

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH RMA FLUX VEHICLE

SDS Number: SDS-IN 354-C **Revised Date: 24 SEPTEMBER 2018**

Product Use: Rosin-based mildly activated solder paste consisting of a flux vehicle blended with a 83-92 %

pre-alloyed metal powder.

MANUFACTURER:

EMERGENCY PHONE: In America:

The Indium Corporation of America®. CHEMTREC 24 hrs. 34 Robinson Rd., Clinton, NY 13323 USA: 1 (800) 424-9300

Information: (315) 853-4900 Outside USA: +1 (703) 527-3887 nswarts@indium.com China: Emergency 86+ 4008417580

In Europe:

The Indium Corporation of America® (European Operations)

7 Newmarket Ct

Kingston, Milton Keynes, UK, MK 10 OAG

Information: +44 [0] 1908 580400

In Asia:

Indium Corporation of America Asia-Pacific Operations-Singapore

29 Kian Teck Avenue Singapore 628908

Information: +65 6268-8678

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

2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

Carcinogen listed in

See Section 11

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

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/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)

Lead containing 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

H335 May cause respiratory irritation H351 Suspected of causing cancer

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. 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

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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

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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)

Skin sensitizer-Category 1B

Respiratory sensitizer-Category 1B

Eye irritation-Category 2A

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 eye irritation.

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 has been known to cause occupational asthma.

Skin Contact: May cause skin irritation. ANTIMONY 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.

<u>TIN</u>: Has been shown to increase incidence of sarcoma in animal tests.

BISMUTH: May cause kidney damage.

INDIUM: May cause damage to respiratory system.

WARNING: This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and can cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

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.

3. COMPOSITION /	INFORMATION	ON ON INGREDIEN	TS	INDALLOT W	
Components	% wt	CAS Registry #	PEL mg/m³	TLV-TWA mg/m³	TLV-STEL mg/m³
TIN	+	7440-31-5			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
LEAD	+	7439-92-1			
		(US)	0.05	0.05	-
		(EU)	-	0.15	-
		(Canada)	0.05	0.05	-
		(Singapore)	0.15	-	-
		(Mexico)	-	0.15	-
		(China)	-	0.05(dust) 0.03 (fume)	-
SILVER	+	7440-22-4			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	-	0.1	-
GOLD	+	7440-57-5	N.E.	N.E.	N.E.
ANTIMONY	+	7440-36-0			
		(US)	0.5	0.5	-
		(EU)	0.5	-	-
		(Canada)	-	0.5	1.5
		(Singapore)	0.5	-	-
		(Mexico)	-	0.5	-
		(China)	-	0.5	-
GERMANIUM	+	7440-56-4	N.E.	N.E.	N.E.

- IN 354-C				INDALLOY	WITH RMA
BISMUTH	+	7440-69-9	N.E.	N.E.	N.E.
NDIUM	+	7440-74-6			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(Mexico)	-	0.1	0.3
		(China)	-	0.1	0.3
ROSIN	3.5-8.0	65997-05-9 (US)	N.E.	N.E.	N.E.
		(EU)	0.05	N.E.	0.15 (sensitiser)
POLYGLYCOL ETHER	2.5 - 6.0	9038-95-3	N.E	N.E.	N.E.
PROPRIETARY	1.0 -3.0	-	N.E.	N.E.	N.E.

ALLOY TABLE

Indalloy	%TIN	%SILVER	%LEAD	%ANTIMONY	%INDIUM	%GOLD	%GERMANIU M	%BISMUTH	RoHS 2/3* Compliance
1 (50In/50S n)	41.5-46.0	-	-	-	41.5-46.0	-	-	-	YES
1E (52In/48S n)	39.8-44.2	-	-	-	43.2-47.8	-	-	-	YES
2 80ln/15Pb/ 5Ag)	-	4.2-4.6	12.5-13.8	-	66.4-73.6	-	-	-	NO
3 (90ln/10A g)	-	8.3-9.2	-	-	74.7-82.8	-	-	-	YES
4 (100ln)	-	-		-	83.0-92.0	-	-	-	YES
7 50ln/50Pb)	-	-	41.5-46.0	-	41.5-46.0	-	-	-	NO
9 (70Sn/18P b/12In)	58.1-64.4	1	14.9-16.6	•	10-11	-	-	-	NO
10 (75Pb/25I n)	-	-	63.3-69.0	-	20.8-23.0	-	-	-	NO

