



THE INDIUM CORPORATION OF AMERICA
®\EUROPE®\ASIA-PACIFIC®\INDIUM CORPORATION (SUZHOU) ®
SAFETY DATA SHEET

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

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH RMA FLUX COATING

SDS Number: SDS- CP039

Revised Date: 7 APRIL 2017

Product Use: Industrial Use - Flux Coated Metal Alloy Mix Soldering Preform (See alloy table for metal mixture)

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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

GHS:

Lead-free products



Signal Word: Warning

Hazard statement(s)

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)

Lead containing products



lead containing products

Signal Word: Warning

Hazard statement(s)

H303 May be harmful if swallowed
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 May cause respiratory irritation
H351 Suspected of causing cancer (lead)
H361 Suspected of damaging fertility or the unborn child (applicable to lead containing product)
H373 May cause damage to organs through prolonged or repeated exposure (applicable to lead containing product)
H410 Very toxic to aquatic life with long lasting effects (lead)
EUH201A Warning! Contains lead (applicable only to the products listed that contain 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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Classification:

Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2) (lead)

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: Moderately to severely irritating to the eyes and if not removed promptly, may result in serious ham. Do not allow material to come in contact with eyes. Contact with fume from molten metal may cause irritation.

Ingestion: May be harmful if swallowed.

Inhalation: Inhalation of fume or dust may cause local irritation to the respiratory system.

Skin Contact: Normal handling should not cause any adverse health effects. May cause skin irritation. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal. **ANTIMONY** has been known to cause dermatitis.

Chronic: **TIN:** Has been shown to increase incidence of sarcoma in animal tests.
LEAD: Prolonged exposure to vapors and/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.
INDIUM: May cause damage to respiratory system.

BISMUTH: May cause kidney damage.

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.

Warning: Applicable in California. This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm).

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 potable water supply system. Keep out of the reach of children. Not intended for household use.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% wt	CAS Registry #/EINECS	PEL mg/m ³	TLV-TWA mg/m ³	TLV-STEL mg/m ³
TIN	*	7440-31-5/231-141-8	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
LEAD	*	7439-92-1/231-100-4 (US)	0.05	0.05	N.E.
		(EU)	N.E.	0.15	N.E.
		(Canada)	N.E.	0.05	N.E.
		(Mexico)	0.15	N.E.	N.E.
		(China)	-	0.05(dust) 0.03(fume)	-
		(Singapore)	0.15	N.E.	N.E.
SILVER	*	7440-22-4/231-131-3 (US)	0.01	0.1	N.E.
		(EU)	N.E.	0.1	N.E.
		(Canada)	N.E.	0.1	0.3
		(Mexico)	0.1	N.E.	N.E.
		(Singapore)	0.1	N.E.	N.E.
INDIUM	*	7440-74-69/231-180-0			
		(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
		(China)	-	0.1	0.3
(Singapore)	0.1	N.E.	N.E.		
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)	N.E.	0.5	1.5
		(Singapore)	0.5	-	-
		(Mexico)	0.5	-	-
		(China)	-	0.5	-
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)
		(Singapore)	0.2(fume)	-	-
		(Mexico)	-	0.2(fume)	2
		(China)	-	0.2(fume)	0.6
GOLD	*	7440-57-5/231-165-9	N.E.	N.E.	N.E.
ROSIN	1-2	65997-05-9	N.E	N.E.	N.E
		(EU)	0.05	N.E.	0.15
PROPRIETARY	1-2		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 applicable

Flammable Limits: Flammable in the form of dust when exposed to heat or flame.

