

**1: PRODUCT AND COMPANY IDENTIFICATION**

**Trade name:** **HM531 Solder Paste Lead (Pb) Alloy (Sn63/Pb37) (Sn62/Pb36/Ag2)**

**Application of the substance / the preparation:** Solder paste

**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Kester Inc.  
 800 West Thorndale Avenue  
 Itasca, IL 60143  
 Tel (630) 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.  
 Heng Qiao Road  
 Wujiang Economic Development Zone  
 Suzhou, Jiangsu 215200 China  
 Tel +86 512 82060808

**Information department:** Product Compliance: EHS\_Kester@kester.com

**1.4 Emergency telephone number:**

TRANSPORT EMERGENCY Phone: CHEMTREC (800) 424-9300 (Outside US & Canada): 00+1 +703 527 3887

**2: HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008



GHS08 Health hazard

Carc. 2                    H351 Suspected of causing cancer.  
 Repr. 1B                H360 May damage fertility or the unborn child.  
 STOT RE 2              H373 May cause damage to organs through prolonged or repeated exposure.



GHS07

Eye Irrit. 2A            H319 Causes serious eye irritation.  
 Skin Sens. 1            H317 May cause an allergic skin reaction.  
 STOT SE 3              H335 May cause respiratory irritation.

Aquatic Chronic 4    H413 May cause long lasting harmful effects to aquatic life.

**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labeled according to the CLP regulation.

**Hazard pictograms**

GHS07    GHS08

**Signal word** Danger

**Hazard-determining components of labeling:**

LEAD (Pb)

**Hazard statements**

Causes serious eye irritation.

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May cause an allergic skin reaction.  
 Suspected of causing cancer.  
 May damage fertility or the unborn child.  
 May cause respiratory irritation.  
 May cause damage to organs through prolonged or repeated exposure.  
 May cause long lasting harmful effects to aquatic life.

**Precautionary statements**

Wear protective gloves / eye protection.  
 Do not eat, drink or smoke when using this product.  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 IF ON SKIN: Wash with plenty of soap and water.  
 Store in a well-ventilated place. Keep cool.  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazard description:****WHMIS Symbols**

D2A - Very toxic material causing other toxic effects


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


Health = 2  
 Fire = 1  
 Reactivity = 0

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

Health = 2  
 Fire = 1  
 Reactivity = 0

**2.3 Other hazards****Results of PBT and vPvB assessment**

PBT: Not applicable.

vPvB: Not applicable.

**3: COMPOSITION OF MIXTURE****Description:** Mixture of the substances listed below with nonhazardous additions.

| CAS No.                             | Description   | % Range  |
|-------------------------------------|---|----------|
| CAS: 7440-31-5<br>EINECS: 231-141-8 | TIN (Sn)  | 55-70%   |
| CAS: 7439-92-1<br>EINECS: 231-100-4 | LEAD (Pb)<br>⚠ Carc. 2, H351; Repr. 1B, H360; STOT RE 2, H373<br>⚠ Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332 | 25-40%   |
|                                     | Rosin<br>⚠ Skin Sens. 1, H317   | 3.0-5.0% |
| CAS: 4767-03-7<br>EINECS: 225-306-3 | Organic Acid<br>⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335   | 1.0-3.0% |

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|                                     |   | (Contd. of page 2) |
|-------------------------------------|---|--------------------|
| CAS: 61790-85-0                     | Ethoxylated Amines<br>Eye Dam. 1, H318<br>Skin Irrit. 2, H315   | 1.0-3.0%           |
| CAS: 7440-22-4<br>EINECS: 231-131-3 | SILVER (Ag)   | 1.0-3.0%           |
| CAS: 111-42-2<br>EINECS: 203-868-0  | diethanolamine<br>Carc. 2, H351; STOT RE 2, H373<br>Skin Corr. 1B, H314; Eye Dam. 1, H318<br>Acute Tox. 4, H302 | ≤1.0%              |

**Additional information:**

Solder powder is typically 85-92% of the solder paste composition.

This product will be heated to a temperature of 217C (Celsius) during soldering. All volatile substances will evaporate and not remain on the finished circuit board.

