



## SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** INDALLOY WITH INDIUM 9.72 & 9.72-MD FLUX VEHICLE

**SDS Number:** SDS-1003

**Revised Date:** 11 JULY 2018

**Product Use:** Industrial Use (mixture) - Solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder. See alloy table for listing of alloys with the same flux.

#### MANUFACTURER:

##### In America:

The Indium Corporation of America®  
34 Robinson Rd., Clinton, NY 13323  
Information: (315) 853-4900  
nswarts@indium.com

##### EMERGENCY PHONE:

**CHEMTREC 24 hrs.**  
**USA: 1 (800) 424-9300**  
**Outside USA: +1 (703) 527-3887**

##### In Europe:

Indium Corporation of America (European Operations)  
7 Newmarket Ct.  
Kingston, Milton Keynes, UK, MK 10 OAG  
Information: +44 [0] 1908 580400

##### In China:

Indium Corporation (Suzhou) Co., Ltd.  
No. 428 Xinglong Street  
Suzhou Industrial Park  
Suchun Industrial Square  
Unit No. 14-C  
Jiangsu Province, China 215126  
Information: (86) 512-6283-4900

##### In Asia:

Indium Corporation of America  
Asia-Pacific Operations-Singapore  
29 Kian Teck Avenue  
Singapore 628908  
Information: +65 6268-8678

**2. HAZARDS IDENTIFICATION**

**PRIMARY ROUTES OF ENTRY:**

\*Eye      \*Inhalation      \*Skin      \*Ingestion      NTP

**Carcinogen listed in**

IARC      OSHA      \*Not Listed  
See Section 11

GHS:

Lead -free



Signal Word: Warning

Hazard statement(s)

- H317      May cause an allergic skin reaction
- H320      Causes eye irritation
- H334      May cause allergy or asthma symptoms or breathing difficulties if inhaled
- EUH208      Contains rosin. May produce an allergic reaction

Precautionary statement(s)

- P233      Keep container tightly closed
- P261      Avoid breathing dust/fume/gas/mist/vapours/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)

Lead containing



Signal Word: Warning

Hazard statement(s)

- H303      May be harmful if swallowed
- H317      May cause an allergic skin reaction
- H320      Causes eye irritation
- H334      May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H332      Harmful if inhaled
- 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
- EUH208      Contains rosin. May produce an allergic reaction

Precautionary statement(s)

P233	Keep container tightly closed
P261	Avoid breathing dust/fume/gas/mist/vapours/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)

Classification:

Specific target organ toxicity- repeated exposure – Category 2

Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2 ) (lead)

Eye irritation- (Category 2B)

Respiratory sensitization (Category 1B)

Skin sensitization (Category 1B)

Acute toxicity, inhalation (Category 4)

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 severe eye irritation.

**Ingestion:** This product contains metal alloy powder 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 when heated may cause respiratory sensitization.

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

**COPPER:** Overexposure to fumes of copper 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 can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**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
		(Singapore)	2	-	-
		(Canada)	N.E.	2	4
<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	-	-
		(China)	-	0.05(dust) 0.03(fume)	-
		(Mexico)	-	0.15	-
<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>	*	7440-36-0/23-146-5			

			(US)	0.5	0.5	-
			(EU)	0.5	-	-
			(Canada)	-	0.5	1.5
			(Singapore)	0.5	-	-
			(China)	-	0.5	-
			(Mexico)	0.5	-	-
<b>SILVER</b>	*	7440-22-4/231-131-3				
			(US)	0.01	0.1	-
			(EU)	-	0.1	-
			(Canada)	-	0.1	0.3
			(Singapore)	0.1	-	-
			(Mexico)	0.1	-	-
<b>ROSIN</b>	3.0-8.0	65997-05-9	(US)	N.E.	N.E.	N.E.
			(EU)	0.05	N.E.	0.15 (sensitiser)
<b>ORGANIC AMINE</b>	0.08-0.17		(US)	2	2	N.E.
			(EU)	-	2	4
			(Canada)	-	2	4
			(Singapore)	2	-	-
			(China)	-	1	2
<b>PROPRIETARY ACTIVATORS</b>	3.8-8.5			N.E.	N.E.	N.E.
* See Alloy Table						

