



## SAFETY DATA SHEET

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**1.1 Product Identifier:** INDALLOY WITH INDIUM8.9HF (LEAD CONTAINING) SOLDER PASTE

**SDS Number:** SDS-4771

**Revised Date:** 5 APRIL 2021

Revision: 1.6

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Product Use:** Industrial Use (Mixture) - Solder paste consisting of a flux vehicle blended with 83 - 92 weight percent pre-alloyed metal powder used for soldering applications. Review alloy table for exact product identification. Note: this SDS covers various metal alloy mixtures using the same flux.

See alloy table for listing of products included under this SDS.

**1.3 Details of the supplier of the safety data sheet**

**MANUFACTURER/SUPPLIER/IMPORTER:**

**In America:**

The Indium Corporation of America®.

34 Robinson Rd, Clinton NY 13323

Technical & Safety Information: (315) 853-4900

Safety & SDS Information: [nswarts@indium.com](mailto:nswarts@indium.com)

Corporation web page: <http://www.indium.com>

**In Europe:**

The Indium Corporation of America® (European Operations)

7 Newmarket Ct.

Kingston, Milton Keynes, UK, MK 10 OAG

Information: (normal business hours) +44 [0] 1908 580400

EU Contact: [aday@indium.com](mailto:aday@indium.com)

**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:**

The Indium Corporation of America

Asia-Pacific Operations-Singapore

29 Kian Teck Avenue

Singapore 628908

Information: +65 6268-8678

**In India:**

Indium Solder Private Limited  
 Shed A, NP-7 Guidny Industrial Estate,  
 Ekkaduthangal, Chennai, Tamil Nadu, India 600032  
 Tel: +91-044-46877888

**1.4 Emergency Telephone Number****FOR CHEMICAL EMERGENCY ONLY PHONE \*:****CHEMTREC 24 hrs. International Response****USA: 1 (800) 424-9300****Outside USA: +1 (703) 527-3887****China Emergency: 86+ 4001-204937****France: 33-975181407****In France emergency information (French poison center): INRS (ORFILA) +33 (0) 1 45 42 59 59****Germany: toll free- 0800-181-7059 or (Frankfurt) 49-69643508409****Italy: toll free- 800-789-767****Poland: (Warsaw) 48-223988029****Portugal: 351-308801773****Hungary: (Budapest) 36-18088425****Romania: 40-37-6300026****United Kingdom: (London) 44-870-8200418 and 44-2038073798****\* Used only for spill/leak/fire/exposure/accident****ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation****SECTION 2. HAZARDS IDENTIFICATION****PRIMARY ROUTES OF ENTRY:** Eye Inhalation Skin Ingestion**Carcinogen listed in**

NTP

IARC

OSHA

 Not Listed**2.1 Classification of substance or mixture: (mixture)**

Skin sensitizer-Category 1B H317

Respiratory sensitizer-Category 1B H334

Repr. 1A: H360FD; Lact.: H362; STOT RE1, H372

**2.2 Label Elements**

Labeling according to Regulation (EC) No. 1272/2008

**GHS:**

Signal Word: Danger

**Hazard statements**

H317 May cause an allergic skin reaction

H319 Causes serious eye irritation

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

H360FD	May damage fertility or the unborn child
H362	May cause harm to breast-fed children
H372	Causes damage to organs through prolonged or repeated exposure
<u>Precautionary statement(s)</u>	
P233	Keep container tightly closed
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P263	Avoid contact during pregnancy/while nursing.
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)

---

### **2.3 OTHER HAZARDS:**

#### **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 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. Rosin may cause occupational asthma.

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

**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. Signs and symptoms of exposure – anemia. Possible carcinogenic to humans.

## **SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS**

### **3.2 Mixture:**

<b>Components</b>	<b>% wt</b>	<b>CAS Registry #/ EINECS#</b>	<b>ECHA Registration #</b>
<b>TIN</b>	*	7440-31-5/231-141-8	01-2119486474-28-0077
<b>SILVER</b>	*	7440-22-4/231-131-3	01-2119555669-21-0093

