



## 2. HAZARDS IDENTIFICATION

### PRIMARY ROUTES OF ENTRY:

⊗Eye    ⊗Inhalation    ⊗Skin    ⊗Ingestion

### CARCINOGEN LISTED IN:

NTP    IARC    OSHA    ⊗Not Listed

GHS



for lead containing products

Signal Word: Warning

#### Hazard statement(s)

- H317            May cause an allergic skin reaction
- H319            Causes serious eye irritation
- H335            May cause respiratory irritation
- H351            Suspected of causing cancer (lead)
- H361            Suspected of damaging fertility or the unborn child (applicable to lead containing product)
- H373            May cause damage to organs through prolonged or repeated exposure (applicable to lead containing product)
- H410            Very toxic to aquatic life, with long lasting effects (lead containing product)

#### Precautionary statement(s)

- P233            Keep container tightly closed
- P261            Avoid breathing dust/fume/gas/mist/vapors/spray
- P270            Do not eat, drink or smoke when using this product
- P273            Avoid release to the environment
- P280            Wear protective gloves/protective clothing/eye protection/face protection
- P362            Take off contaminated clothing and wash before reuse
- P301 + P314    IF SWALLOWED: Get Medical advice/attention if you feel unwell.
- P302 +P352    IF ON SKIN: Wash with plenty of soap and water
- P304 + 341    IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
- P305 + 351    IF IN EYES: Rinse continuously with water for several minutes (15 mins)

### POTENTIAL HEALTH EFFECTS:

- Eye Contact:**    Contact with material at room temperature or fume from material at typical re-flow temperatures over 100°C may cause serious eye irritation.
- Ingestion:**        May cause irritation.    May be harmful (lead containing).
- Inhalation:**        Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system.
- Skin Contact:**     May cause skin irritation. Antimony may causes dermatitis.
- Chronic:**

**SILVER:** Chronic skin contact or ingestion of silver dust, salts, or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes.

**TIN:** Has been shown to increase incidence of sarcoma in animal tests. Chronic exposure to tin dusts and fume may result in “stannosis” a mild form of pneumoconiosis.

**COPPER:** Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever; dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair.

**LEAD:** Prolonged exposure to vapors or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning.

**WARNING:** This product contains a chemical (s) known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (lead). Applicable in the State of California (Safe Drinking Water Standard).

**WARNING:** This product may contain lead. Lead may be harmful to your health. US Federal law prohibits the use of leaded solders in making of joints in any private or public potable (drinking) water supply system. Keep out of the reach of children.

**NOTE:** The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Components    | % wt | CAS Registry #/EINECS# | PEL<br>mg/m <sup>3</sup> | TLV-TWA<br>mg/m <sup>3</sup> | TLV-STEL<br>mg/m <sup>3</sup> |
|---------------|------|------------------------|--------------------------|------------------------------|-------------------------------|
| <b>TIN</b>    | *    | 7440-31-5/231-141-8    |                          |                              |                               |
|               |      | (US)                   | 2                        | 2                            | -                             |
|               |      | (EU)                   | -                        | 2                            | 4                             |
|               |      | (Canada)               | -                        | 2                            | 4                             |
|               |      | (Singapore)            | 2                        | -                            | -                             |
| <b>SILVER</b> | *    | 7440-22-4/231-131-3    |                          |                              |                               |
|               |      | (US)                   | 0.01                     | 0.1                          | -                             |
|               |      | (EU)                   | -                        | 0.1                          | -                             |
|               |      | (Canada)               | N.E.                     | 0.1                          | 0.3                           |
|               |      | (Singapore)            | 0.1                      | -                            | -                             |
|               |      | (Mexico)               | 0.1                      | -                            | -                             |
| <b>COPPER</b> | *    | 7440-50-8/231-159-6    |                          |                              |                               |
|               |      | (US)                   | 0.1                      | 0.2                          | -                             |

