



SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier: INDALLOY WITH INDIUM 5.7 LT-1 FLUX

SDS Number: SDS-7017

Revised Date: 29 OCTOBER 2019

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

Product Use: Industrial Use Only (mixture) - solder paste consisting of a flux vehicle blended with 75-90 weight percent pre-alloyed metal powder. See alloy table.

1.3 Details of the supplier of the safety data sheet

MANUFACTURER/SUPPLIER/IMPORTER:

In America:

The Indium Corporation of America®
34 Robinson Road, Clinton NY 13323
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: <http://www.indium.com>

In Europe:

Indium Corporation of Europe(European Operations)
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Kingston, Milton Keynes, UK, MK 10 OAG
Information: (normal business hours) +44 [0] 1908 580400
EU Contact: aday@indium.com

In China:

Indium Corporation (Suzhou) Co., Ltd.
No. 428 Xinglong Street
Suzhou Industrial Park
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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

1.4 Emergency Telephone Number**FOR CHEMICAL EMERGENCY ONLY PHONE *:****CHEMTREC 24 hrs.****USA: 1 (800) 424-9300****Outside USA: +1 (703) 527-3887****China: Emergency 86+ 4008417580***** 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 NTP IARC OSHA ⊕Not Listed

Carcinogen listed in**2.1 Classification:****2.2 Label Elements**

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

GHS:



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 + 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

Sensitization, skin- Category1B

Sensitization, respiratory- Category 1B

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 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. 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 may cause metal fume fever (chills, muscle aches, nausea, and fever; dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair

ANTIMONY: May be harmful if inhaled. May cause respiratory irritation.

INDIUM: may cause irritation/damage to respiratory system.

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

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture:

Components	% wt	CAS Registry #/ EINECS#
TIN	*	7440-31-5/231-141-8
SILVER	*	7440-22-4/231-131-3
BISMUTH	*	7440-69-9/231-177-4
ANTIMONY	*	7440-36-0/231-146-5
COPPER	*	7440-50-8/231-159-6
INDIUM	*	7440-74-6/231-180-0
ROSIN	4.0 – 6.0	65997-05-9
POLYGLYCOL ETHER	3.0 – 5.0	9038-95-3
CARBOXYLIC ACID	1.0 – 4.0	68937-05-3

N.E. = Not established * See alloy table.

ALLOY TABLE

75-90% alloy in mix.

Indalloy (metal mixture)	%tin Sn	%silver Ag	%bismuth Bi	%indium In	%antimony Sb	%copper Cu	%nickel Ni	RoHS 2/3 Compliance
281 (58Bi/42Sn)	31.5-37.8	-	43.5-52.2	-	-	-	-	Yes
282 (57Bi/42Sn/1Ag)	31.5-37.8	0.75-0.90	42.8-51.3	-	-	-	-	Yes
ALLOY 51-3 (Sn60-68/Bi28-36/Ag 1-2.5/In 0.5-1.5/Sb 0-1/Cu 0-1)	45-61.2	0.75-2.25	21-32.4	0.44-1.35	0-0.9	0-0.9	-	Yes
ALLOY 67-3 (Sn50-60/Bi 40-48/Ag 0-1.5/In 0-1/Cu0-1)	37.5-54	0-1.35	30-43.2	0-0.9	-	0-0.9	-	Yes
Durafuse™ LT	65-88	2-3.5	-	7.5-13.5	-	0-0.45	-	Yes
841-63-2	35-50	0-1	50-60	0-0.5	0.5-2	0-1	0-0.2	Yes
841-66-2	30-45	0-1.2	40-59	-	0-0.45	0-0.45	0-0.45	Yes
841-69-1	30-45	0-1	40-59	-	0-0.45	0-0.45	-	Yes
841-69-3	30-45	0-0.9	40-59	-	0-0.45	0-0.45	-	Yes
841-84-1	37-50	-	50-60	-	0.5-2	0-1	0-0.2	Yes
841-84-2	34-50	0.5-2	50-60	0-0.5	0-0.5	0-1	0-0.2	Yes
870-8-1	41-58	0.75-1.5	30-45	-	-	0-0.2	-	Yes
841-63-3	30-45	0-0.9	40-59	-	0-0.45	0-0.45	-	Yes
841-96-4	35-50	0.5-2	50-60	-	0.5-2	0-1	0.02	Yes

[RoHS 3 – products do not contain any listed phthalates](#)

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 effect, 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.

