



LEAD SOLDER ALLOYS : TIN - LEAD - SILVER - ALLIAGES SN-PB-AG

SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 2020/878)

SECTION 1 : IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : LEAD SOLDER ALLOYS : TIN - LEAD - SILVER

Product code : ALLIAGES SN-PB-AG.

Product type : Sn1Pb97.5Ag1.5 (310Ag) - Sn4.95Pb94.05Ag1 - Sn5Pb93.5Ag1.5 (300Ag) - Sn5Pb92.5Ag2.5 - Sn27Pb70Ag3 - Sn60Pb37Ag3 - Sn62Pb36Ag2

UFI : XWM0-R06W-8008-M12N

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

Soft soldering

Use descriptor system (REACH) :

SU 3 Industrial uses : uses of substances as such or in preparations at industrial sites

PC 38 Welding and soldering products (with flux coatings or flux cores), flux products

1.3. Details of the supplier of the safety data sheet

Registered company name : MBO.

Address : Rue de la Fonderie.21800.Chevigny-Saint-Sauveur.FRANCE.

Telephone : 00 33 3 80 46 12 58. Fax : 00 33 3 80 46 66 59.

admin@mbosolder.com

www.mbosolder.com

1.4. Emergency telephone number : +33 (0)1 45 42 59 59.

Association/Organisation : INRS / ORFILA <http://www.centres-antipoison.net>.

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

In compliance with EC regulation No. 1272/2008 and its amendments.

Reproductive toxicity, Category 1A (Repr. 1A, H360FD).

Reproductive toxicity, Effects on or via lactation (Lact., H362).

Specific target organ toxicity (repeated exposure), Category 1 (STOT RE 1, H372).

This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.

This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

In compliance with EC regulation No. 1272/2008 and its amendments.

Hazard pictograms :



GHS08

Signal Word :

DANGER

Product identifiers :

EC 231-100-4 LEAD

Additional labeling :

For professional use only.

Hazard statements :

H360FD

May damage fertility. May damage the unborn child.

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H362	May cause harm to breast-fed children.
H372	Causes damage to organs through prolonged or repeated exposure .
Precautionary statements - Prevention :	
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/ ...

2.3. Other hazards

The mixture contains substances classified as 'Substances of Very High Concern' (SVHC) $\geq 0.1\%$ published by the European Chemicals Agency (ECHA) under article 57 of REACH: <http://echa.europa.eu/fr/candidate-list-table>

The mixture fulfils neither the PBT nor the vPvB criteria for mixtures in accordance with annexe XIII of the REACH regulations EC 1907/2006.

The mixture does not contains substances $\geq 0.1\%$ with endocrine disrupting properties in accordance with the criteria of the Delegated Regulation (EU) 2017/2100 of the Commission or Regulation (EU) 2018/605 of the Commission.

It is recommended to wear safety glasses, protective gloves, to wash hands after use and to work with a good ventilation of area, and suitable fumes extraction system locally installed.

The product could cause burns during soldering.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS**3.2. Mixtures****Composition :**

Identification	(EC) 1272/2008	Note	%
CAS: 7439-92-1 EC: 231-100-4 REACH: 01-2119513221-59-XXXX	GHS08 Dgr Repr. 1A, H360FD Lact., H362 STOT RE 1, H372	[1] [2] [6]	36.00 - 97.50 %
LEAD			
CAS: 7440-31-5 EC: 231-141-8 REACH: 01-2119486474-28-0033		[1]	1.00 - 62.00 %
TIN			
CAS: 7440-22-4 EC: 231-131-3 REACH: 01-2119555669-21-0025		[1]	1.50 - 3.00 %
SILVER			

Specific concentration limits:

Identification	Specific concentration limits	ATE
CAS: 7440-22-4 EC: 231-131-3 REACH: 01-2119555669-21-0025		inhalation: ATE = 5.16 mg/1 4h
SILVER		

Information on ingredients :

(Full text of H-phrases: see section 16)

[1] Substance for which maximum workplace exposure limits are available.

[2] Carcinogenic, mutagenic or reprotoxic (CMR) substance.