Extinguishing Media:	Use extinguishers appropriate for the surrounding fire conditions. Use water spray, carbon dioxide, or foam. Do not allow water run-off to enter sewers or waterways.
Special Fire Fighting Procedures:	Firefighters wear an approved self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures:	Wear HEPA (high efficiency particulate filter) filter respirator and other personal protective clothing. (See Exposure Controls/Personal Protection Section). Clean up spill without generating or dispersing dust into the air. Vacuum solids instead of sweeping. Reduce airborne dust and prevent scattering by moistening with water. Place spilt material in a container and dispose of in accordance with applicable regulations.
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7. HANDLING AND STORAGE

Handling Precautions:	Avoid breathing vapors from heated material and dusts from powder form. Avoid contact with eyes, skin and clothing. Follow routine safe handling procedures. Use with adequate ventilation.
Storage Precautions:	Keep away from heat and flame. Store in suitable, tightly capped, and labeled containers in cool dry, well-ventilated area. Empty containers may be hazardous as they contain product residue.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:	Local exhaust ventilation is recommended to control any fume or dust air contaminants. Keep personnel exposures to as low as possible.
Personal protection:	
Eyes:	Chemical safety glasses/goggles and face shield with molten metal.
Respirator:	An authority approved or compliant marked air-purifying respirator with a fume/dust HEPA type Chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated. Warning: Air purifying respirators do not protect the worker in oxygen-deficient atmospheres.
Skin:	Wear protective gloves, clothing such as lab coat, coveralls, apron and boots.
Other:	Eye-wash fountain/shower in work area. Avoid the use of contact lenses in high fume and dust areas. Regular shower facilities and industry laundry service may be required.
Work/Hygienic	Maintain good housekeeping. Clean up spills immediately. Good personal hygiene is essential. Avoid eating, smoking or drinking in the lead work areas. Wash hands and face thoroughly with soap and water immediately upon leaving the work area and before eating.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid, gray metal	Boiling Point:	Not available
Odor:	Odorless	Melting Point:	See Table
Specific Gravity:	See Table	pH:	Not applicable
Vapor Pressure:	Not established	Solubility in Water:	Insoluble

Vapor Density: (air=1) Not applicable.

10. STABILITY AND REACTIVITY

General: Stable.

Conditions to Avoid: Not established

Incompatible Materials: Not established

Hazardous Decomposition / Combustion: Toxic fumes are emitted at elevated temperatures.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP(National Toxicity Program): No

OSHA (Occupational Safety & Health Administration): No

IARC (International Agency for Research on Cancer): Yes (Lead and its compounds)

LD50: Not established. **LC50:** Not established.

12. ECOLOGICAL INFORMATION

Product has not been tested.

Lead is harmful to the aquatic life.

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 for all shipping modes.

UN – none

Non-hazardous- ground/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.).

WARNING: This product contains a chemical known to the State of California to cause cancer and/or birth defects(or other

reproductive harm). California Prop 65 Safe Drinking Water Standard

SARA 313 Listing - 40 CFR 372.65 – Lead CAS# 7439-92-1 Silver CAS# 7440-22-4 Copper 7440-50-8

Ingredient is 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 2A Poisonous and infectious mater-Other effects – Very Toxic (lead)
Class D 2B Material causing other toxic effects – (skin irritation)

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 Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.

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 Limit for Hazardous Agents in the Workplace, GBZ2-2007

16. OTHER INFORMATION

HMIS Hazard Rating:	Health:	2
	Fire:	1
	Physical Hazard:	0

Revised Date: 7 APRIL 2017

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.