<b>LEAD</b>	*	7439-92-1/231-100-4	01-2119513221-59-0132 (H360FD/H362/H372)
<b>ROSIN</b>	4.0-6.0	65997-05-9	01-2119964093-37-0008 (H317/334)
<b>POLYGLYCOL ETHER</b>	3.0 – 5.0	9038-95-3	X (H319)
<b>TETRAETHYLENE GLYCOL DIMETHYL ETHER</b>			
<b>CARBOXYLIC ACID</b>	1.0 -6.0	68937-72-4	X (H319)
<b>BIS(2-(2-METHOXYETHOXY)ETHYL)ETHER (TETRAETHYLENE GLYCOL DIMETHYL ETHER)</b>	0.58 – 1.2	143-24-8/205-594-7	01-2119958965-16-0006 (H360)

\* See Alloy Table for breakdown of percentages of alloy mixtures

<http://www.indium.com>

## **SECTION 4. FIRST AID MEASURES**

### **4.1 Description of 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.

### **4.2 Most important symptoms and effects, both acute and delayed:**

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 may cause harm. Sign of overexposure is anemia. Exposure can cause eye irritation and can cause serious irritation especially during fuming.

### **4.3 Indication of any immediate medical attention and special treatment needed:**

No specific special treatment information is available on this mixture. Review data provided in this document to understand the hazards when working with the product. No other information is available at this time.

## **SECTION 5. FIRE FIGHTING MEASURES**

### **5.1 Extinguishing Media:**

Use extinguishers appropriate for the surrounding fire conditions. Water, CO2 or foam media.

### **5.2 Special hazards arising from the substance or mixture:**

May produce toxic fumes of carbon monoxide if burning or metal oxide fumes.

### **5.3 Advice for Firefighters**

Fire fighters must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. No other information is available.

## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

### **6.1 Personal precautions, protective equipment and emergency procedures:**

#### **For non-emergency personnel:**

Keep away from the spill. Remove sources of ignition. Keep exhaust ventilation system running. In the event of a fire evacuate area.

#### **For emergency responders:**

Wear safety glasses, gloves when cleaning up any spill. Other equipment may be necessary based on the immediate area and other chemicals unrelated to the product that may be in use. Adequate ventilation should be available. Keep unnecessary personnel away from area during clean up.

**Environmental Precautions:** Dispose contaminated cloth rags or paper towels following all applicable governmental regulations. Material may have reclaim value. Material is non - hazardous. It however does contain metals and organic chemicals which may not be suited for release to any body of water including drains.

#### **Methods and material for containment and cleaning up:**

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.

**6.2 Reference to other sections:** See Section 8 for exposure levels.

## **SECTION 7. HANDLING AND STORAGE**

### **7.1 Precautions For Safe Handling:**

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. Do not eat, drink or smoke when handling this product. Utilize exhaust ventilation when heating product. Emissions may contain metal fumes, rosin and organic compounds.

### **7.2 Conditions for Safe Storage, including any incompatibilities:**

**Storage Precautions:** Store product in tightly capped original containers in a cool, dry area. Refer to product label and product data sheet for specific storage temperature requirements. Rotate stock to ensure use before expiration date.

**7.3 Specific End Use(s):** Soldering applications

## **SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

### **8.1 Control Parameters:**

		<u>CAS#/EINECS#</u>	<u>TWA</u> mg/m3	<u>STEL</u> mg/m3
TIN	*	7440-31-5/231-141-8		
		(UK)	2	4
		(Belgium)	2	-
		(Germany)	2	-

		(Netherlands)	2	-
		(Spain)	2	-
		(Poland)	2	-
<b>SILVER</b>	*	7440-22-4/231-131-3		
		(UK)	0.1	0.3
		(Belgium)	0.1	-
		(France)	0.1	-
		(Germany)	0.1	-
		(Netherlands)	0.1	-
		(Spain)	0.1	-
		(Poland)	0.05	-
<b>LEAD</b>	*	7439-92-1/231-100-4		
		(UK)	0.15	-
		(France)	0.1	-
		(Spain)	0.15	-
		(Italy)	0.15	-
		(Portugal)	0.05	-
		(Finland)	0.1	-
		(Denmark)	0.05	-
		(Austria)	0.1	0.4
		(Switzerland)	0.1	0.8
		(Poland)	0.05	-
		(Norway)	0.05	-
		(Ireland)	0.15	-
<b>ROSIN</b>	4.0-6.0	65997-05-9		
		(EU)	0.05	N.E.
				0.15 (sensitizer)
<b>POLYGLYCOL ETHER</b>	3.0 – 5.0	9038-95-3		
			N.E.	N.E.
<b>CARBOXYLIC ACID</b>	1.0 - 6.0	68937-72-4		
			N.E.	N.E.
<b>BIS(2-(2-METHOXYETHOXY)ETHYL)ETHER (TETRAETHYLENE GLYCOL DIMETHYL ETHER)</b>			N.E.	N.E.
	0.58 – 1.2	143-24-8/205-594-7		