[6] Substances of very high concern (SVHC).

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.

NEVER induce swallowing by an unconscious person.



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4.1. description of first aid measures

In the event of exposure by inhalation :

Take affected persons into fresh air. If irritation persists, get medical attention.

In the event of splashes or contact with eyes :

Wash thoroughly with fresh, clean water for 15 minutes holding the eyelids open.

If there is any redness, pain or visual impairment, consult an ophthalmologist.

In the event of splashes or contact with skin :

Watch out for any remaining product between skin and clothing, watches, shoes, etc.

Immediately wash with water and soap and rinse thoroughly.

If skin irritation persists, get medical attention.

If burns should occur from molten metal, treat for burn and get medical assistance if necessary.

In the event of swallowing :

Seek medical attention, showing the label.

4.2. Most important symptoms and effects, both acute and delayed

No data available.

4.3. Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5 : FIREFIGHTING MEASURES

Non-flammable.

5.1. Extinguishing media

Suitable methods of extinction

In the event of a fire, use :

- dry chemical agents
- sprayed water or water mist
- dry sand

Unsuitable methods of extinction

In the event of a fire, do not use :

- water jet
- foam

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.

Do not breathe in smoke.

In the event of a fire, the following may be formed :

- metal oxides, metal dust

Molten metal reacts violently with oxidising agents.

5.3. Advice for firefighters

Wear full body protective clothing and appropriate self-contained breathing apparatus.

Cool adjacent containers with water spray.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.

For non first aid worker

Keep persons without protective equipment away from danger area.

For first aid worker

First aid workers will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Prevent any material from entering drains or waterways.

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Retrieve the product by mechanical means (sweeping/vacuuming).

6.4. Reference to other sections

No data available.

SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the mixture is handled.

Avoid exposure to pregnant women and warn women of child-bearing age of the possible risks

7.1. Precautions for safe handling

Always wash hands after handling.

Remove and wash contaminated clothing before re-using.

The workplace must be ventilated and fumes must be captured at the emission source.

Due to its high density, the product is heavy. Avoid the fall of the product.

Wear protective shoes and gloves.

Fire prevention :

Prevent access by unauthorised personnel.

Recommended equipment and procedures :

For personal protection, see section 8.

Observe precautions stated on label and also industrial safety regulations.

Do not breathe in dust.

Avoid exposure - obtain special instructions before use.

Prohibited equipment and procedures :

No smoking, eating or drinking in areas where the mixture is used.

7.2. Conditions for safe storage, including any incompatibilities

No data available.

Storage

Do not store with food products.

On spool, in original cardboard, at room temperature, keep away from inclemency. During 24 months

Packaging

Always keep in packaging made of an identical material to the original.

7.3. Specific end use(s)

No data available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters****Occupational exposure limits :**

- European Union (2019/1831, 2017/2398, 2017/164, 2009/161, 2006/15/CE, 2000/39/CE, 98/24/CE) :

CAS	VME-mg/m3	VME-ppm	VLE-mg/m3	VLE-ppm	Notes
7440-22-4	0.1	-	-	-	-

- ACGIH TLV (American Conference of Governmental Industrial Hygienists, Threshold Limit Values, 2010) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
7439-92-1	0.05 mg/m3	-	-	-	-
7440-31-5	2 mg/m3	-	-	-	-
7440-22-4	0.1 mg/m3	-	-	-	-

- Germany - AGW (BAuA - TRGS 900, 08/08/2019) :

CAS	VME :	VME :	Excess	Notes
7440-22-4		0.1 E mg/m ³		8(II)

- France (INRS - ED984 / 2020-1546) :

CAS	VME-ppm	VME-mg/m3	VLE-ppm	VLE-mg/m3	Notes	TMP No :
7439-92-1	-	0.15	-	-	-	1



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7440-22-4	-	0.1	-	-	-	-	-
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- UK / WEL (Workplace exposure limits, EH40/2005, Fourth Edition 2020) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
7440-22-4	0.1 mg/m ³				

Derived no effect level (DNEL) or derived minimum effect level (DMEL):

SILVER (CAS: 7440-22-4)

Final use:

Exposure method:
Potential health effects:
DNEL :

Workers.