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ALLOY MIXTURE TABLE

INDALLOY METAL ALLOY MIX IDENTIFICATION	%INDIUM In	%LEAD Pb	%BISMUTH Bi	%TIN Sn	%ANTIMONY Sb	%SILVER Ag	%COPPER Cu	%GOLD Au	SG	MELTING POINT
1 (50In/50Sn)	50	-	-	50	-	-	-	-	7.30	125C/257F
2 (80In/15Pb/5Ag)	80	15	-	-	-	5	-	-	7.85	154C/309F
7 (50In/50Pb)	50	50	-	-	-	-	-	-	8.86	210C/410F
11 (95Pb/5In)	5	95	-	-	-	-	-	-	11.06	313C/595F
97 (43Sn/43Pb/14Bi)	-	43	14	43	-	-	-	-	9.02	163C/325F
104 (Sn62/36Pb/2Ag)	-	36.1	-	62.5	-	1.4	-	-	8.41	179C/354F
106 (Sn63/37Pb))	-	37	-	63	-	-	-	-	8.40	183C/361F
109 (60Sn/40Pb)	-	40	-	60	-	-	-	-	8.50	191C/376F
121 (96.5Sn/3.5Ag)	-	-	-	96.5	-	3.5	-	-	7.36	221C/430F
122 (95Sn/5Pb)	-	5	-	95	-	-	-	-	7.42	222C/432F
128 (100Sn)	-	-	-	100	-	-	-	-	7.28	232C/450F
133 (95Sn/5Sb)	-	-	-	95	5	-	-	-	7.25	240C/464F
151 (92.5Pb/5Sn/2.5Ag)	-	92.5	-	-	5	-	-	-	11.02	296C/565F
164 (92.5Pb/5In/2.5Ag)	5	92.5	-	-	-	2.5	-	-	11.02	310C/590F
171 (95Pb/5Sn)	-	95	-	5	-	-	-	-	11.06	312C/594F
182 (80Au/20Sn)	-	-	-	20	-	-	-	80	14.51	280C/536F
205 (60In/40Pb)	60	40	-	-	-	-	-	-	8.52	181C/358F
206 (60Pb/40In)	40	60	-	-	-	-	-	-	9.30	231C/448F
228 (88Pb/10Sn/2Ag)	-	88	-	10	-	2	-	-	10.75	299C/570F
238 (90Sn/10Au)	-	-	-	90	-	-	-	10	7.78	217C/423F
239 (91Pb/4Sn/4Ag/1In)	1	91	-	4	-	4	-	-	11.05	313C/595F
241 (SAC387)	-	-	-	95.5	-	3.8	0.7	-	7.40	220C/428F

(95.5Sn/3.8Ag/0.7Cu)										
244☐ (99.3Sn/0.7Cu)	-	-	-	99.3	-	-	0.7	-	7.31	227C/441F
INDALLOY METAL ALLOY MIX IDENTIFICATION	%INDIUM In	%LEAD Pb	%BISMUTH Bi	%TIN Sn	%ANTIMONY Sb	%SILVER Ag	%COPPER Cu	%GOLD Au	SG	MELTING POINT
256☐ (SAC305) (96.5Sn/3Ag/0.5Cu)	-	-	-	96.5	-	3	0.5	-	7.35	220C/428F
281☐ (58Bi/42Sn)	-	-	58	42	-	-	-	-	8.56	138C/281F
282☐ (57Bi/42Sn/1Ag)	-	-	57	42	-	1	-	-	8.57	140C/284F
290☐ (97In/3Ag)	97	-	-	-	-	3	-	-	7.38	143C/290F
NON STANDARD ALLOY MIX										
NS (60Sn/39.65Pb/0.35Sb)	-	39.65	-	60	0.35	-	-	-	8.48	-
NS☐ (96.3Sn/3.7Ag)	-	-	-	96.3	-	3.7	-	-	7.36	-
NS (77Pb/20Sn/3Ag)	-	77	-	20	-	3	-	-	10.19	-
NS☐ (96Sn/4Ag)	-	-	-	96	-	4	-	-	7.37	-

☐ = RoHS 2 Compliant EU Directive 2011/65/EU

NS = Non Standard Blend

Indium Corporation is providing this above RoHS statement as information only. Solder related products are not directly related to the EU Directive. It is the responsibility of the customer to determine compliance with the regulations. Please review any applicable exemptions that may apply. It is the customer's responsibility to determine whether or not exemptions will or can be taken. Indium Corporation cannot make that determination. Above products do not contain any RoHS flame retardants.

<http://www.indium.com>