SDS - IN 354	4-C INDALLOY WITH RMA									
Indalloy	%TIN	%SILVER	%LEAD	%ANTIMONY	%INDIUM	%GOLD	%GERMANIU M	%BISMUTH	RoHS 2/3* Compliance	
11 (95Pb/5ln)	-	-	78.9-87.4	-	4.2-4.6	-	-	-	YES	
42 (46Bi/34S n/20Pb)	28.2-31.3	-	16.6-18.4	-	-	-	-	38.2-42.3	NO	
53 (67Bi/33In)	-	-	-	-	27.4-30.4	-	-	55.6-61.6	YES	
70 (40In/40S n/20Pb)	33.2-36.8	-	16.6-18.4	-	33.2-36.8	-	-	-	NO	
97 (43Sn/43P b/14Bi)	36.7-39.6	-	36.7-39.6	-	-	-	-	11.6-12.9	NO	
104/Sn62 (62.5Sn/36 .1Pb/1.4A g)	51.9-57.5	1.2-1.8	29.9-33.2	-	-	-	-	-	NO	
106/Sn63 (63Sn/37P b)	52.3-58.0	-	30.7-34.0	-	-	-	-	-	NO	
109 (60Sn/40P b)	49.8-55.2	-	33.2-36.8	-	-	-	-	-	NO	
116 (50Sn/50P b)	41.5-46.0	-	41.5-46.0	-	-	-	-	-	NO	
118 (90Sn/10P b)	74.7-82.8	-	8.3-9.2	-	-	-	-	-	NO	
121 (96.5Sn/3. 5Ag)	80.1-88.8	1.2-1.8	-	-	-	-	-	-	YES	
122 (95Sn/5Pb)	78.9-87.4	-	4.2-4.6	-	-	-	-	-	NO	
123 (97.5Sn/2. 5Ag)	80.9-89.7	2.1-2.3	-	-	-	-	-	-	YES	
127 (60Pb/37S n/3Ag)	30.7-34.0	2.5-2.8	49.8-55.2	-	-	-	-	-	NO	
130 (60Pb/40S n)	33.2-36.8	-	49.8-55.2	-	-	-	-	-	NO	
132 (95Sn/5Ag	78.9-87.4	4.2-4.6	-	-	-	-	-	-	YES	
133 (95Sn/5Sb	78.9-87.4	-	-	4.2-4.6	-	-	-	-	YES	
141 (70Pb/30S n)	24.9-27.6	-	58.1-64.4	-	-	-	-	-	NO	

SDS - IN 354	OS - IN 354-C INDALLOY WITH RMA								T.
Indalloy	%TIN	%SILVER	%LEAD	%ANTIMONY	%INDIUM	%GOLD	%GERMANIU M	%BISMUTH	RoHS 2/3* Compliance
143 (90Pb/10S b)	-	-	74.4-82.8	8.3-9.2	-	-	-	-	YES
145 (75Pb/25S n)	20.8-23.0	-	62.3-69.0	-	-	-	1	-	NO
149 (80Pb/20S n)	16.6-18.4	-	66.4-73.6	-	-	-	1	-	NO
150 (81Pb/19l n)	-	-	67.2-74.5	-	15.8-17.5	-	-	-	NO
151 (92.5Pb/5 Sn/2.5Ag)	4.2-4.6	2.0-2.3	76.8-85.0	-	-	-	-	-	YES
155 (90Pb/5Ag /5Sn)	4.2-4.6	4.2-4.6	74.7-82.8	-	-	-	-	-	YES
159 (90Pb/10S n)	8.3-9.2	-	74.7-82.8	-	-	-	-	-	YES
161 (97.5Pb/2. 5Ag)	-	2.1-2.3	80.9-89.7	-	-	-	-	-	YES
164 (92.5Pb/5l n/2.5Ag)	-	2.1-2.3	76.8-85.1	-	4.2-4.6	-	-	-	YES
165 (97.5Pb/1. 5Ag/1Sn)	0.8-0.9	1.2-1.4	80.9-89.7	-	-	-	-	-	YES
171 (95Pb/5Sn)	4.2-4.6	-	78.9-87.4	-	-	-	-		YES
175 (95Pb/5Ag	-	4.2-4.6	78.9-87.4	-	-	-	-	-	YES
182 (80Au/20S n)	16.6-18.4	-	-	-	-	66.4-73.6	-	-	YES
183 (88Au/12G e)	-	-	-	-	-	73.0-81.0	10.0-11.0	-	YES
204 (70ln/30P b)	-		24.9-27.6	-	58.1-64.4	-	-	-	NO
205 (60In/40P b)	-	-	33.2-36.8	-	49.8-55.2	-	-	-	NO
206 (60Pb/40I n)	-	-	49.8-55.2	-	33.2-36.8	-	-	-	NO

