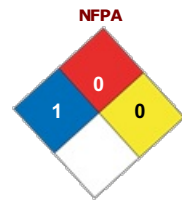


|   |   |
|---|---|
| <b>Personal Protective Equipment</b><br><br>Safety Glasses      Protective Gloves | <b>WHMIS Pictograms</b><br><br>Not Controlled |
|---|---|

## SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Lead Free Solder Alloy  
**Product Code:** Lead Free Solder Alloy  
**MSDS Manufacturer Number:** Lead Free Solder Alloy  
**Synonyms:** Lead Free Solder Alloy  
**Product Use/Restriction:** Solder  
**Manufacturer Name:** Kester  
**Address:** 800 W. Thorndale Avenue  
 Itasca, IL 60143  
**General Phone Number:** (630)-616-4000  
**Customer Service Phone Number:** (800)-2KESTER (253-7837)  
**CHEMTREC:** 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  
 msds@kester.com  
**Website:** msds@kester.com  
**MSDS Creation Date:** August 15, 2008  
**MSDS Revision Date:** March 11, 2010



| <b>HMS</b>          |   |
|---------------------|---|
| Health Hazard       | 1 |
| Fire Hazard         | 0 |
| Reactivity          | 0 |
| Personal Protection | X |

\* Chronic Health Effects

## SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS#      | Ingredient Percent | EC Num. |
|---------------|-----------|--------------------|---------|
| Zinc          | 7440-66-6 | 0 - 10 by weight   |         |
| Antimony      | 7440-36-0 | 0 - 10 by weight   |         |
| Copper        | 7440-50-8 | 0 - 10 by weight   |         |
| Bismuth       | 7440-69-9 | 0 - 10 by weight   |         |
| Silver        | 7440-22-4 | 0 - 10 by weight   |         |
| Tin           | 7440-31-5 | 0 - 100 by weight  |         |

## SECTION 3 - HAZARDS IDENTIFICATION

**Emergency Overview:** CAUTION! Irritant. Exposures to soldering fumes and vapors may be irritating to eyes, respiratory system, and skin.  
**Route of Exposure:** Eyes. Skin. Inhalation. Ingestion.  
**Eye:** May cause irritation.  
**Skin:** May cause irritation.  
**Inhalation:** Prolonged or excessive inhalation may cause respiratory tract irritation.  
**Ingestion:** May be harmful if swallowed. May cause vomiting.

## SECTION 4 - FIRST AID MEASURES

**Eye Contact:** Immediately flush eyes with plenty of water for 15 to 20 minutes. Get medical attention, if irritation or symptoms of overexposure persists.  
**Skin Contact:** Immediately wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.  
**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

Ingestion: If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

## SECTION 5 - FIRE FIGHTING MEASURES

**Flash Point:** > 93 °C (> 199 °F)  
**Lower Flammable/Explosive Limit:** Not applicable.  
**Upper Flammable/Explosive Limit:** Not applicable.  
**Extinguishing Media:** Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this material.  
**Unsuitable Media:** Do not use a solid water stream as it may scatter and spread fire.  
**Protective Equipment:** As in any fire, wear Self-Contained Breathing Apparatus (SCBA), MSHA/NIOSH (approved or equivalent) and full protective gear.  
**Hazardous Combustion Byproducts:** Oxides of carbon, oxides of nitrogen, aliphatic aldehydes, and other organic substances may be formed during combustion.. Melted solder above 1000 deg F will liberate toxic lead and/or antimony fumes

### **NFPA Ratings:**

**NFPA Health:** 1  
**NFPA Flammability:** 0  
**NFPA Reactivity:** 0  
**NFPA Other:**

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Personnel Precautions:** Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Avoid breathing vapor, aerosol or mist. Avoid contact with skin, eyes and clothing.  
**Environmental Precautions:** Avoid runoff into storm sewers, ditches, and waterways.  
**Methods for containment:** Melted solder will solidify on cooling and can be scraped up.  
**Methods for cleanup:** Solidified solder can be scraped up upon cooling. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

## SECTION 7 - HANDLING and STORAGE

**Handling:** Use with adequate ventilation. Avoid breathing vapor and fumes. Use only in accordance with directions.  
**Storage:** No special storage conditions required.  
**Hygiene Practices:** Wash thoroughly after handling. Avoid inhaling vapors, mists, or fumes.

## SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION - EXPOSURE GUIDELINES

**Engineering Controls:** Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.  
**Eye/Face Protection:** Safety glasses with side-shields.  
**Hand Protection Description:** Wear appropriate protective gloves. Consult glove manufacturer's data for permeability data.  
**Respiratory Protection:** When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self- contained breathing apparatus should be worn.