|                                     |         |                     |           |                          |           |
|-------------------------------------|---------|---------------------|-----------|--------------------------|-----------|
|                                     |         | (EU)                | -         | 0.2 (fume)               | 2(dust)   |
|                                     |         | (Canada)            | -         | 0.2                      | 0.6       |
|                                     |         | (Singapore)         | 0.2(fume) | 1(dust)                  | -         |
|                                     |         | (Mexico)            | 0.2       | -                        | 2         |
|                                     |         | (China)             | -         | 0.2(fume)                | 0.6(fume) |
| <b>ANTIMONY</b>                     | *       | 7440-36-0/231-146-5 |           |                          |           |
|                                     |         | (US)                | 0.5       | 0.5                      | -         |
|                                     |         | (EU)                | 0.5       | -                        | -         |
|                                     |         | (Canada)            | -         | 0.5                      | 1.5       |
|                                     |         | (Mexico)            | N.E.      | 0.5                      | -         |
|                                     |         | (Singapore)         | 0.5       | -                        | -         |
|                                     |         | (China)             | -         | 0.5                      | -         |
| <b>LEAD</b>                         | *       | 7439-92-1/231-100-4 |           |                          |           |
|                                     |         | (US)                | 0.05      | 0.05                     | -         |
|                                     |         | (EU)                | -         | 0.15                     | -         |
|                                     |         | (Canada)            | 0.05      | 0.05                     | -         |
|                                     |         | (Singapore)         | 0.15      | -                        | -         |
|                                     |         | (Mexico)            | N.E.      | 0.15                     | -         |
|                                     |         | (China)             | -         | 0.05(dust)<br>0.03(fume) | -         |
| <b>PROPRIETARY</b>                  | 0 – 4   | -                   | N.E.      | N.E.                     | N.E.      |
| <b>METHOXY<br/>POLYGLYCOL ETHER</b> | 3.0-7.0 | 9004-74-4           | N.E.      | N.E.                     | N.E.      |
| <b>ETHANOLAMINE</b>                 | 1.0-5.0 | 141-43-5            | N.E.      | 5                        | N.E.      |
|                                     |         | (Singapore)         | 5         | -                        | -         |
| N.E. = Not established              |         | * See Alloy Table   |           |                          |           |

**ALLOY TABLE (DATA)****%Metal Mix in Flux**

| <b>Indalloy Mixture<br/>(%Metal)</b>             | <b>%TIN<br/>Sn</b> | <b>%SILVER<br/>Ag</b> | <b>%COPPER<br/>Cu</b> | <b>%ANTIMONY<br/>Sb</b> | <b>%LEAD<br/>Pb</b> | <b>RoHS 2*<br/>Compliance<br/>(2011/65/EU)</b> |
|--|--------------------|-----------------------|-----------------------|-------------------------|---------------------|--|
| <b>121<br/>(96.5Sn/3.5Ag)</b>                    | 80-88.8            | 2.9-3.2               | -                     | -                       | -                   | YES  |
| <b>128<br/>100Sn</b>                             | 83-92              | -                     | -                     | -                       | -                   | YES  |
| <b>133<br/>(95Sn/5Sb)</b>                        | 78.9-87            | -                     | -                     | 4.2-4.6                 | -                   | YES  |
| <b>228<br/>(88Pb/10Sn/2Ag)</b>                   | 8.3-9.2            | 1.7-1.84              | -                     | -                       | 73-80.9             | YES with<br>exemption                          |
| <b>241<br/>(SAC 387)<br/>95.5Sn/3.8Ag/0.7Cu)</b> | 79.2-87.9          | 3.2-3.5               | 0.58-0.64             | -                       | -                   | YES  |
| <b>244<br/>(99.3Sn/0.7Cu)</b>                    | 82.4-91.4          | -                     | 0.58-0.64             | -                       | -                   | YES  |
| <b>256<br/>(SAC 305)<br/>(96.5Sn/3Ag/0.5Cu)</b>  | 80.1-88.8          | 2.5-2.8               | 0.42-0.46             | -                       | -                   | YES  |

**4. FIRST AID MEASURES**

- Eye Contact:** Hold eyelids apart and flush eyes with plenty of tepid water for at least 15 minutes. Seek medical attention if irritation persists.
- Ingestion:** If patient is conscious, ONLY induce vomiting as directed by trained personnel. NEVER give anything by mouth to an unconscious person. Seek medical attention immediately.
- Inhalation:** Remove to fresh air. If not breathing, give artificial respiration or oxygen by trained personnel. Seek immediate medical attention.
- Skin Contact:** Remove contaminated clothing. Wash affected area with soap and water. Wash clothing before reuse. If irritation persists, obtain medical attention.

**5. FIRE FIGHTING MEASURES**

- Flash Point:** Not established.      **Method:** Not established.
- Auto-ignition Temperature:** Not established.
- Flammable Limits:** Limits not established.
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions.
- Special Fire Fighting Procedures:** Firefighters must wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**6. ACCIDENTAL RELEASE MEASURES**

**Spill or Leak Procedures:** Using a spatula, scoop up paste and place in a plastic or glass jar and tightly cap. Remove traces of paste residue using cloth rags or paper towels moistened with ethyl or isopropyl alcohol. Dispose contaminated cloth rags or paper towels following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations. Material may have reclaim value.

