SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **INDALLOY WITH INDIUM 10.1 FLUX**

SDS Number: SDS-5795 **Revised Date:** 21 FEBRUARY 2018

Product Use: Industrial Use (mixture) - solder paste consisting of a flux vehicle blended with **82-89** weight percent pre-alloyed metal powder. See alloy table for metal mixtures with the same flux.

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2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY: **Carcinogen listed in**

⊕Eye ⊕Inhalation ⊕Skin ⊕Ingestion NTP IARC OSHA ⊕Not Listed

GHS:
General GHS:
Lead free products

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
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 +P364	Take off contaminated clothing and wash before reuse
P301 + P314	IF SWALLOWED: Get Medical attention/advice 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
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H351	Suspected of causing cancer (lead)
H361	Suspected of damaging fertility or the unborn child (lead)
H373	May cause damage to organs through prolonged or repeated exposure (lead)
H410	Very toxic to aquatic life with long lasting effects (lead)
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
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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
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 serious eye irritation.

Ingestion: This product contains metal 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. May be harmful if inhaled. Inhalation of rosin fume may cause occupational asthma.

Skin Contact: May cause skin irritation. Rosin may cause dermatitis and skin sensitization.

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.

LEAD: Prolonged exposure to vapors or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning.

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

Warning: State of California Only: This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (lead) Safe Drinking Water Standard – California Prop 65.

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/m³	TLV-TWA mg/m³	TLV-STEL mg/m³
TIN	*	7440-31-5/231-141-8			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
SILVER	*	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	-	-
COPPER	*	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
LEAD	*	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)	- -
ANTIMONY	*	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	-
BISMUTH	*	7440-69-6	NE..	N.E.	N.E.
NICKEL	*	7440-02-0			
		(US)	1	0.015	N.E.
ROSIN	5.0 – 6.0	65997-05-9	N.E.	N.E.	N.E.
		(EU)	0.05	N.E.	0.15 (sensitiser)
POLYGLYCOL ETHER	3.0 – 5.0	9038-95-3	N.E.	N.E.	N.E.
FATTY ACIDS (C6-C12)	1.0 – 3.0	67762-36-1	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 (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 any permissible exposure limits 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. 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 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 working with lead containing products use standard lead work procedures, 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:	1 g/cc (flux)	**pH:**	4 – 8 (flux)
Vapor Pressure:	Not applicable.	**Solubility in Water:**	Insoluble (paste)
Vapor Density:	(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	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.

Product not tested.

12. ECOLOGICAL INFORMATION

Product not tested.

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 shipping requirements. (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.).

California PROP 65 (Safe Drinking Water Standard):
This product contains a chemical known to the State of California to cause cancer and/or birth defects or other reproductive harm. (trace levels of lead)

SARA 313 Listing - 40 CFR 372.65
Silver Copper Lead Antimony

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:  D2B – Materials Causing Other Toxic Effects – irritation/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 the Mexican guidelines, NOM-018-STPS-2015 and NOM-010-STPS-2014.

In China:
This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007.
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 in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS).

16. OTHER INFORMATION

HMIS Hazard Rating:	**Health:**	1
	Fire:	1
	Reactivity:	0
Revised Date:	21 FEBRUARY 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.

Note: This SDS may be translated into an international language. If there is any misinterpretation or misunderstanding of any words or phrases that may occur within any translation the ENGLISH language shall always prevail.

ALLOY TABLE 82-89% metal load

INDALLOY Metal Mix	% TIN Sn	% SILVER Ag	% COPPER Cu	% ANTIMONY Sb	% LEAD Pb	% Bismuth Bi	% Nickel Ni	RoHS 2 Compliance
121 (96.5Sn/3.5Ag)	79-85.9	2.87-3.1	-	-	-	-	-	Yes
133 95Sn/5Sb	77.9-84.6	-	-	4.1-4.45	-	-	-	Yes
233 (85Pb/10Sb/5Sn)	4.1-4.45	-	-	8.2-8.9	69.7-75.7	-	-	Yes*
241 (SAC387) 95.5Sn/3.8Ag/0.7Cu)	78-85	3.1-3.4	0.57-0.623	-	-	-	-	Yes
256 (SAC305) 96.5Sn/3Ag/0.5Cu)	79-85.9	2.46-2.67	0.41-0.445	-	-	-	-	Yes
268	80.8-87.7	0.41-0.445	0.82-0.89	-	-	-	-	Yes

(SACM0510) (98.5Sn/0.5Ag/1Cu/0.05Mn)								
270 90.05Sn/3.8Ag/0.7Cu/3Bi/1.4Sb/0.15Ni	73.8-80.9	3.1-3.4	0.57-0.623	1.15-1.25	-	2.46-2.67	0.12-0.133	Yes
276 (90.6Sn/3.2Ag/0.7Cu/5.5Sb)	74.3-80.6	2.6-2.8	0.57-0.623	4.5-4.9	-	-	-	Yes
Non Standard 99Sn/1Sb	81.2-88	-	-	0.82-0.89	-	-	-	Yes

RoHS 2 = (2011/65/EU) * Complies with high melting lead exemption