



INDIUM CORPORATION OF AMERICA
®\EUROPE®\ASIA-PACIFIC®\INDIUM (SUZHOU) ®

This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux known as RA Flux. A table is provided that lists all metal groupings. To better serve all of our customers Indium Corporation has generated one SDS, for this product. Unless otherwise stated the health and safety information provided within is applicable to all products.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER: INDALLOY WITH RA FLUX COATING

SDS NUMBER: SDS CP038

REVISED DATE: 1 JUNE 2015

PRODUCT USE: INDUSTRIAL USE (mixture) - METAL BLEND WITH FLUX COATING FOR SOLDERING APPLICATION'S. SEE ALLOY TABLE FOR THE LIST OF PRODUCTS AVAILABLE. SOME HEALTH AND SAFETY INFORMATION MAY NOT BE APPLICABLE TO THE SPECIFIC PRODUCT USED. REVIEW APPLICABLE DATA.

MANUFACTURER:

In America:

The Indium Corporation of America
 1676 Lincoln Ave., Utica NY 13502
 Information: (315) 853-4900
 nswarts@indium.com

EMERGENCY PHONE:

CHEMTREC 24 hrs.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887

In Europe:

Indium Corporation of Europe
 7 Newmarket Ct.
 Kingston, Milton Keynes, UK, MK 10 OAG
 Information: +44 [0] 1908 580400

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:

Indium Corporation of America
 Asia-Pacific Operations-Singapore
 29 Kian Teck Avenue
 Singapore 628908
 Information: +65 6268-8678

2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

*Eye *Inhalation *Skin *Ingestion

CARCINOGEN LISTED IN:

NTP IARC OSHA *Not Listed
* * See Section 11

GHS: general information



(lead, cadmium containing products)

Warning Word: Warning

Hazard statement(s)

- H303 May be harmful if swallowed (lead/cadmium)
- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 May cause respiratory irritation
- H332 Harmful if inhaled (lead and cadmium containing)
- H341 Suspected of causing genetic defects (cadmium)
- H350 May cause cancer (cadmium)
- H351 Suspected of causing cancer (lead)
- H361 Suspected of damaging fertility or the unborn child (applicable to lead containing product)
- H372 Causes damage to organs through prolonged or repeated exposure (cadmium)
- 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 harmful effects (lead) (cadmium)
- EUH201A Warning! Contains lead (applicable only to the products listed that contain lead) Review listing.
- EUH207: Warning! Contains cadmium. Dangerous fumes are formed during use.
- 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 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)

Review the information that is applicable for the product you are using. See metal table.

POTENTIAL HEALTH EFFECTS:

- Eye Contact:** Fume from molten metal may cause irritation. Severe eye damage may result from hot molten metal being splashed into the eyes. Wear safety glasses and face shield when working with molten metal.
- Ingestion:** Ingestion of dust may cause headache, nausea, abdominal pain, fatigue and pain in the legs, arms and joints. May be harmful.
- Inhalation:** Inhalation of fume or dust may cause local irritation to the respiratory system. Inhalation of fume or dust may cause headache, nausea, abdominal pain, fatigue and pain in the legs, arms and joints.

Inhalation can cause shortness of breath and sore throat. Inhalation of cadmium fume or dust can cause metal fume fever. Inhalation of cadmium may be fatal. Inhalation may be harmful.

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.

Chronic: Indium may cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing.

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 and muscle and joint pain and damage to the nervous system, blood system and kidneys.

Tin: has been shown to increase incidence of sarcoma in animal tests.

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.

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

Cadmium: Overexposure can cause damage to the lungs and kidneys. Cadmium is a toxic metal and ingestion or inhalation of fumes and dust can be harmful. Included effects may be obstructive lung disease such as emphysema, bone demineralization, micro fractures and osteomalacia, gastrointestinal symptoms, rhinitis and discoloration of the teeth.

NOTE: **The Indium Corporation does not recommend, manufacture, market or endorse any of its product’s 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.**

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% wt	CAS Registry #
INDIUM	*	7440-74-6/231-180-0
TIN	*	7440-31-5/231-141-8
LEAD	*	7439-92-1/231-100-4
SILVER	*	7440-22-4/231-131-3

BISMUTH	*	7440-69-9
ANTIMONY	*	7440-36-0/231-146-5
CADMIUM	*	7440-43-9 (US)
ROSIN MIXTURE	1.0-4.0	65997-05-9 (US)

N.E. = Not established

* See Alloy Table at end of document

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. None combustible solid in bulk form, however, dust or powder may be flammable.
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions, such as foam, carbon dioxide, dry chemical and water.
- Special Fire Fighting Procedures:** Firefighters must wear NIOSH approved self-contained breathing apparatus and full protective clothing.
- Explosion Data - Sensitivity to:** **Mechanical Impact:** Not established
Static Discharge: Not established

6. ACCIDENTAL RELEASE MEASURES

- Spill or Leak Procedures:** Contain spill. If molten, cool to allow metal to solidify. If solid metal wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment. Use a vacuum, place in barrels and return to process if possible. Metal can be recycled. Sweeping is not recommended if material can be airborne.

