

**Material Safety Data Sheet**

acc. to ISO/DIS 11014

Printing date 07/31/2003

Reviewed on 07/21/2003

**1 Identification of substance****Product details****Trade name:** **SOLDER ALLOYS CONTAINING LEAD**

Application of the substance / the preparation: Solder

**Manufacturer/Supplier:**Kester  
515 E. Touhy Ave.  
Des Plaines, IL 60018

Tel.(847) 297-1600

Fax.(847) 390-9338

**Information department:**

MSDS Coordinator

Tel. (847) 699-5755

**Emergency information:**

CHEMTREC 24-Hour Emergency Telephone Number:

(800)424-9300

CHEMTREC 24-Hour Emergency Telephone Number (Outside of the U.S. and Canada):

(703)527-3887

**2 Composition/Data on components****Chemical characterization****Description:** Mixture of the substances listed below with nonhazardous additions.**Dangerous components:**

|           |          |        |
|-----------|----------|--------|
| 7440-31-5 | tin      | 0-100% |
| 7439-92-1 | lead     | 0-100% |
| 7440-36-0 | antimony | 0-100% |
| 7440-50-8 | copper   | 0-100% |
| 7440-22-4 | silver   | 0-100% |
| 7440-69-9 | bismuth  | 0-100% |
| 7440-66-6 | Zinc     | 0-100% |

**Additional information:**

Composition and weight percent of solder alloys varies widely and can be determined by product label.

**3 Hazards identification****WHMIS Hazard Symbols****Information pertaining to particular dangers for man and environment:**

The product has to be labelled due to the calculation procedure of international guidelines.

Harmful by inhalation and if swallowed.

Danger of cumulative effects.

Possible risk of impaired fertility.

Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.

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USA

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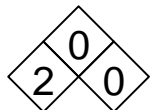
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**Classification system:****NFPA ratings (scale 0 - 4)**

Health = 2

Fire = 0

Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

|            |   |
|------------|---|
| HEALTH     | 2 |
| FIRE       | 0 |
| REACTIVITY | 0 |

Health = \*2

Fire = 0

Reactivity = 0

**4 First aid measures****General information:**

*Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.*

**After inhalation:** *Supply fresh air; consult doctor in case of complaints.*

**After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*

**After eye contact:** *Rinse opened eye for several minutes under running water.*

**After swallowing:** *Induce vomiting, if person is conscious. Seek medical help.*

**5 Fire fighting measures****Suitable extinguishing agents:**

*CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.*

**Special hazards caused by the material, its products of combustion or resulting gases:**

*Melted solder above 1000°F will liberate toxic lead and/or antimony fumes.*

**Protective equipment:** *Wear self-contained respiratory protective device.*

**6 Accidental release measures**

**Person-related safety precautions:** *Not required.*

**Measures for environmental protection:** *Do not allow to enter sewers/ surface or ground water.*

**Measures for cleaning/collecting:**

*Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.*

**7 Handling and storage****Handling:**

**Information for safe handling:** *Ensure good ventilation/exhaustion at the workplace.*

**Information about protection against explosions and fires:** *Keep respiratory protective device available.*

**Storage:**

**Requirements to be met by storerooms and receptacles:** *No special requirements.*

**Information about storage in one common storage facility:** *Not required.*

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Further information about storage conditions: Store in dry conditions.

## 8 Exposure controls and personal protection

Additional information about design of technical systems: No further data; see item 7.

Components with limit values that require monitoring at the workplace:

### 7440-31-5 tin

|     |                                   |
|-----|-----------------------------------|
| PEL | 2 mg/m <sup>3</sup><br>Metal      |
| REL | 2 mg/m <sup>3</sup><br>Tin, Metal |
| TLV | 2 mg/m <sup>3</sup>               |

### 7439-92-1 lead

|     |  |
|-----|--|
| PEL | 0.05* mg/m <sup>3</sup><br>as Pb                                       |
| REL | <0.1* mg/m <sup>3</sup><br>as Pb; *Blood Pb <0.06 mg/100 g whole blood |
| TLV | 0.05 mg/m <sup>3</sup><br>as Pb; BEI                                   |

### 7440-36-0 antimony

|     |                                |
|-----|--------------------------------|
| PEL | 0.5 mg/m <sup>3</sup>          |
| REL | 0.5 mg/m <sup>3</sup><br>as Sb |
| TLV | 0.5 mg/m <sup>3</sup>          |

### 7440-50-8 copper

|     |  |
|-----|--|
| PEL | 0.1*, 1** mg/m <sup>3</sup><br>*fume **dusts & mists                             |
| REL | 0.1*, 1** mg/m <sup>3</sup><br>*Copper fume, as Cu **Copper dusts & mists, as Cu |
| TLV | 0.2*, 1** mg/m <sup>3</sup><br>*fume; ** dusts&mists, as Cu                      |

### 7440-22-4 silver

|     |                        |
|-----|------------------------|
| PEL | 0.01 mg/m <sup>3</sup> |
| REL | 0.01 mg/m <sup>3</sup> |
| TLV | 0.1 mg/m <sup>3</sup>  |

#### Additional information:

PEL = Permissible Exposure Limit (OSHA)

REL = Recommended Exposure Limit (NIOSH)

TLV = Threshold Limit Value (ACGIH)

OSHA = Occupational Safety and Health Administration

ACGIH = American Conference of Governmental Industrial Hygienists

NIOSH = National Institute for Occupational Safety and Health

#### Personal protective equipment:

##### General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Immediately remove all soiled and contaminated clothing.