**ALLOY TABLE**

% in Solder Paste

INDALLOY	LEAD %Pb	ANTIMONY %Sb	TIN %Sn	COPPER %Cu	SILVER %Ag	RoHS 2/3 Compliance
106 (Sn63/Pb37)	30.7-34.0	-	52.3-58.0	-	-	No
121 (Sn96.5/Ag3.5)	-	-	80-88.8	-	2.9-3.2	Yes
133 (Sn95/Sb5)	-	4.2-4.6	78.9-87.4	-	-	Yes
151 (Pb92.5/Sn5/Ag2.5)	76.8-85.1	-	4.2-4.6	-	2.1-2.3	Yes^
159 (Pb90/Sn10)	74.7-82.8	-	8.3-9.2	-	-	Yes^
163 (Pb95.5/Ag2.5)	79.3-87.9	-	1.7-1.8	-	2.1-2.3	Yes^
171 (Pb95/Sn5)	78.9-87.4	-	4.2-4.6	-	-	Yes^
228 (Pb88/Sn10/Ag2)	73.0-81.0	-	8.3-9.2	-	1.7-1.8	Yes^
233 (Pb85/Sb10/Sn5)	70.6-78.2	8.3-9.2	4.2-4.6	-	-	Yes^
256(SAC 305) (96.5Sn/3Ag/0.5Cu)	-	-	80.1-88.8	0.415	2.49-2.76	Yes

RoHS 2 = Restriction of Hazardous Substances (2011/65/EU) No phthalates.

^ Complaint if you are taking the lead exemptions for high melting leads. Otherwise this is not complaint under RoHS. Check your company polices for any exceptions. Please note that above metal % is based on the 83-92% contained in the solder paste. Refer to the original lead content when reviewing compliance.

**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. Not flammable.
- 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.

## 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 the 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-low furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.

**Skin:** Compatible chemical resistant 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. Follow standard lead work practices when applicable.

## 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)

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

**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.

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 oral – rat > 5,000 mg/kg

Bismuth – LD50 oral-rat 5,000 mg/kg

Antimony - LD50 oral – rat 7,000 mg/kg

Lead – Suspected human reproductive toxicant. May cause damage to organs through prolonged or repeated exposure. Reproductive toxicity – rat –inhalation, oral/ effects on newborn.

## 12. ECOLOGICAL INFORMATION

Product not tested.

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

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

Antimony – Toxicity to fish – mortality NOEC (*sheepshead minnow*) 6.2 mg/l – 96h. Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.



### 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. Do not dispose of down any drain or other body of water

### 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Not regulated (US Department of Transportation).

Non hazardous under shipping modes.

UN – none

Not regulated by IATA.

### 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.).



**WARNING:** This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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).



D2B Materials Causing Other Toxic Effects -irritant

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 the Mexican regulations, NOM-018-STPS-2015 and NOM-010-STPS-2014.

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).

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 under the Chinese Occupational Exposure Limit for hazardous Agents in the Workplace, GBZ2-2007.

SARA 313 Listing - 40 CFR 372.65

Lead CAS# 7439-92-1 Antimony CAS# 7440-36-0 Silver CAS# 7440-22-4 Organic amine

Copper CAS# 7440-50-8

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

All ingredients are listed on the EPA TSCA Inventory.

All ingredients are listed on the Canadian Domestic Substance List.

## 16. OTHER INFORMATION

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

**Revised Date:** 11 JULY 2018

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

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

The information and recommendations contained herein are, to the best of The Indium Corporation of America's knowledge and belief, accurate and reliable as of the date issued. The Indium Corporation of America does not warrant or guarantee their accuracy or reliability, and The Indium Corporation of America shall not be liable for any loss or damage arising out of the user thereof. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container.

This SDS has been updated with new information and classifying in accordance with the newest requirements under the GHS. The ingredients within this product have not changed.