## 7. HANDLING AND STORAGE

**Handling Precautions:** Keep containers tightly closed when not in use. Use care to avoid spills. Use only with production equipment specifically designed for use with solder paste. Wear appropriate personal protective equipment when working or handling solder paste. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed.

**Storage Precautions:** Store product in tightly capped original containers in a cool, dry area. Refer to product label for specific storage temperature requirements. Rotate stock to ensure use before expiration date on the label.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Use only with production equipment (such as stencil printers and re-flow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that exposure levels are not exceeded. Use ventilation.

### Personal protection:

**Eyes:** Chemical safety glasses/goggles. Face shield for splash hazards.

**Respirator:** An authority approved or compliant marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances (i.e. when re-flowing manually on a plate instead of a ventilated re-flow furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.

**Skin:** Compatible chemical resistant gloves. Latex gloves not recommended.

**Other:** Lab coat, eyewash fountain in work area. Avoid the use of contact lenses in high fume areas.

**Work/Hygienic Practices:** Maintain good housekeeping. Clean up spills immediately. DO NOT allow rags or paper towels contaminated with solder paste to accumulate in the work area. Good personal hygiene is essential. Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Grey colored paste.

**Boiling Point:** Not applicable.

**Odor:** Mild characteristic odor.

**Melting Point:** Not applicable

**Specific Gravity:** 1 g/cc

**pH:** 4 -8 (flux)

**Vapor Pressure:** Not applicable.

**Solubility in Water:** Insoluble (paste)

**Vapor Density:** (air=1) Not applicable.

**10. STABILITY AND REACTIVITY**

|  |  |
|--|--|
| <b>General:</b>                              | Stable.  |
| <b>Conditions to Avoid:</b>                  | Not established.   |
| <b>Incompatible Materials:</b>               | Avoid contact with acids, bases or oxidizing agents.                           |
| <b>Hazardous Decomposition / Combustion:</b> | Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. |
| <b>Hazardous Polymerization:</b>             | Will not occur.  |

**11. TOXICOLOGICAL INFORMATION**

|                         |                  |   |                  |
|-------------------------|------------------|---|------------------|
| <b>Carcinogenicity:</b> | <b>NTP:</b> No   |   |                  |
|                         | <b>OSHA:</b> No  |   |                  |
|                         | <b>IARC:</b> Yes | Lead and lead compounds are listed as possible carcinogens. |                  |
| <b>LD50:</b>            | Not established. | <b>LC50:</b>  | Not established. |

Chronic Toxicity: Lead can cause potential harm to the developing fetus.

**12. ECOLOGICAL INFORMATION**

Product not tested.

**13. DISPOSAL CONSIDERATION**

**Waste Disposal Method:** Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations.

**14. TRANSPORT INFORMATION**

Transport in accordance with applicable regulations and requirements. Not regulated (US Department of Transportation). Not hazardous under shipping regulations, all modes.

UN – none

Marine Pollutant: no

**15. REGULATORY INFORMATION**

The information in this Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated hereunder (29 CFR 1910.1200 ET. SEQ.).

California PROP 65(Safe Drinking Water Standard): WARNING:

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

SARA 313 Listing - 40 CFR 372.65  
Silver Copper Antimony Lead

All ingredients are listed on the EPA TSCA Inventory.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR).

This product has been classified in accordance with the guidelines set by the Dept. of Industrial Health of the Republic of Singapore.

This product has been classified in accordance with Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.

Regulatory Information China:

GB/T 16483-2008, GB/T 17519-2013, Safety Data Sheets for Chemical Products

GB 30000.2-29-2013, Rules for classification and labeling of chemicals (GHS)

Decree No. 591: Regulations on the Control Over Safety of Hazardous Chemicals.

This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2002.

For compliance with EU Directive 2002/95/EC, Restriction of Hazardous Substances (RoHS), see Alloy Table.

All ingredients are listed on the Korean Existing Chemical Inventory.

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS).

## 16. OTHER INFORMATION

**Revised Date:** 21 JUNE 2016  
**Prepared by:** Nancy Swarts, Indium Corporation of America  
**Approved by:** Nancy Swarts, Indium Corporation of America

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