7. HANDLING AND STORAGE

- Handling Precautions:** Only dry metals should be added to molten bath. If working with molten metal, or exposed to fume or dust, use appropriate personal protective equipment. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed.
- Storage Precautions:** Store product in a cool, dry area away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components	% wt	CAS Registry #	PEL mg/m ³	TLV-TWA mg/m ³	TLV-STEL mg/m ³
INDIUM	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Mexico)	-	0.1	0.3
		(Singapore)	0.1	-	-
		(China)	-	0.1	0.3
TIN	*	7440-31-5/231-141-8			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
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)	-
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	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	-
CADMIUM	*	7440-43-9 (US)	(US)	0.005	0.01	-
			(EU)	0.025	-	-
			(Singapore)	0.05	-	-
			(China)	-	0.01	0.02
			(Canada)	-	0.05	0.2
ROSIN MIXTURE	1.0-4.0	65997-05-9 (US)	(US)	N.E.	N.E.	N.E.
			(EU)	0.05	N.E.	0.15

*See metal table at end of document.

Engineering Controls: Exhaust ventilation is necessary to control any air contaminants and keep exposures as low as possible. Use ventilation for worker protection.

Personal protection:

Eyes: Chemical safety glasses/goggles and face shield with molten metal. Face shield for splash hazards.

Respirator: An authority approved or compliant marked air-purifying respirator with a HEPA particulate/fume cartridge is recommended when contaminants are elevated or during cutting or melting. Certain conditions may require monitoring to determine the correct respiratory protection.

Skin: Rubber or heat resistant gloves. Apron, boots, sleeve protectors may be necessary depending on the type of work performed.

Other: Lab coat, eye-wash fountain in work area. Avoid the use of contact lenses in high fume/dust areas.

Work/Hygienic Maintain good housekeeping. Clean up spills immediately. Wash hands thoroughly with soap and water immediately upon leaving the work area and before eating. Refrain from eating or smoking in work areas. When applicable in US, review, OSHA lead and cadmium worker requirements. Certain work practice and medical monitoring may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Metal preform/shape	Boiling Point:	Not determined
Odor:	Odorless.	Melting Point:	See table
Specific Gravity:	See Table	pH:	Not applicable
Vapor Pressure:	Not applicable.	Solubility in Water:	Insoluble
Vapor Density:	(air=1) Not applicable.	Flash point:	Not Applicable

10. STABILITY AND REACTIVITY

General: Stable.

Conditions to Avoid:	Not established.
Incompatible Materials:	Avoid contact with acids, sulfur or oxidizing agents. Ignites and incandesces on heating with sulfur.
Hazardous Decomposition / Combustion:	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity Listing: National Testing Program (NTP): Cadmium is listed as a possible carcinogen. (Yes)

Occupational Safety & Health Administration (OSHA):

Cadmium is listed as a possible carcinogen (Yes)

U.N. International Agency for Research on Cancer (IARC):

Cadmium is listed as a possible carcinogen and lead and lead compounds are listed (Yes)

LD50: Not established.

LC50: Not established.

Other: Chronic Toxicity: Overexposure to fumes may cause respiratory tract irritation. Lead and Cadmium may cause potential harm to the developing fetus.

Cadmium:

Inhalation, human, 39 mg/m³, LCLO

Oral, rat, 2330 mg/kg, LD50

Women, inhalation, dose: 129 ug/m³, 20 years

Chronic Exposure: Teratogen/Mutagen/Reproductive Hazard

Lead:

Genotoxicity in vivo – rat- inhalation

Developmental Toxicity – rat – inhalation

Developmental Toxicity –rat-oral

Reproductive toxicity – rat - inhalation

Other: Chronic Toxicity: Lead and Cadmium can cause potential harm to the developing fetus.

See NIOSH RTECS Number for additional information: NL1050000 (indium metal); 7525000(lead only); 5325000 (copper only); VW3500000(silver only); EU9800000 (cadmium only)

12. ECOLOGICAL INFORMATION

Product not tested. Contains substances that are harmful to the aquatic organisms.