N.E. = Not established

TWA = time weighted average

STEL = short term exposure limit

**8.2 Exposure Controls:**

**Engineering Controls:** Use only with production equipment (such as stencil printers and re-flow furnaces) with adequate exhaust ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components with established exposure limits so they are not exceeded. Use exhaust ventilation when heating product. Air emission control equipment may be necessary based on the local governmental requirements for contaminants entering the atmosphere. Emissions may contain metal fume, rosin and organic compounds.

**Personal protection:**

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

**Respiratory:** An 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. Recommend a nitrile disposable or other chemical glove.

**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. Follow standard lead work practices, if applicable.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties:**

<b>Appearance:</b>	Grey colored solid paste	<b>Boiling Point/Range:</b>	Not determined
<b>Odor:</b>	Mild characteristic odor.	<b>Melting Point/Freezing Point:</b>	Not applicable
<b>Odor Threshold:</b>	Not established	<b>Evaporation Rate:</b>	Not applicable
<b>Specific Gravity:</b>	Not applicable.	<b>pH:</b>	Not applicable
<b>Vapour Pressure:</b>	Not applicable.	<b>Solubility in Water:</b>	Insoluble (paste)
<b>Vapour Density:</b>	(air=1) Not applicable.	<b>Partition coefficient:</b>	Not established
<b>Relative Density:</b>	Not established	<b>Flammability:</b>	Not applicable, not flammable
<b>Flash Point:</b>	Not applicable	<b>Method:</b>	Not applicable
<b>Auto-ignition Temperature:</b>	Not applicable	<b>Flammable Limits:</b>	Limits not established
<b>UEL/LEL Limits:</b>	Not applicable	<b>Decomposition Temp:</b>	Not applicable
<b>Viscosity:</b>	Not established	<b>Explosive properties:</b>	Not applicable
<b>Oxidizing Properties:</b>	Not established		

**9.2 Other Information:** Above data for the whole mixture.

**SECTION 10. STABILITY AND REACTIVITY**

<b>10.1 Reactivity:</b>	Stable.
<b>10.2 Chemical Stability:</b>	Stable
<b>10.3 Possibility of Hazardous Reactions:</b>	Not established

- 10.4 Conditions To Avoid:** None known
- 10.5 Incompatible Materials:** Avoid contact with acids, bases or oxidizing agents.
- 10.6 Hazardous Decomposition / Combustion:** Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. Metal oxide fumes.
- 10.7 Hazardous Polymerization:** Will not occur.

## **SECTION 11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008:**

<b><u>Acute toxicity:</u></b>	Not established	<b><u>Mutagenicity:</u></b>	Not established
<b><u>Irritation:</u></b>	Not established	<b><u>Toxicity for Reproduction:</u></b>	Contains lead, tetraethylene glycol dimethyl ether
<b><u>Corrosivity:</u></b>	Not applicable	<b><u>Absence of specific data:</u></b>	None available (not tested)
<b><u>Sensitization:</u></b>	contains rosin		
<b><u>Repeated dose toxicity:</u></b>	Not established		
<b><u>Carcinogenicity:</u></b>	Not established		
<b><u>Likely Routes of Entry:</u></b>	eyes (irritation) /skin (irritation or sensitization) /inhalation (irritation/sensitization) ingestion (may be harmful)		
<b><u>Interactive effects:</u></b>	None known		

### **11.2 Information on other hazards:**

May cause irritation or sensitization by skin and inhalation.

#### **Delayed and immediate effects as well as chronic effects from short and long-term exposure:**

Exposure to rosin fume has been known to cause occupational asthma. Exposure to lead fume, if applicable, may cause harm by inhalation and ingestion. Chronic exposures to lead fume, if applicable, can cause potential harm to the developing fetus. Lead exposure can be toxic.

