



## SAFETY DATA SHEET

This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux. A product table is provided on page 3 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 regulatory, health and safety information provided within is applicable to all products.

### 1. PRODUCT AND COMPANY IDENTIFICATION

**General Product Identifier:** INDALLOY WITH INDIUM 5.5 LT FLUX VEHICLE

**SDS Number:** SDS-4677

**Revised Date:** 5 SEPTEMBER 2018

**Product Use:** Industrial Use (mixture) - Solder paste consisting of a flux vehicle blended with 83-92 weight percent pre-alloyed metal powder for soldering applications.

#### MANUFACTURER:

##### In America:

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

##### In Europe:

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

##### In Asia:

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

#### EMERGENCY PHONE:

**CHEMTREC 24 hrs.**

**USA: 1 (800) 424-9300**

**Outside USA: +1 (703) 527-3887**

**China Emergency: +86 4008417580**

##### 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

Unit No. 14-C

## 2. HAZARDS IDENTIFICATION

### PRIMARY ROUTES OF ENTRY:

\*Eye   \*Inhalation   \*Skin   \*Ingestion   NTP   IARC   OSHA   \*Not Listed

### Carcinogen listed in

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  
 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 + P341           IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing  
 P305 + P351           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  
 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. 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 + P341           IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable

for breathing  
P305 + P351 IF IN EYES: Rinse continuously with water for several minutes (15 mins)

---

**Classification:**

Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2 ) (lead)

Skin sensitizer-Category 1B

Respiratory sensitizer-Category 1B

Skin irritant- Category 2

Acute toxicity, oral- Category 5

Specific target organ toxicity- repeated exposure (Category 2) (lead)

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 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. May cause sensitization by inhalation. Exposure to rosin may cause occupational asthma.

**Skin Contact:** May cause skin irritation. Rosin may cause irritation, dermatitis or sensitization by skin contact.

**Chronic:** **TIN:** Has been shown to increase incidence of sarcoma in animal tests.

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

**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.

**INDIUM:** may cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing.



**WARNING:** This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and can cause 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)	-	2	4
<b>BISMUTH</b>	*	7440-69-9	N.E.	N.E.	N.E.
<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) 0.03(fume)	-		
<b>SILVER</b>	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Mexico)	-	0.1	-
(Singapore)	0.1	-	-		
<b>INDIUM</b>	*	7440-74-6			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	-	0.1	0.3
(China)	-	0.1	0.3		
<b>ROSIN</b>	4-8	65997-05-9	N.E.	N.E.	N.E.
		(EU)	0.05	-	0.15

<b>POLYGLYCOL ETHER</b>	3-6	9038-95-3	N.E.	N.E.	N.E.
<b>PROPRIETARY</b>	3-5		N.E.	N.E.	N.E.

N.E. = Not established      \* See Alloy Table

**ALLOY PRODUCT TABLE**

%Metal mixed with flux

<b>PRODUCT IDENTIFIER INDALLOY</b>	<b>%TIN Sn</b>	<b>%BISMUTH Bi</b>	<b>%SILVER Ag</b>	<b>%INDIUM In</b>	<b>%LEAD Pb</b>	<b>RoHS 2/3 Compliance</b>
Indalloy 42 46Bi/34Sn/20Pb	28-31	38.2-42.3	-	-	16.6-18.4	No
Indalloy 53 (67Bi/33In)	-	55.6-61.6	-	27.4-30.4	-	Yes
Indalloy 281 (58 Bi/42Sn)	34.9-38.6	48-53.4	-	-	-	Yes
Indalloy 282 (57Bi/42Sn/1Ag)	34.9-38.6	47.3-52	0.83-0.92	-	-	Yes

\*RoHS 2 = Restriction of Hazardous Substances (review for any applicable exemptions that may apply) (2011/65/EU)

\*RoHS 3- products do not contain any listed phthalates

**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.

## 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 the exposure levels are not exceeded.

### Personal protection:

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

**Respirator:** An 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, eye-wash 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. When applicable follow lead work practices.

## 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>	1 g/cc	<b>pH:</b>	4-8 (flux)
<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**

<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.

. 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.

<b>LD50:</b>	Not established.	<b>LC50:</b>	Not established.
--------------	------------------	--------------	------------------

**12. ECOLOGICAL INFORMATION**

Product not tested.

**13. DISPOSAL CONSIDERATION**

<b>Waste Disposal Method:</b>	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 international regulations and requirements. Not regulated under US DOT (United States Department of Transportation).

UN classification - none

Not hazardous for shipping. (ground/IATA/IMDG)

North American Emergency Guide Book – Not applicable

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.).



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

SARA 313 Listing - 40 CFR 372.65: Silver, Lead

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).



**WHMIS:** Class D2 (Materials Causing Other Toxic Effects (skin irritant/sensitizer)  
D2A-Materials Causing Other Toxic Effects-Very Toxic Material (Chronic) (lead)

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.

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 using the Chinese Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2007.

## 16. OTHER INFORMATION

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

**Revised Date:** 5 SEPTEMBER 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.