Inhalation.
Long term systemic effects.
0.1 mg of substance/m³

Final use:

Exposure method:
Potential health effects:
DNEL :

Consumers.

Ingestion.
Long term systemic effects.
1.2 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Inhalation.
Long term systemic effects.
0.04 mg of substance/m³

TIN (CAS: 7440-31-5)

Final use:

Exposure method:
Potential health effects:
DNEL :

Workers.

Dermal contact.
Short term systemic effects.
133.3 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Dermal contact.
Long term systemic effects.
133.3 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Inhalation.
Short term systemic effects.
11.75 mg of substance/m³

Exposure method:
Potential health effects:
DNEL :

Inhalation.
Long term systemic effects.
11.75 mg of substance/m³

Final use:

Exposure method:
Potential health effects:
DNEL :

Consumers.

Ingestion.
Short term systemic effects.
80 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Ingestion.
Long term systemic effects.
80 mg/kg body weight/day

Exposure method:
Potential health effects:
DNEL :

Dermal contact.
Short term systemic effects.
80 mg/kg body weight/day

Exposure method:
Potential health effects:

Dermal contact.
Long term systemic effects.



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DNEL : 80 mg/kg body weight/day

Exposure method: Inhalation.
Potential health effects: Short term systemic effects.
DNEL : 3.476 mg of substance/m3

Exposure method: Inhalation.
Potential health effects: Long term systemic effects.
DNEL : 3.476 mg of substance/m3

Predicted no effect concentration (PNEC):

SILVER (CAS: 7440-22-4)

Environmental compartment: Soil.
PNEC : 0.794 mg/kg

Environmental compartment: Fresh water.
PNEC : 0.04 µg/l

Environmental compartment: Sea water.
PNEC : 0.86 µg/l

Environmental compartment: Fresh water sediment.
PNEC : 438.13 mg/kg

Environmental compartment: Marine sediment.
PNEC : 438.13 mg/kg

Environmental compartment: Waste water treatment plant.
PNEC : 25 µg/l

LEAD (CAS: 7439-92-1)

Environmental compartment: Soil.
PNEC : 212 mg/kg

Environmental compartment: Fresh water.
PNEC : 3.1 µg/l

Environmental compartment: Sea water.
PNEC : 3.5

Environmental compartment: Fresh water sediment.
PNEC : 174 mg/kg

Environmental compartment: Marine sediment.
PNEC : 164.2 mg/kg

Environmental compartment: Waste water treatment plant.
PNEC : 0.1 mg/l

8.2. Exposure controls

Personal protection measures, such as personal protective equipment

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Pictogram(s) indicating the obligation of wearing personal protective equipment (PPE) :



Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.

Before handling powders or dust emission, wear mask goggles in accordance with standard EN166.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.

Use suitable protective gloves that are resistant to chemical agents in accordance with standard EN ISO 374-1.

Gloves must be selected according to the application and duration of use at the workstation.

Protective gloves need to be selected according to their suitability for the workstation in question : other chemical products that may be handled, necessary physical protections (cutting, pricking, heat protection), level of dexterity required.

Type of gloves recommended :

- cotton

- Body protection

Suitable type of protective clothing :

- protective work clothing

- protective shoes

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.

- Respiratory protection

Avoid inhaling dust.

Type of FFP mask :

Wear a disposable half-mask dust filter in accordance with standard EN149/A1.

Independent breathing apparatus for respiratory protection :

It is recommended to set up a fumes exhaust system closer to their emission. In case of insufficient ventilation, wear suitable respiratory equipment. In case of formation of vapors, wear suitable respiratory equipment with filter.

- Thermal risks

The product could cause burns during soldering.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state

Physical state : Solid.

Colour

Unspecified

Odour

Odour threshold : Not stated.

Melting point

Melting point/melting range : Not specified.

Freezing point

Freezing point / Freezing range : Not stated.

Boiling point or initial boiling point and boiling range

Boiling point/boiling range : Not specified.

