



## SAFETY DATA SHEET

This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux known as Indium 5.8LS. A product table is provided that lists all metal groupings. To better serve all of our customers Indium Corporation has generated one SDS, for this product, to be used within the United States as well as internationally. Some of the regulatory information contained within may not be applicable to the customer's individual state or country. Unless otherwise stated the health and safety information provided within is applicable to all products.

### 1. PRODUCT AND COMPANY IDENTIFICATION

**General Product Class Identifier:** **INDALLOY WITH INDIUM 5.8 LS FLUX VEHICLE**

(View product table for individual product descriptions)

**SDS Number:** SDS-4010

**Revised Date:** 2 FEBRUARY 2018

**Product Use:** Industrial Use - No-clean solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder used for solder applications. Review alloy table for listing of metal mixes with the same family flux.

#### MANUFACTURER:

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**2. HAZARDS IDENTIFICATION****PRIMARY ROUTES OF ENTRY:**

⊗Eye    ⊗Inhalation    ⊗Skin    ⊗Ingestion

**CARCINOGEN LISTED IN:**

NTP    IARC    OSHA    ⊗Not Listed

GHS:

**Lead free products**

Signal Word: Warning

Hazard statement(s)

H317            May cause an allergic skin reaction  
 H334            May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H335            May cause respiratory irritation  
 EUH208        Contains rosin. May produce an allergic reaction

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 +P364    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)

**Lead containing products**

Signal Word: Warning

Hazard statement(s)

H303            May be harmful if swallowed  
 H317            May cause an allergic skin reaction  
 H334            May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 H335            May cause respiratory irritation  
 H351            Suspected of causing cancer  
 H361            Suspected of damaging fertility or the unborn child  
 H373            May cause damage to organs through prolonged or repeated exposure  
 H410            Very toxic to aquatic life with long lasting effects  
 EUH201A        Warning! Contains lead (applicable only to the products listed that contain lead) Review listing.  
 EUH208        Contains rosin. May produce an allergic reaction

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 +P364	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)

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Classification:

Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2 ) (lead)

Skin sensitizer-Category 1B

Respiratory sensitizer-Category 1B

Acute toxicity, oral-Category 5 (lead)

Acute toxicity, inhalation 4 (lead)

Specific target organ toxicity single exposure, respiratory tract- Category 3

Acute aquatic toxicity – Category 1 for lead containing products (H400)

Chronic aquatic toxicity – Category 1 for lead containing products (H410)

**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 eye irritation.

**Ingestion:** This product contains alloy powders and organic chemicals. May be harmful if swallowed

**Inhalation:** Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. Rosin fume may cause occupational asthma.

**Skin Contact:** May cause skin irritation. Rosin may cause dermatitis.

**Chronic:** **LEAD:** Prolonged exposure to vapors or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning. Symptoms of lead poisoning include headache, nausea, abdominal pain, muscle and joint pain and damage to the nervous system, blood system and kidneys.

**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.

**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)

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

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

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Components	% wt	CAS Registry #/EINECS#	PEL mg/m <sup>3</sup>	TLV-TWA mg/m <sup>3</sup>	TLV-STEL 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>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)	0.15	-	-
		(China)	-	0.05(dust) 0.03(fume)	-
<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>BISMUTH</b>	*	7440-69-9/231-177-4	N.E.	N.E.	N.E.
<b>ROSIN</b>	3.0-4.0	65997-05-9 (US)	N.E.	N.E.	N.E.
		(EU)	0.05	-	0.15 (sensitiser)

<b>POLYGLYCOL ETHER</b>	3 - 10	9038-95-3	N.E.	N.E.	N.E.
<b>CARBOXYLIC ACID</b>	3 – 6	68937-05-3	N.E.	N.E.	N.E.
N.E. = Not established		* See Alloy Table			

