



**INDIUM CORPORATION OF AMERICA®\EUROPE®\ASIA-PACIFIC®  
INDIUM CORPORATION (SUZHOU)®  
SAFETY DATA SHEET**

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. See alloy table for all metal mixtures using the same flux

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** INDALLOY WITH NC-SMQ92 FLUX VEHICLE

**SDS Number:** SDS-IN 479

**Revised Date:** 5 MAY 2017

**Product Use:** Industrial Use (mixture) - No-clean solder paste consisting of a flux vehicle blended with an 83-92 % pre- alloyed metal powder.

### MANUFACTURER:

**In America:**

The Indium Corporation of America  
34 Robinson Rd., Clinton, New York 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 Europe  
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:

XEye      XInhalation      XSkin      XIngestion      NTP

### CARCINOGEN LISTED IN:

IARC      OSHA      XNot 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  
 H412      Harmful to aquatic life with long lasting effects (lead free product)  
 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)

GHS – 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 (lead)  
 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)

Classification:

Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2 ) (lead)

Acute aquatic toxicity – Category 1 for lead containing products

Chronic aquatic toxicity – Category 1 for lead containing products

Respiratory sensitizer- Category1B

Skin sensitizer- Category1B

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

**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 damage.

**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 may cause occupation asthma.

**Skin Contact:** May cause skin irritation. Antimony and rosin has been known to 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.

**BISMUTH:** May cause kidney damage.

**INDIUM:** May cause damage to respiratory system.

**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 known to the State of California to cause cancer and/or birth defects (or other reproductive harm).

**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.

Summary: Skin contact may cause irritation. Long term contact may cause dermatitis. Inhalation of decomposed rosin fume may cause irritation or occupational asthma. Exposure to metal fumes may cause irritation to the respiratory system. Long term exposure by inhalation to metal fumes may cause illness such as metal fume fever. Exposure to lead fume, if applicable, may cause harm. Sign of overexposure is anemia.

### 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	N.E.
		(EU)	-	0.15	-
		(Canada)	0.05	0.05	-
		(Mexico)	0.15	-	-
		(Singapore)	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
		(Mexico)	0.1	-	-
(Singapore)	0.1	-	-		

<b>INDIUM</b>	*	7440-74-6/231-180-0	(US)	0.1	0.1	-
			(EU)	0.1	0.3	-
			(Canada)	-	0.1	0.3
			(Mexico)	0.1	-	0.3
			(Singapore)	0.1	-	-
			(China)	-	0.1	0.3
			<b>BISMUTH</b>	*	7440-69-9/231-177-4	N.E.
<b>ANTIMONY</b>	*	7440-36-0/231-146-5	(US)	0.5	0.5	-
			(EU)	0.5	-	-
			(Canada)	-	0.5	1.5
			(Mexico)	0.5	-	-
			(Singapore)	0.5	-	-
			(China)	-	0.5	-
<b>COPPER</b>	*	7440-50-8/231-159-6	(US)	0.1 (fume)	0.2 (fume)	-
			(EU)	-	0.2 (fume)	-
			(Canada)	-	0.2 (fume)	0.6 (fume)
			(Mexico)	0.2	-	2
			(Singapore)	0.2(fume)	1(dust)	-
			(China)	-	1	2.5(dust)
					0.2	0.6(fume)
<b>ROSIN</b>	3 - 4	65997-05-9 (US)	(US)	N.E.	N.E.	N.E.
			(EU)	0.05	N.E.	0.15 (sensitiser)
<b>POLYGLYCOL ETHER</b>	2 – 5	9038-95-3	N.E.	N.E.	N.E.	
<b>PROPRIETARY</b>	3 - 8	-	N.E.	N.E.	N.E.	