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, 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.

6.2 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.

6.3 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.

6.4 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.

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.

7.2 Specific End Use(s): Soldering applications

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:

Components	% wt	CAS Registry #/ EINECS#	PEL	TLV	
				TLV-TWA mg/m ³	TLV-STEL mg/m ³
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	-	-		
BISMUTH	*	7440-69-9/231-177-4	N.E.	N.E.	N.E.

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	-
COPPER	*	7440-50-8/231-159-6			
		(US)	0.1	0.2	-
		(EU)	-	0.2 (fume)	2(dust)
		(Canada)	-	0.2	0.6
		(Singapore)	0.2(fume)	1(dust)	-
		(Mexico)	0.2	-	2
		(China)	-	0.2(fume)	0.6(fume)
INDIUM	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	N.E.
		(EU)	N.E.	0.1	0.3
		(Canada)	N.E.	0.1	0.3
		(Mexico)	0.1	N.E.	0.3
		(Singapore)	0.1	N.E.	N.E.
		(China)	-	0.1	0.3
ROSIN	4.0 – 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.
CARBOXYLIC ACID	1.0 – 4.0	68937-05-3	N.E.	N.E.	N.E.

N.E. = Not established * See alloy table.

8.2 Exposure Controls:

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 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.

SECTION 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.	Partition coefficient:	Not established
Relative Density:	Not established	Flammability:	Not applicable
Flash Point:	Not established	Method:	Not applicable
Auto-ignition Temperature:	Not applicable	Flammable Limits:	Limits not established
UEL/LEL Limits:	Not applicable	Decomposition Temp:	Not applicable
Viscosity:	Not established	Explosive properties:	Not applicable
Oxidizing Properties:	Not established		

9.2 Other Information: Above data for the whole mixture.

SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity:** Stable.
- 10.2 Chemical Stability:** Stable
- 10.3 Possibility of Hazardous Reactions:** 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** 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 toxicological effects:**Acute toxicity:** Not established**Irritation:** Not established**Corrosivity:** Not applicable**Sensitization:** Not available**Repeated dose toxicity:** Not established**Carcinogenicity:** Not established**Likely Routes of Entry:** eyes (irritation) /skin (irritation or sensitization) /inhalation (irritation/sensitization) ingestion (may be harmful)**Interactive effects:** None known**Mutagenicity:** Not established**Toxicity for Reproduction:** Not Established**Absence of specific data:** None available (not tested)**11.2 Symptoms related to the physical, chemical and toxicological characteristics:**

May cause irritation or sensitization by skin and inhalation.

11.3 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.

Mixture verses substance information: None known**Other Information:****Carcinogenicity:** NTP: No (National Toxicity Program)**Listing** OSHA: No (US Occupational Safety & Health Administration)

IARC: No (U.N. International Agency for Research on Cancer)

Silver – LD50 oral – rat > 5,000 mg/kg

Bismuth – LD50 oral-rat 5,000 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 Other adverse effects:** No information is available for mixture. Avoid release to environment.**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):** Product mixtures do not contain any PBB or PBDT brominated compounds.

RoHS –Users should review their particular use for any applicable exemptions that may apply. Review alloy table for products. Follow waste assessment rules for categorizing the waste.

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.

- 14.1 UN Number** None
- 14.2 UN proper shipping name:** None
- 14.3 Transport hazard class(s):** None
- 14.4 Packing group:** None
- 14.5 Environmental hazards:** None
- 14.6 Special precautions for user:** None
- 14.7 Transport in bulk:** Not applicable

SECTION 15. REGULATORY INFORMATION

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 20 May 2010 EU No 453/2010 and information as stated under regulation EC No 1272/2008 CLP Regulation.

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

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

Revised Date: 29 OCTOBER 2019

Prepared by: Nancy Swarts, Indium Corporation of America

Approved by: Nancy Swarts, Indium Corporation of America

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