**ALLOY TABLE (DATA)**

**%Metal Mix in Flux**

<b>Indalloy Mixture Products (%Metal)</b>	<b>%TIN Sn</b>	<b>%SILVER Ag</b>	<b>%COPPER Cu</b>	<b>%BISMUTH Bi</b>	<b>%LEAD Pb</b>	<b>RoHS* Compliance (2011/65/EU/RoHS2)</b>
<b>104</b> (Sn62/Pb36/2Ag)	51.9-57.5	1.2-1.8	-	-	29.9-33.2	NO
<b>106</b> (Sn63/37Pb)	52.3-58	-	-	-	30.7-34	NO
<b>LEAD FREE PRODUCTS LISTED BELOW</b>						
<b>121</b> (96.5 Sn/3.5Ag)	80.1-88.8	2.9-3.2	-	-	-	YES
<b>241</b> <b>(SAC 387)</b> (95.5Sn/3.8Ag/0.7Cu)	79.3-87.9	3.2-3.5	0.58-0.64	-	-	YES
<b>246</b> (95.5Sn/4Ag/0.5Cu)	79.3-87.9	3.3-3.7	0.42-0.46	-	-	YES
<b>249</b> (91.8Sn/4.8Bi/3.4Ag)	76.2-84.5	2.8-3.1	-	4-4.4	-	YES
<b>252</b> (95.5Sn/3.9Ag/0.6Cu)	79.3-87.9	3.2-3.6	0.50-0.55	-	-	YES
<b>256</b> <b>(SAC 305)</b> (96.5Sn/3Ag/0.5Cu)	80.1-88.8	2.5-2.8	0.42-0.46	-	-	YES
<b>263</b> (99Sn/0.3Ag/0.7Cu)	82-91	0.25-0.28	0.58-0.64	-	-	YES
<b>NS</b> (90Sn/7.5Bi/2Ag/0.5Cu)	74.7-82.8	1.7-1.8	0.42-0.46	6.2-6.9	-	YES

**NS = Non-standard alloy mixture**

**\*RoHS 2 = Restriction of Hazardous Substances**

#### 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 (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.
- 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. Do not use latex gloves.
- 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

- |                          |                           |                             |                   |
|--------------------------|---------------------------|-----------------------------|-------------------|
| <b>Appearance:</b>       | Grey colored paste.       | <b>Boiling Point:</b>       | Not applicable.   |
| <b>Odor:</b>             | Mild characteristic odor. | <b>Melting Point:</b>       | Not applicable    |
| <b>Specific Gravity:</b> | Not applicable.           | <b>pH:</b>                  | Not applicable    |
| <b>Vapor Pressure:</b>   | Not applicable.           | <b>Solubility in Water:</b> | Insoluble (paste) |
| <b>Vapor Density:</b>    | (air=1) Not applicable.   |                             |                   |

## 10. STABILITY AND REACTIVITY

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

## 11. TOXICOLOGICAL INFORMATION

- Carcinogenicity:** **NTP:** No  
**OSHA:** No 29CFR1910.1025  
**IARC:** Yes Lead and lead compounds are listed as possible carcinogens.
- LD50:** Not established. **LC50:** Not established.

**Other:** Chronic Toxicity: Prolonged or repeated exposure to rosin flux fume may cause workers to develop occupational asthma. Lead can cause potential harm to the developing fetus.

No other ingredients are listed as carcinogens or toxic.

## 12. ECOLOGICAL INFORMATION

Product not tested.

An environmental hazard cannot be excluded in the event of unprofessional handling. Some ingredients contained are harmful to the environment.

Copper – Toxicity to daphnia and other aquatic invertebrates mortality NOEC – Daphnia 0.004 mg/l – 24h.

Lead – Toxicity to fish – mortality LOEC – rainbow trout – 1.19 mg/l – 96h. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Bioaccumulation – Oncorhynchus kisutch – 2 weeks  
Bioconcentration factor (BCF): 12. Fresh fish: 0.44 mg/l LC50 96h/ 1.32 mg/l LC50 96h/water Flea: 600 ug/l EC50 = 48h

### 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 rules for waste assessments.

### 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not regulated (US Department of Transportation).

Not hazardous under shipping regulations, all modes.  
Non-hazardous under IATA. Not regulated

UN – none Marine Pollutant: No

North American Emergency Guide Book – Not applicable

### 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

Lead CAS# 7439-92-1 Silver CAS# 7440-22-4 Copper CAS# 7440-50-8

EPA Genetic Toxicology Program – Lead CAS# 7439-92-1

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).



Canadian WHMIS: D2A - Materials Causing Other Toxic Effects-Very Toxic Material (Chronic). (lead)  
D2B – Materials Causing Other Toxic Effects (skin irritation/skin sensitization)

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.

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

Malaysia:

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). (GHS)

In China:

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

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

GB/T 16483-2008, GB/T 17517-2013

This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007

All ingredients are listed on the China Chemical Inventory.

## 16. OTHER INFORMATION

<b>HMIS Hazard Rating:</b>	<b>Health:</b>	2
	<b>Fire:</b>	1
	<b>Reactivity:</b>	0

**Revised Date:** 2 FEBRUARY 2018

**Prepared by:** Nancy Swarts, Indium Corporation of America

**Approved by:** Nancy Swarts, Indium Corporation of America

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