\* See Alloy Table

N.E. = Not established

EU = European Union Occupational Exposure Limits

**ALLOY TABLE**

## Metal mixed with flux

<b>Indalloy</b>	<b>RoHS 2 Compliance</b>	<b>%TIN Sn</b>	<b>%SILVER Ag</b>	<b>%LEAD Pb</b>	<b>%ANTIMONY Sb</b>	<b>%BISMUTH Bi</b>	<b>%INDIUM In</b>	<b>%COPPER Cu</b>
<b>7</b> <b>(50In/50Pb)</b>	No	-	-	41.5-46	-		41.5-46	-
<b>97</b> <b>(43Sn/43Pb/14Bi)</b>	No	36.7-39.6	-	36.7-39.6	-	11.6-12.9	-	-
<b>104</b> <b>(Sn62/Pb36/2Ag)</b>	No	51.9-57.5	1.2-1.8	29.9-33.2	-	-	-	-
<b>106</b> <b>(Sn63/Pb37)</b>	No	52.3-58	-	30.7-34	-	-	-	-
<b>109</b> <b>(Sn60/Pb40)</b>	No	49.8-55.2	-	33.2-36.8	-	-	-	-
<b>121</b> <b>(96.5Sn/3.5Ag)</b>	Yes	80.1-88.8	2.9-3.2	-	-	-	-	-
<b>127</b> <b>60Pb/37Sn/3Ag)</b>	No	30.7-34	2.5-2.8	49.8-55.2	-	-	-	-
<b>132</b> <b>(95Sn/5Ag)</b>	Yes	78.9-87.4	4.2-4.6	-	-	-	-	-
<b>133</b> <b>(95Sn/5Sb)</b>	Yes	78.9-87.4	-	-	4.2-4.6	-	-	-
<b>205</b> <b>(60In/40Pb)</b>	No	-	-	33.2-36.8	-	-	49.8-55.2	-
<b>228</b> <b>(88Pb/10Sn/2Ag)</b>	Yes +	8.3-9.2	1.7-1.8	73-81	-	-	-	-
<b>233</b> <b>(85Pb/10Sb/5Sn)</b>	Yes +	4.2-4.6	-	70.6-78.2	8.3-9.2	-	-	-
<b>240</b> <b>(46Sn/46Pb/8Bi)</b>	No	38.2-42.3	-	38.2-42.3	-	6.6-7.4	-	-
<b>241</b> <b>(95.5Sn/3.8Ag/0.7Cu)</b>	Yes	79.3-87.9	3.2-3.5	-	-	-	-	0.6-0.7
<b>244</b> <b>(99.3Sn/0.7Cu)</b>	Yes	82.4-91.4	-	-	-	-	-	0.58-0.64
<b>281</b> <b>(58Bi/42Sn)</b>	Yes	34.9-38.6	-	-	-	48.1-53.4	-	-

<b>NS</b>	No	50-56	0.08-0.09	32.8-36.4	-	-	-	-
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NS = Non Standard Alloy

RoHS (Restriction of Hazardous Substances) EU Directive 2011/65/EU

Yes + Complies with RoHS only if using the lead exemption for high melting leads >85%

#### 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.

#### 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 they're 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.

**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 proper lead work practices when applicable.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Grey colored paste.

**Boiling Point:** Not applicable.

**Odor:** Mild characteristic odor.

**Melting Point:** Not applicable

**Specific Gravity:** Not applicable.

**pH:** Not applicable

**Vapor Pressure:** Not applicable.

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

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

**Volatile Organic Compounds:** <140,000 ug/kg

## 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

**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.

## 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

Avoid release to 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 reuse empty containers. Do not discharge product to body of water or drain. Avoid release to environment.

### 14. TRANSPORT INFORMATION

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

Non hazardous under the shipping regulations.

North American Emergency Guide Book – Not applicable

Non – hazardous ground, IATA, IMDG- not regulated.

### 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.).

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 -irritant

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

California PROP 65: WARNING:

This product contains a chemical 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

Antimony CAS# 7440-36-0

## Copper CAS# 7440-50-8

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

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

Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2002 in China.

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)

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:** 5 MAY 2017

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

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

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