:

09.00 - 17.00 Mon - Thurs, 09.00 - 16.00 Fri

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC

This mixture is not classified as hazardous according to Directive 1999/45/EC.

Classification according to Regulation (EC) No. 1272/2008 [CLP]

This mixture is not classified as hazardous according to Regulation (EC) No. 1272/2008.

2.2. Label elements

2.3. Other hazards

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

EC No	Chemical name	Quantity
CAS No	Classification according to Directive 67/548/EEC	
Index No	Classification according to Regulation (EC) No. 1272/2008 [CLP]	
REACH No		
231-141-8	tin	100 %
7440-31-5		
231-177-4	bismuth	70 - < 75 %
7440-69-9		
231-131-3	silver	5 - < 10 %
7440-22-4		
01-2119555669-21		

Full text of R-, H- and EUH-phrases: see section 16.

Further Information

Product does not contain listed SVHC substances.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In case of accident or feeling unwell, 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

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Unsuitable extinguishing media

Extinguishing media which must not be used for safety reasons:

- Water
- Full 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 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 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

Bismuth and Tin Alloy, with or without Silver

Exposure limits (EH40)

CAS No	Substance	ppm	mg/m ³	fibres/ml	Category	Origin
7440-22-4	Silver, metallic	-	0.1	-	TWA (8 h) STEL (15 min)	WEL WEL

DNEL/DMEL values

CAS No	Substance	DNEL type	Exposure route	Effect	Value
7440-31-5	tin	Worker DNEL, long-term	inhalation	systemic	11,75 mg/m ³
		Worker DNEL, acute	inhalation	systemic	11,75 mg/m ³
		Worker DNEL, long-term	dermal	systemic	133,3 mg/kg bw/day
		Worker DNEL, acute	dermal	systemic	133,3 mg/kg bw/day
		Consumer DNEL, long-term	inhalation	systemic	3,476 mg/m ³
		Consumer DNEL, acute	inhalation	systemic	3,476 mg/m ³
		Consumer DNEL, long-term	dermal	systemic	80 mg/kg bw/day
		Consumer DNEL, acute	dermal	systemic	80 mg/kg bw/day
		Consumer DNEL, long-term	oral	systemic	80 mg/kg bw/day
		Consumer DNEL, acute	oral	systemic	80 mg/kg bw/day
7440-69-9	bismuth	Worker DNEL, long-term	inhalation	systemic	13,1 mg/m ³
		Consumer DNEL, long-term	oral	systemic	13,3 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

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PNEC values

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

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 feeding. 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.

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 exhaust 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

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Odour: odourless

Test method

pH-Value: not applicable

Changes in the physical state

Melting point: Bi58Sn42: 139 °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

Decomposition temperature: not determined

Oxidizing properties

none

Vapour pressure: not determined

Density: Bi58Sn42: 8,72 g/cm³ 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

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.

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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.

Acute toxicity

CAS No	Chemical name	Exposure routes	Method	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.

STOT-single exposure

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

Severe effects after repeated or prolonged exposure

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.

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.

Bismuth and Tin Alloy, with or without Silver**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.

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

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Air transport (ICAO)

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 MARPOL73/78 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

Additional information

This preparation is hazardous in the sense of regulation (EC) No 1272/2008 [GHS].
Not subject to 96/82/EC

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

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

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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

Further Information

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.)