



This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux. A table is provided that lists all metal groupings. To better serve all of our customers and reduce paperwork 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.

## SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** INDALLOY WITH INDIUM5.1AT FLUX VEHICLE

**SDS Number:** SDS-4261

**Revised Date:** APRIL 2, 2018

**Product Use:** Industrial use - solder paste consisting of a flux vehicle blended with 80-92 weight percent pre-alloyed metal powder. (lead free solder paste) for soldering applications. See alloy table for metal mixtures.

#### MANUFACTURER:

##### In America:

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## 2. HAZARDS IDENTIFICATION

### PRIMARY ROUTES OF ENTRY:

☒Eye    ☒Inhalation    ☒Skin    ☒Ingestion    NTP

### Carcinogen listed in

IARC    OSHA    ☒Not Listed  
See Section 11(nickel)



Signal Word: Warning

### Hazard statement(s)

H317                    May cause an allergic skin reaction  
H319                    Causes serious eye irritation  
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)

### 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 metal alloy powders and organic chemicals. May cause irritation.

**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 irritation. Inhalation of rosin fume may cause occupational asthma.

**Skin Contact:**     May cause skin irritation. Rosin may cause dermatitis. Nickel and Antimony can cause dermatitis.

**Chronic:**            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.

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.

**NICKEL:** Exposure may result in metal fume fever, which is an irritation to the respiratory tract resembling influenza. Skin sensitizer. Possible cancer hazard.



**WARNING:** This product can expose you to chemicals including [trace levels of lead and nickel] which is known to the State of California to cause cancer and [trace amounts of lead] which is known to the State of California to 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.

### 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>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>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>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(fume)	2
			(Singapore)	0.2	-	-
			(China)	-	1(dust)	2.5
					0.2(fume)	0.6
<b>BISMUTH</b>	*	7440-69-9/231-177-4		N.E.	N.E.	N.E.
<b>NICKEL</b>	*	7440-02-0/231-111-4				
			(US)	1	1.5	-
					0.015(NIOSH)	
			(EU)	-	0.5	-
			(Canada)	-	1	2
			(Singapore)	1	-	-
			(Mexico)	-	1	-
			(China)	-	1	2.5
<b>GOLD</b>	*	7440-57-5		N.E.	N.E.	N.E.
<b>ROSIN</b>	4.0-6.0	65997-05-9		N.E.	N.E.	N.E.
			(EU)	0.05	N.E.	0.15 (sensitiser)
<b>POLYGLYCOL ETHER</b>	2.0-5.0	9038-95-3		N.E.	N.E.	N.E.
<b>PROPRIETARY ACTIVATORS</b>	3.0-5.0	-		N.E.	N.E.	N.E.

N.E. = Not established

\* See Alloy Table

#### 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 (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 any permissible exposure limits are not exceeded.

### Personal protection:

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

**Respirator:** An authority approved or EU compliant CE 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 are 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.

## 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

<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 (Nickel) informational purposes	
	Product is not rated as a carcinogen.	
<b>LD50:</b>	Not established.	<b>LC50:</b> Not established.
<b>Other:</b>	Chronic Toxicity: Prolonged or repeated exposure to rosin flux fume may cause workers to develop occupational asthma.	

NIOSH Registry of Toxic Effects of Chemical Substances:

Nickel: RTECS QR5950000, Tin: XP7320000, Antimony: CC4025000, Silver: VW3500000, Copper: GL5325000

## 12. ECOLOGICAL INFORMATION

Product not tested.

No information is available for mixture. Avoid release to environment.

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

Antimony – Toxicity to fish – mortality NOEC (sheepshead minnow) 6.2 mg/l – 96h. Harmful 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.

#### 14. TRANSPORT INFORMATION

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

Non hazardous under all international shipping requirements such as (USDOT/IATA/IMDG).

UN – none.