Store protective clothing separately.

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## Breathing equipment:

When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self-contained breathing apparatus should be worn.

## Protection of hands:



Protective gloves

Material of gloves:

Cloth gloves

Nitrile rubber, NBR

Natural rubber, NR

Penetration time of glove material:

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

## Eye protection:



Tightly sealed goggles

Safety glasses

## 9 Physical and chemical properties

### General Information

**Form:** Solid  
**Color:** Silver grey  
**Odor:** Mild

### Change in condition

**Melting point/Melting range:** > 100°C (> 212°F)

**Boiling point/Boiling range:** 1740°C (3164°F)

**Flash point:** Not applicable.

**Danger of explosion:** Product does not present an explosion hazard.

**Density at 20°C (68°F):** > 7 g/cm<sup>3</sup>

**Solubility in / Miscibility with**

**Water:** Insoluble.

## 10 Stability and reactivity

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Materials to be avoided:** Strong acids, strong oxidizers.

**Dangerous reactions** No dangerous reactions known.

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**Trade name: SOLDER ALLOYS CONTAINING LEAD****Dangerous products of decomposition:** *No dangerous decomposition products known.*

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**11 Toxicological information****Acute toxicity:****Primary irritant effect:***on the skin: No irritant effect.**on the eye: Smoke during soldering can cause eye irritation.**through inhalation: May cause respiratory irritation.**through ingestion: May be harmful if swallowed.***Sensitization:** *No sensitizing effects known.***Additional toxicological information:***The product shows the following dangers according to internally approved calculation methods for preparations:**Harmful***12 Ecological information****General notes:** *Do not allow product to reach ground water, water course or sewage system.***13 Disposal considerations****Product:****Recommendation:***Must not be disposed of together with household garbage. Do not allow product to reach sewage system.***Uncleaned packagings:****Recommendation:** *Disposal must be made according to official regulations.***14 Transport information****DOT regulations:***Hazard class: -  
Not regulated.***Land transport ADR/RID (cross-border):****ADR/RID class:** -  
*Not regulated.***Maritime transport IMDG:****IMDG Class:** -  
*Not regulated.***Marine pollutant:** *No*

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**Air transport ICAO-TI and IATA-DGR:****ICAO/IATA Class: -***Not regulated.***15 Regulations***USA The following information relates to product regulation specific to the USA.***SARA (Superfund Amendments and Reauthorization Act)***Section 355 (extremely hazardous substances):**None of the ingredient is listed.**Section 313 (Specific toxic chemical listings):*

7439-92-1 | lead

7440-36-0 | antimony

7440-50-8 | copper

7440-22-4 | silver

7440-66-6 | Zinc

**TSCA (Toxic Substances Control Act):***All ingredients are listed.***California Proposition 65***Chemicals known to cause cancer:**WARNING: This product contains a chemical known to the State of California to cause cancer.*

7439-92-1 | lead

7440-43-9 | cadmium

7440-02-0 | nickel

*Chemicals known to cause reproductive toxicity:**WARNING: This product contains a chemical known to the State of California to cause birth defects and/or other reproductive harm.*

7439-92-1 | lead

7440-43-9 | cadmium

**Carcinogenicity categories***EPA (Environmental Protection Agency)*

7439-92-1 | lead | B2

7440-50-8 | copper | D

7440-22-4 | silver | D

*IARC (International Agency for Research on Cancer)*

7439-92-1 | lead | 2B

*NTP (National Toxicology Program)**None of the ingredients is listed.**TLV (Threshold Limit Value established by ACGIH)**None of the ingredients is listed.*

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|  |
|--|
| NIOSH-Ca (National Institute for Occupational Safety and Health) |
| None of the ingredients is listed.                               |
| OSHA-Ca (Occupational Safety & Health Administration)            |
| None of the ingredients is listed.                               |

CANADA: The following information relates to product regulation specific to Canada.

**Workplace Hazardous Materials Identification (WHMIS):**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Classification:

D2A

D2B

**Components on Ingredient List for WHMIS:**

lead

tin

antimony

copper

silver

**EUROPEAN UNION**

The following information relates to product regulation specific to the directives of the European Union.

**Risk phrases:**

Harmful by inhalation and if swallowed.

Danger of cumulative effects.

Possible risk of impaired fertility.

**Safety phrases:**

Keep out of the reach of children.

Wear suitable protective clothing and gloves.

If swallowed, seek medical advice immediately and show this container or label.

Dispose of this material and its container to hazardous or special waste collection point.

**Special labeling of certain preparations:**

Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.

**16 Other information**

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser's use. The data on this Material Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Material Safety Data Sheet as a source for hazard information.

Department issuing MSDS: Product Safety

Contact: Heather Holich, MSDS Coordinator

Tel. (847)699-5755