**Mixture verses substance information:** None known. Mixture not tested.

#### **Carcinogenicity Listing:**

**NTP:**Yes (National Toxicity Program), **OSHA:** Yes (US Occupational Safety & Health Administration)

**IARC:**Yes - Lead and lead compounds are listed as possible carcinogens. (International Agency for Research on Cancer). Group 2B-Possibly carcinogenic to humans (cobalt).

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 oral – rat > 5,000 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.

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

Tetraethylene glycol dimethyl ether – LD50 Oral rat- female-3,640-4,160 mg/kg

LD50 Dermal-rat-male>6,900 mg/kg

## **SECTION 12. ECOLOGICAL INFORMATION**

Product mixtures not tested.

**12.1 Toxicity:** No information available

**12.2 Persistence and degradability:** No information available



**12.3 Bioaccumulative potential:** No information available

**12.4 Mobility in soil:** No information available

**12.5 Results of PBT and vPvB assessments:** No data is available

**12.6 Endocrine disrupting properties:** No information available

**12.7 Other adverse effects:** No information is available for mixture. Avoid release to environment.

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

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

## **SECTION 13. DISPOSAL CONSIDERATION**

**13.1 Waste treatment method:** Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with environmental regulations. Containerize material and classify according to applicable regulations. No pre-treatment on site is recommended. Do not dispose of down any drain or waterway. Utilize the same personal protective equipment as the user when handling for disposal.

**RoHS (Restriction of Hazardous Substances):** some of the product mixtures are RoHS compliant because they are lead free. Product mixtures do not contain any PBB or PBDB brominated compounds.

RoHS – Note that some of the product mixtures do contain lead and are therefore not compliant with RoHS. Users should review their particular use for any applicable exemptions that may apply. Review alloy table for products.

## **SECTION 14. TRANSPORT INFORMATION**

Transport in accordance with applicable international regulations and requirements.

Solder Paste is non - hazardous.

Not regulated/non - hazardous under US DOT (United States Department of Transportation).

Not regulated/non - hazardous under international shipping requirements (IATA/Ocean).

Not a marine pollutant.

**14.1 UN Number or ID number** Not applicable

**14.2 UN proper shipping name:** Not applicable

**14.3 Transport hazard class(s):** No Applicable

**14.4 Packing group:** Not Applicable

**14.5 Environmental hazards:** Not Applicable

**14.6 Special precautions for user:** Not Applicable

**14.7 Maritime transport in bulk according to IMO instruments:** Not applicable

## **SECTION 15. REGULATORY INFORMATION**

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

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.).

All ingredients are listed on the USEPA TSCA Inventory.

All ingredients are listed on EINECS. Note Rosin was recently listed under the No Longer Polymer List, Notification of New Chemical Substances in Accordance with Directive 67/548/EEC.

Safety data sheet was developed using EC 1907/2006 amended as of Feb 2020 EU No 453/2010, 2015/830, 2020/830 June 2020 and information as stated under regulation EC No 1272/2008 CLP Regulation.

Product contains an EU REACH Substance of Very High Concern (SVHC): Tetraethylene glycol dimethyl ether- CAS# 143-24-8 and Lead (7439-92-1).

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 2037/2000.

**15.2 Chemical safety assessment:** None performed for mixture.

## **SECTION 16. OTHER INFORMATION**

**NOTE:** The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption.

**Revised Date:** 5 APRIL 2021  
**Prepared by:** Nancy Swarts, The Indium Corporation of America, nswarts@indium.com  
**Approved by:** Nancy Swarts, The Indium Corporation of America

Changes provided on this SDS were based on the requirements of EU No. 453/2010 of Feb 2020, June 2020 2020/830 regarding amendments to EC No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

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.

### **ALLOY TABLE (DATA)**

**%Metal Mix in Flux**

Indalloy Mixture (%Metal)	% TIN Sn	% SILVER Ag	% LEAD Pb	RoHS 2/3 Compliance
100 (62.6Sn/37Pb/0.4Ag)	52-57.6	0.3-0.37	30.7-34	NO
104 (62Sn/36Pb/2Ag)	51.5-57	1.2-1.8	29.9-33	NO
106 (Sn63/Pb37)	52-58	-	30.7-34	NO
122 (95Sn/5Pb)	78.9-87	-	4.2-4.6	NO

**NS = Non standard alloy mixture**

**\*RoHS = Restriction of Hazardous Substances-  
RoHS 2 (2011/65/EU)**

**RoHS 3 = products do not contain any listed phthalates**