### EXPOSURE GUIDELINES

#### **Antimony :**

**Guideline ACGIH:** TLV-TWA : 0.5 mg/m3  
**Guideline OSHA:** PEL-TWA : 0.5 mg/m3

#### **Copper :**

**Guideline ACGIH:** TLV-TWA : 1 mg/m3  
**Guideline OSHA:** PEL-TWA : 1 mg/m3

#### **Silver :**

**Guideline ACGIH:** TLV-TWA : 0.1 mg/m3  
**Guideline OSHA:** PEL-TWA : 0.01 mg/m3

#### **Tin :**

**Guideline ACGIH:** TLV-TWA : 2 mg/m3  
**Guideline OSHA:** PEL-TWA : 2 mg/m3

## SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

**Physical State Appearance:** Solid  
**Color:** Silver grey  
**Odor:** Odorless

|                |  |
|----------------|--|
| Boiling Point: | Not determined.                        |
| Melting Point: | > 100 °C (> 212 deg F)                 |
| Density:       | >7 g/cm <sup>3</sup> (@ 20 °C (68 °F)) |
| Flash Point:   | > 93 °C (> 199 °F)                     |

## SECTION 10 - STABILITY and REACTIVITY

|                                 |   |
|---------------------------------|---|
| Chemical Stability:             | Stable under normal temperatures and pressures.   |
| Hazardous Polymerization:       | Not reported.   |
| Conditions to Avoid:            | No thermal decomposition if used according to specifications.   |
| Incompatible Materials:         | Oxidizing agents. Strong acids and alkalis.   |
| Special Decomposition Products: | When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded to liberate aliphatic aldehydes and acids. |

## SECTION 11 - TOXICOLOGICAL INFORMATION

### Zinc :

|             |  |
|-------------|--|
| Skin:       | Skin - Human Standard Draize Test. : 300 ug/3D-I - [mild](RTECS)   |
| Inhalation: | Inhalation. - Human TLo - Lowest published toxic concentration: 124 mg/m <sup>3</sup> /50M - [Lungs, Thorax, or Respiration - cough Lungs, Thorax, or Respiration - dyspnea Skin and Appendages - sweating ] (RTECS) |
| Ingestion:  | Oral - Bird duck LDLo: 388 mg/kg - [Autonomic Nervous System - other (direct) parasymphomimetic oral - ataxia Blood - changes in leukocyte (WBC) count ] (RTECS)   |

### Antimony :

|            |  |
|------------|--|
| Ingestion: | Oral - Rat LD50: 100 mg/kg [Details of toxic effects not reported other than lethal dose value.] (RTECS) |
|------------|--|

### Copper :

|            |   |
|------------|---|
| Ingestion: | Oral - Mouse LD50: 413 mg/kg [Details of toxic effects not reported other than lethal dose value.]<br>Oral - Mouse LD50: >5000 mg/kg [Behavioral - food intake (animal) Gastrointestinal - hypermotility, diarrhea Gastrointestinal - nausea or vomiting] (RTECS) |
|------------|---|

### Bismuth :

|            |   |
|------------|---|
| Ingestion: | Oral - Mouse LD50: 10 gm/kg [Details of toxic effects not reported other than lethal dose value.]<br>Oral - Rat LD50: 5 gm/kg [Details of toxic effects not reported other than lethal dose value.] (RTECS) |
|------------|---|

### Silver :

|            |  |
|------------|--|
| Ingestion: | Oral - Mouse LD50: 100 mg/kg [Details of toxic effects not reported other than lethal dose value.] (RTECS) |
|------------|--|

## SECTION 12 - ECOLOGICAL INFORMATION

|                     |  |
|---------------------|--|
| Ecotoxicity:        | No ecotoxicity data was found for the product.       |
| Environmental Fate: | No environmental information found for this product. |

## SECTION 13 - DISPOSAL CONSIDERATIONS

|                 |   |
|-----------------|---|
| Waste Disposal: | Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines. |
|-----------------|---|

## SECTION 14 - TRANSPORT INFORMATION

|                      |                |
|----------------------|----------------|
| DOT Shipping Name:   | Not Regulated. |
| DOT UN Number:       | Not Regulated. |
| IATA Shipping Name:  | Not Regulated. |
| IATA UN Number:      | Not Regulated. |
| IMDG UN Number :     | Not Regulated. |
| IMDG Shipping Name : | Not Regulated. |
| RID UN Number :      | Not Regulated. |
| RID Shipping Name :  | Not Regulated. |

## SECTION 15 - REGULATORY INFORMATION

|                        |  |
|------------------------|--|
| Canada Reg. Status:    | This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. |
| Canada WHMIS:          | Not controlled.  |
| <u>Zinc :</u>          |  |
| TSCA Inventory Status: | Listed   |
| Canada DSL:            | Listed   |

**Antimony :**  
TSCA Inventory Status: Listed  
Canada DSL: Listed

**Copper :**  
TSCA Inventory Status: Listed  
Canada DSL: Listed

**Bismuth :**  
TSCA Inventory Status: Listed  
Canada DSL: Listed

**Silver :**  
TSCA Inventory Status: Listed  
Canada DSL: Listed

**Tin :**  
TSCA Inventory Status: Listed  
Canada DSL: Listed

**WHMIS Pictograms**



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**SECTION 16 - ADDITIONAL INFORMATION**

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General Use: Solder  
HMIS Health Hazard: 1  
HMIS Fire Hazard: 0  
HMIS Reactivity: 0  
HMIS Personal Protection: X  
MSDS Creation Date: August 15, 2008  
MSDS Revision Date: March 11, 2010

**Disclaimer:** 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.

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