Cadmium: 4.26mg/l LC 50 96h, 0.0004-0.003 mg/l LC50 96h, 0.006 mg/l LC50 96h

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. Do not dispose of on the ground or into any waterway. Lead and cadmium materials are considered to be hazardous waste and should be disposed of properly if they are not recycled. Do not reuse any containers that this product was packaged in. Product container may contain residue of hazardous materials.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not regulated under US DOT (United States Department of Transportation)-IATA/Ocean).

Non hazardous under shipping modes.

UN – none.

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 Mexican regulations NOM-018-STPS-2000 and NOM-010-STPS-1999.

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/cadmium) D2B Materials Causing Other Toxic Effects (irritant).
D1A – Materials causing immediate and serious toxic effects –Very Toxic Material (cadmium)

This product has been classified in accordance with the guidelines set by the Dept of Industrial Health of the Republic of Singapore.

SARA 313 Listing - 40 CFR 372.65 Lead, Antimony, Copper, Cadmium and Silver

EPA Toxicology Program Lead and Cadmium

All ingredients are listed on the EPA TSCA Inventory.

California Prop 65: Warning: This product contains chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm).

Ingredients are listed on the Canadian Domestic Substance List.

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product:

X_n Hazard Code (lead/cadmium) T

Risk Phrases:

R20/22 Harmful by inhalation and if swallowed (lead/cadmium)
R36/37/38 Irritating to eyes, respiratory system and skin
R42/43 May cause sensitization by inhalation and by skin contact

R60	May impair fertility (lead/cadmium)
R63	Possible risk to the unborn child (cadmium)
R26	Very toxic by inhalation (cadmium)
R40	Limited evidence of carcinogenic effect (lead)
R45	May cause cancer (cadmium)
R48	Danger of serious damage to health by prolonged exposure (lead) (cadmium)
R61	Avoid release to the environment

Safety Phrases:

S20/21	When using do not eat, drink or smoke
S23	Do not breathe fumes/gas/vapor/spray
S24/25	Avoid contact with skin and eyes
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection
S28	After contact with skin wash immediately with plenty of soap and water
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
S62	If swallowed, do not induce vomiting seek medical advice immediately and show container or label

16. OTHER INFORMATION

HMIS Hazard Rating:

Health:	2
Fire:	0
Reactivity:	0

Revised Date: 1 JUNE 2015

Prepared by: Nancy Swarts, Indium Corporation of America

Approved by: Nancy Swarts, Indium Corporation of America

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ALLOY TABLE

(Alloy mixture with a 1-4% rosin coating)

INDALLOY	RoHS 2 Compliance	%BISMUTH Bi	%COPPER Cu	%INDIUM In	%LEAD Pb	%TIN Sn	%SILVER Ag	%CADMIUM Cd	%ANTIMONY Sb	MELTING POINT	SG
1E	YES	-	-	52	-	48	-	-	-	118C/244F	7.30
4	YES	-	-	100	-	-	-	-	-	156C/314F	7.31
104(Sn62)	NO	-	-	-	36	62	2	-	-	179C/354F	8.41
106 (Sn63)	NO	-	-	-	37	63	-	-	-	183C/361F	8.40
109	NO	--	-	-	40	60	-	-	-	179C/354F	8.50
130	NO	-	-	-	60	40	-	-	-	238C/460F	9.28
132	YES	--	-	-	-	95	5	-	-	240C/430F	7.39
156	YES	-	-	-	-	90	10	-	-	295C/563F	7.51
181	NO	-	-	-	30.6	51.2	-	18.2	-	145C/293F	8.45
206	NO	-	-	40	60	-	-	-	-	231C/448F	9.30
241 (SAC387)	YES	-	0.7	-	-	95.5	3.8	-	-	220C/428F	7.40
244	YES	--	0.7	-	-	99.3	-	-	-	227C/441F	7.31
256 (SAC241)	YES	-	0.5	-	-	96.5	3	-	-	220C/428F	7.40
281	YES	58	-	-	-	42	-	-	-	138C/281F	8.56
290	YES	-	-	97	-	-	3	-	-		
NS	YES	-	2	-	-	97	0.2	-	0.8	-	7.31
NS	YES	-	-	-	-	96	4	-	-	-	7.37
NS	NO	-	-	-	38	60	2	-	-	-	8.49
NS	YES	97.5	-	-	-	-	2.5	-	-	-	9.82

RoHS 2 Compliance = Restriction of Hazardous Substances EU Directive 2011/65/EU. Review any applicable exemptions.

Visit <http://www.indium.com>.

Solder related products are not directly related to RoHS. Therefore the above is provided as information only. It is the customer's responsibility to determine compliance with any applicable regulation.