**4: FIRST AID MEASURES**
**4.1 Description of first aid measures**
**General information:** Follow general first aid procedures.

**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:** Seek immediate medical advice.

**4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

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

No further relevant information available.

**5: FIREFIGHTING MEASURES**
**5.1 Extinguishing media**
**Suitable extinguishing agents:**

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

**5.2 Special hazards arising from the substance or mixture**

In case of fire, the following can be released:

Carbon monoxide (CO)

 Nitrogen oxides (NO<sub>x</sub>)

 Carbon dioxide (CO<sub>2</sub>)

Aliphatic aldehydes

**5.3 Advice for firefighters**
**Protective equipment:** Wear self-contained respiratory protective device.

**6: ACCIDENTAL RELEASE MEASURES**
**6.1 Personal precautions, protective equipment and emergency procedures** Ensure adequate ventilation

**6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Scoop up paste and deposit in appropriate containers.

**6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

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## 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Prevent formation of aerosols.

Wash hands after handling paste and before eating or smoking. Care should be taken to remove paste from under fingernails.

**Information about protection against explosions and fires:** No special measures required.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage:

**Requirements to be met by storerooms and receptacles:** Store in a cool location.

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

**Further information about storage conditions:** Keep receptacle tightly sealed.

**7.3 Specific end use(s)** No further relevant information available.

## 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

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

### 8.1 Control parameters

**Components with limit values that require monitoring at the workplace:**

#### 7440-31-5 TIN (Sn)

PEL Long-term value: 2 mg/m<sup>3</sup>  
metal

REL Long-term value: 2 mg/m<sup>3</sup>

TLV Long-term value: 2 mg/m<sup>3</sup>  
metal

#### 7439-92-1 LEAD (Pb)

PEL Long-term value: 0.05\* mg/m<sup>3</sup>  
\*see 29 CFR 1910.1025

REL Long-term value: 0.05\* mg/m<sup>3</sup>  
\*8-hr TWA, excl. lead arsenate; See PocketGuideApp.C

TLV Long-term value: 0.05\* mg/m<sup>3</sup>  
\*and inorganic compounds, as Pb; BEI

#### Additional information:

PEL = Permissible Exposure Limit (OSHA)

TLV = Threshold Limit Value (ACGIH)

OSHA = Occupational Safety and Health Administration

ACGIH = American Conference of Governmental Industrial Hygienists

### 8.2 Exposure controls

#### Personal protective equipment:

#### General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

#### 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.

Not necessary if room is well-ventilated.

Use suitable respiratory protective device in case of insufficient ventilation.

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**Protection of hands:**

Protective gloves

**Material of 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:**

Safety glasses



Face Shield with Safety Glasses when refilling.

## 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties****General Information****Appearance:**

|                  |                 |
|------------------|-----------------|
| <b>Form:</b>     | Pasty           |
| <b>Color:</b>    | Silver grey     |
| <b>Odor:</b>     | Mild            |
| <b>pH-value:</b> | Not determined. |

**Change in condition****Melting point/Melting range:** Undetermined.**Flash point:** Undetermined.**Auto igniting:** Product is not selfigniting.**Danger of explosion:** Product does not present an explosion hazard.**Density at 20 °C (68 °F):** > 4.5 g/cm<sup>3</sup> (> 37.553 lbs/gal)**Solubility in / Miscibility with****Water:** Not miscible or difficult to mix.

## 10: STABILITY AND REACTIVITY

**10.1 Reactivity** No further relevant information available.**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.**10.3 Possibility of hazardous reactions** No dangerous reactions known.**10.4 Conditions to avoid** No further relevant information available.**10.5 Incompatible materials:** Strong acids, strong oxidizers.**10.6 Hazardous decomposition products:**

Carbon monoxide and carbon dioxide

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 When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded to liberate aliphatic aldehydes and acids.

## 11: TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

**Acute toxicity:**
**Primary irritant effect:**
**on the skin:** Possible local irritation by contact with flux or fumes.

**on the eye:**

Smoke during soldering can cause eye irritation.

Causes serious eye irritation.

**through inhalation:**

May cause respiratory irritation.

Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system.

**through ingestion:** May be harmful if swallowed.

**Sensitization:**

May cause an allergic skin reaction.

**Additional toxicological information:**
**Carcinogenic categories**
**IARC (International Agency for Research on Cancer)**

|           |                |    |
|-----------|----------------|----|
| 7439-92-1 | LEAD (Pb)      | 2B |
| 111-42-2  | diethanolamine | 2B |

**NTP (National Toxicology Program)**

|           |           |   |
|-----------|-----------|---|
| 7439-92-1 | LEAD (Pb) | R |
|-----------|-----------|---|

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

## 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

**Aquatic toxicity:** No further relevant information available.

**Additional ecological information:**
**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary

**12.5 Results of PBT and vPvB assessment**
**PBT:** Not applicable.

**vPvB:** Not applicable.

## 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

**Recommendation:**

Disposal must be made according to official regulations.

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.

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**SAFETY DATA SHEET (SDS)**

According to 1907/2006/EC, Article 31

Version number 7

Reviewed on 09/28/2015

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**14: TRANSPORT INFORMATION**

|  |                 |
|--|-----------------|
| 14.1 UN-Number   | Not regulated   |
| DOT, ADN   | Not applicable  |
| 14.2 UN proper shipping name   | Not regulated   |
| ADR  | Not applicable  |
| IMDG, IATA   | Not regulated   |
| 14.3 Transport hazard class(es)  | Not regulated   |
| DOT, ADR, IMDG, IATA   |                 |
| Class  | Not regulated.  |
| 14.4 Packing group   | Not regulated   |
| Marine pollutant:  | No              |
| 14.6 Special precautions for user  | Not applicable. |
| 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |

**15: REGULATORY INFORMATION****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

All ingredients are listed on the following Government Inventories:

|              |   |
|--------------|---|
| China:       | Inventory of Existing Chemical Substances in China (IECSC)                |
| Korea:       | Korea Existing Chemicals List (ECL)                                       |
| Europe:      | European Inventory of Existing Commercial Chemical Substances (EINECS)    |
| Japan:       | Inventory of Existing and New Chemical Substances (ENCS)                  |
| Philippines: | Philippine Inventory of Chemicals and Chemical Substances (PICCS)         |
| USA:         | TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances |

**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 (Pb)      |
| 7440-22-4 | SILVER (Ag)    |
| 111-42-2  | diethanolamine |

**TSCA (Toxic Substances Control Act):** Kester certifies that all components listed below for the subject finished product are on the TSCA Inventory of Chemical Substances and are not subject to any chemical specific regulation under TSCA Section 12(b) export notification requirements delineated at 40 CFR part 707, subpart D.

All ingredients are listed or exempt from listing.

**California Proposition 65****Chemicals known to cause cancer:**

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

LEAD (Pb)  
diethanolamine

**Chemicals known to cause reproductive toxicity:**

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects and/or other reproductive harm.

LEAD (Pb)

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

7439-92-1 LEAD (Pb)

B2

7440-22-4 SILVER (Ag)

D

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

**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 Safety Data Sheet (SDS) contains all of the information required by the CPR.

**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labeled according to the CLP regulation.

**Hazard pictograms**

GHS07 GHS08

**Signal word** Danger**Hazard-determining components of labeling:**

LEAD (Pb)

**Hazard statements**

Causes serious eye irritation.

May cause an allergic skin reaction.

Suspected of causing cancer.

May damage fertility or the unborn child.

May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure.

May cause long lasting harmful effects to aquatic life.

**Precautionary statements**

Wear protective gloves / eye protection.

Do not eat, drink or smoke when using this product.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF ON SKIN: Wash with plenty of soap and water.

Store in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with local/regional/national/international regulations.

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**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 Safety Data Sheet (SDS):** Product Compliance / EHS Department**Contact:** EHS\_Kester@kester.com**Date of preparation / last revision** 09/28/2015 / 6

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**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A

Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

Carc. 2: Carcinogenicity, Hazard Category 2

Repr. 1B: Reproductive toxicity, Hazard Category 1B

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4

\* **Data compared to the previous version altered.**

US