Flammability

Flammability (solid, gas) : Not stated.

**LEAD SOLDER ALLOYS : TIN - LEAD - SILVER - ALLIAGES SN-PB-AG****Lower and upper explosion limit**

Explosive properties, lower explosivity limit (%) : Not stated.

Explosive properties, upper explosivity limit (%) : Not stated.

Flash point

Flash point interval : Not relevant.

Auto-ignition temperature

Self-ignition temperature : Not specified.

Decomposition temperature

Decomposition point/decomposition range : Not specified.

pH

pH : Not relevant.

pH (aqueous solution) : Not stated.

Kinematic viscosity

Viscosity : Not stated.

Solubility

Water solubility : Insoluble.

Fat solubility : Not stated.

Partition coefficient n-octanol/water (log value)

Partition coefficient: n-octanol/water : Not stated.

Vapour pressure

Vapour pressure (50°C) : Not relevant.

Density and/or relative density

Density : > 1

Relative vapour density

Vapour density : Not stated.

9.2. Other information

Solidus / Liquidus temperature (Sn5Pb92.5Ag2.5) : 288°C / 296°C

Density (Sn1Pb97.5Ag1.5 (310Ag)) : 11.24 @ 20°C

Density (Sn5Pb93.5Ag1.5 (300Ag)) : 10.9 @ 20°C

Density (Sn5Pb92.5Ag2.5) : 10.9 @ 20°C

Density (Sn27Pb70Ag3) : 9.85 @ 20°C

Density (Sn60Pb37Ag3) : 8.5 @ 20°C

Density (Sn62Pb36Ag2) : 8.5 @ 20°C

Solidus / Liquidus temperature (Sn1Pb97.5Ag1.5 (310Ag)) : 309°C / 310°C

Solidus / Liquidus temperature (Sn5Pb93.5Ag1.5 (300Ag)) : 296°C / 301°C

Solidus / Liquidus temperature (Sn27Pb70Ag3) : 179°C / 253°C

Solidus / Liquidus temperature (Sn60Pb37Ag3) : 178°C / 232°C

Solidus / Liquidus temperature (Sn62Pb36Ag2) : 178°C / 180°C

Density (Sn4.95Pb94.05Ag1) : 10.9 @ 20°C

Solidus / Liquidus temperature (Sn4.95Pb94.05Ag1) : About 300°C

9.2.1. Information with regard to physical hazard classes

No data available.

9.2.2. Other safety characteristics

No data available.

SECTION 10 : STABILITY AND REACTIVITY**10.1. Reactivity**

The product is stable under normal conditions of use and storage, but reacts with strong oxidisers.

10.2. Chemical stability

This mixture is stable under the recommended handling and storage conditions in section 7.



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10.3. Possibility of hazardous reactions

Reaction with strong oxidizers.

10.4. Conditions to avoid

Avoid :

- formation of dusts

Dusts can form an explosive mixture with air.

10.5. Incompatible materials

The product reacts with strong acids, especially with oxidising acids.

10.6. Hazardous decomposition products

No hazardous decomposition under normal conditions of use.

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Known human reproductive toxicant.

May damage fertility and the unborn child.

Presents a risk on or via lactation.

Causes severe damage to organs in the event of repeated or prolonged exposure.

11.1.1. Substances

Acute toxicity :

SILVER (CAS: 7440-22-4)

Oral route : 2000 < LD50 <= 5000 mg/kg
Species : Rat

Dermal route : 2,000 < LD50 <= 5000 mg/kg
Species : Rat

Inhalation route (n/a) : LC50 = 5.16 mg/l
Species : Rat
Duration of exposure : 4 h

TIN (CAS: 7440-31-5)

Oral route : 2000 < LD50 <= 5000 mg/kg
Species : Rat

Dermal route : 2,000 < LD50 <= 5000 mg/kg
Species : Rat

Inhalation route (Dusts/mist) : LC50 > 4.75 mg/l
Species : Rat
Duration of exposure : 4 h

Reproductive toxicant :

SILVER (CAS: 7440-22-4)

No toxic effect for reproduction

11.1.2. Mixture

No toxicological data available for the mixture.