North American Emergency Guide Book – Not Classified

#### 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 [trace levels of lead and nickel] which is known to the State of California to cause cancer and [trace amounts of lead] which is known to the State of California to 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 CAS# 7440-22-4

Copper CAS# 7440-50-8

Nickel CAS# 7440-02-0

Antimony CAS# 7440-36-0

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: Class D 2B 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 guidelines, 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.

**16. OTHER INFORMATION**

**HMIS Hazard Rating:**      **Health:**            1  
   **Fire:**                    1  
   **Reactivity:**        0

**Revised Date:**            2 APRIL 2018

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

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

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<b>%Metal mixed with flux - 80-92% metal load</b>								
<b>PRODUCT IDENTIFIER</b>  INDALLOY (METAL)	<b>%COPPER</b> <b>Cu</b>	<b>%TIN</b> <b>Sn</b>	<b>%SILVER</b> <b>Ag</b>	<b>%GOLD</b> <b>Au</b>	<b>% ANTIMONY</b> <b>Sb</b>	<b>%BISMUTH</b> <b>Bi</b>	<b>%NICKEL</b> <b>Ni</b>	<b>*RoHS 2/3</b> <b>Compliance</b>
<b>121</b> (96.5Sn/3.5Ag)	-	<b>77.2-88.8</b>	<b>2.8-3.2</b>	-	-	-	-	<b>Yes</b>
<b>132</b> (95Sn/5Ag)	-	<b>76-87.4</b>	<b>4-4.6</b>	-	-	-	-	<b>Yes</b>
<b>133</b> (95Sn/5Sb)	-	<b>76-87.4</b>	-	-	<b>4-4.6</b>	-	-	<b>Yes</b>
<b>238</b> (90Sn/10Au)	-	<b>72-82.8</b>	-	<b>8-9.2</b>	-	-	-	<b>Yes</b>
<b>241</b> (95.5Sn/3.8Ag/ 0.7Cu)	<b>0.56-0.64</b>	<b>76.4-87.9</b>	<b>3.04-3.5</b>	-	-	-	-	<b>Yes</b>
<b>243</b> (99Sn/1Cu)	<b>0.8-0.92</b>	<b>79.2-91.1</b>	-	-	-	-	-	<b>Yes</b>
<b>244</b> (99.3Sn/0.7Cu)	<b>0.56-0.64</b>	<b>79.4-91.4</b>	-	-	-	-	-	<b>Yes</b>
<b>249</b> (91.8Sn/4.8Bi/3. 4Ag)	-	<b>73.4-84.5</b>	<b>2.7-3.1</b>	-	-	<b>3.8-4.4</b>	-	<b>Yes</b>
<b>256</b> (96.5Sn/3Ag/ 0.5Cu)	<b>0.4-0.46</b>	<b>77.2-88.8</b>	<b>2.4-2.8</b>	-	-	-	-	<b>Yes</b>
<b>259</b> (90Sn/10Sb)	-	<b>72-82.8</b>	-	-	<b>8-9.2</b>	-	-	<b>Yes</b>

<b>PRODUCT IDENTIFIER</b>	<b>%COPPER Cu</b>	<b>%TIN Sn</b>	<b>%SILVER Ag</b>	<b>%GOLD Au</b>	<b>% ANTIMONY Sb</b>	<b>%BISMUTH Bi</b>	<b>%NICKEL Ni</b>	<b>*RoHS 2 Compliance</b>
INDALLOY (METAL)								
<b>NON STANDARD ALLOY MIX</b> 98.48Sn/1Ag/0. 5Cu/0.02Ni	<b>0.4-0.46</b>	<b>78.8-90.6</b>	<b>0.8-0.92</b>	-	-	-	<b>0.016-0.018</b>	<b>Yes</b>
<b>NON STANDARD ALLOY MIX</b> (99Sn/0.3Ag/0. 7Cu)	<b>0.56-0.6</b>	<b>79.2-91.1</b>	<b>0.24-0.28</b>	-	-	-	-	<b>Yes</b>

RoHS 2/3= Restriction of Hazardous Substances EU Directive 2011/65/EU