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Indalloy	%TIN	%SILVER	%LEAD	%ANTIMONY	%INDIUM	%GOLD	%GERMANIU M	%BISMUTH	RoHS 2/3* Compliance
209 (65Sn/25A g/10Sb)	54.0-59.8	20.8-23. 0	-	8.3-9.2	-	-	-	-	YES
227 (77.2Sn/20 In/2.8Ag)	64.0-71.0	2.3-2.6	-	-	16.6-18.4	-	-	-	YES
228 (88Pb/10S n/2Ag)	8.3-9.2	1.7-1.8	73.0-81.0	-	-	-	-	-	YES
230 (54Sn/26P b/20In Dopant Cu	44.8-49.7	-	21.6-23.9	-	16.6-18.4	-	-	-	NO
233 (85Pb/10S b/5Sn)	4.2-4.6	-	70.6-78.2	8.3-9.2	-	-	-	-	YES
240 (46Sn/46P b/8Bi)	38.2-42.3	-	38.2-42.3	-	-	-	-	6.6-7.4	NO
255 (55.5Bi/44. 5Pb)	-	-	36.9-40.9	-	-	-	-	46.1-51.1	NO
281 (58Bi/42S n)	34.9-38.6	-	-	-	-	-	-	48.1-53.4	YES
281- 338 (60Sn/40B i)	49.8-55.2	-	-	-	-	-	-	33.2-36.8	YES
290 (97ln/3Ag)	-	2.5-2.8	-	-	80.5-89.2	-	-	-	YES
NS (50Sn/47P b/3Bi)	41.5-46.0	-	39.0-43.2	-	-	-	-	2.5-2.8	NO
NS (93.5Pb/5 Sn/1.5Ag)	4.2-4.6	1.2-1.4	77.6-86.0	-	-	-	-	-	YES
NS (67Pb/33I n)	-	-	55.6-61.6	-	27.4-30.4	-	-	-	NO

NS = Non Standard Alloy

*RoHS = Restriction of Hazardous Substances EU Directive 2002/95/EC

RoHS 3 = products do not contain any listed phthalates

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, not flammable.

Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions.

Special Fire Fighting Firefighters must wear NIOSH approved self-contained breathing apparatus and full

Procedures: 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 of contaminated cloth rags or paper towels

following all Federal, State and Local regulations.

7. HANDLING AND STORAGE

HandlingKeep 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

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 permissible

exposure levels 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

Practices: 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.

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

Appearance: Grey colored paste. **Boiling Point:** Not applicable. Mild characteristic odor. **Melting Point:** Not applicable Odor: **Specific Gravity:** Not applicable pH: Not applicable 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.

Will not occur.

Hazardous Decomposition / Harmful organic fumes and toxic oxide fumes may form at elevated

Combustion: temperatures.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: No

Hazardous Polymerization:

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.

Reviewing epidemiological studies the IARC concluded in inadequate evidence for the carcinogenicity of lead and lead compounds in humans and sufficient evidence for the carcinogenicity of inorganic lead compounds in animals. According to the IARC, the lead and lead compounds tested for carcinogenicity in animals are almost soluble salts that were selected on the basis of ease of administration. Metallic lead, lead oxide and lead tetra alkyls have not been tested adequately. The final evaluation was thus that lead and inorganic lead compounds are possibly carcinogenic to humans.

RTECS#: OF7525000 (lead) NL1050000 (indium) VM3500000 (silver) XP7320000 (tin) CC4025000 (antimony)

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.

14. TRANSPORT INFORMATION

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

Un - none

Not regulated under USDOT/IATA/IMDG.

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.

WARNING: This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

For Compliance with EU directive 2002/95/EC, Restriction on Hazardous Substances (RoHS) see Alloy Table.

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)

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

This product has been classified using the Chinese Occupational Exposure Limit of Hazardous Agents in the Workplace, GBZ2-2007.

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

For Compliance with EU directive 2002/95/EC, Restriction on Hazardous Substances (RoHS) see Alloy Table.

SARA 313 Listing - 40 CFR 372.65

Lead CAS# 7439-92-1 Silver CAS# 7440-22-4 Polyglycol ether (1 – 4.5%)

Antimony CAS# 7440-36-0

EPA Genetic Toxicology Program - Lead CAS# 7439-92-1

All ingredients are listed on the EPA TSCA Inventory.

Some ingredients are listed on the Canadian Domestic Substance List. No more than 2.2 % by weight is listed on the Non-domestic substance list.

16. OTHER INFORMATION

HMIS Hazard Rating: Health: 2

Fire: 1 Physical Hazard: 0

Revised Date: 24 SEPTEMBER 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.