Monograph(s) from the IARC (International Agency for Research on Cancer) :

CAS 7439-92-1 : IARC Group 2B : The agent is possibly carcinogenic to humans.



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SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

Do not allow product to reach ground water, water source or sewage system.

12.1.1. Substances

TIN (CAS: 7440-31-5)

Crustacean toxicity :

EC50 = 1.303 mg/l

Species : Ceriodaphnia dubia

SILVER (CAS: 7440-22-4)

Fish toxicity :

NOEC = 0.13 mg/l

Species : Menidia beryllina

Duration of exposure : 28 days

Crustacean toxicity :

NOEC = 0.001 mg/l

Duration of exposure : 7 days

Algae toxicity :

NOEC = 0.0012 mg/l

Duration of exposure : 14 days

12.1.2. Mixtures

No aquatic toxicity data available for the mixture.

12.2. Persistence and degradability

No data available.

12.3. Bioaccumulative potential

12.3.1. Substances

SILVER (CAS: 7440-22-4)

Bioaccumulation :

BCF = 70

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

No data available.

12.6. Endocrine disrupting properties

No data available.

12.7. Other adverse effects

No data available.

SECTION 13 : DISPOSAL CONSIDERATIONS

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.



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SECTION 14 : TRANSPORT INFORMATION

Exempt from transport classification and labelling.

14.1. UN number or ID number

-

14.2. UN proper shipping name

-

14.3. Transport hazard class(es)

-

14.4. Packing group

-

14.5. Environmental hazards

-

14.6. Special precautions for user

-

SECTION 15: Regulatory information

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

- Classification and labelling information included in section 2:

The following regulations have been used:

- EU Regulation No. 1272/2008 amended by EU Regulation No. 2021/643 (ATP 16)

- EU Regulation No. 1272/2008 amended by EU Regulation No. 2021/849 (ATP 17)

- Container information:

No data available.

Usage restrictions apply to the product : See annex XVII of EC regulation No. 1907/2006.

For professional users only.

- Particular provisions :

No data available.

15.2. Chemical safety assessment

No data available.

SECTION 16 : OTHER INFORMATION

We cannot anticipate any and all conditions and situations under which the information and our products or the combination of both with others will be used. We do not assume any liability in the safety and suitability of our products alone or in combination with others. Users must make their own tests to determine the safety and suitability of each product used alone or with other products for their own use.

Except any previous written agreement, our products are sold without guarantee and customers must assume all liability for any loss or damage suffered by themselves or by third parties, either from handling or use of our products alone or with others. In case of any difference or variation seen during the use of the products we request that you contact our technical department.

Wording of the phrases mentioned in section 3 :

H360FD May damage fertility. May damage the unborn child.

H362 May cause harm to breast-fed children.

H372 Causes damage to organs through prolonged or repeated exposure .

Abbreviations :

LD50 : The dose of a test substance resulting in 50% lethality in a given time period.

LC50 : The concentration of a test substance resulting in 50% lethality in a given period.

EC50 : The effective concentration of substance that causes 50% of the maximum response.

NOEC : The concentration with no observed effect.

REACH : Registration, Evaluation, Authorization and Restriction of Chemical Substances.

ATE : Acute Toxicity Estimate

DNEL : Derived No-Effect Level



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PNEC : Predicted No-Effect Concentration

CMR: Carcinogenic, mutagenic or reprotoxic.

UFI : Unique formulation identifier.

STEL : Short-term exposure limit

TWA : Time Weighted Averages

TMP : French Occupational Illness table

TLV : Threshold Limit Value (exposure)

AEV : Average Exposure Value.

ADR : European agreement concerning the international carriage of dangerous goods by Road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association.

ICAO : International Civil Aviation Organisation

RID : Regulations concerning the International carriage of Dangerous goods by rail.

GHS08 : Health hazard

PBT: Persistent, bioaccumulable and toxic.

vPvB : Very persistent, very bioaccumulable.

SVHC : Substances of very high concern.