



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

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** INDALLOY WITH RA/RA-F FLUX VEHICLE

**MSDS Number:** MSDS-IN 360

**Revised Date:** 15 APRIL 2009

**Product Use:** Industrial Use - Rosin-based activated solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder.

### MANUFACTURER:

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## 2. HAZARDS IDENTIFICATION

GHS:



**PRIMARY ROUTES OF ENTRY:**

\*Eye   \*Inhalation   \*Skin   \*Ingestion

**CARCINOGEN LISTED IN:**

NTP   IARC   OSHA   \*Not Listed

**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 may contain lead alloy powder and organic chemicals. Harmful if swallowed. May cause systematic lead poisoning and burns to the digestive tract. Symptoms of lead poisoning include headache, nausea, abdominal pain, muscle and joint pain and damage to the nervous system, blood system and kidneys.
- Inhalation:** Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system.
- Skin Contact:** May cause mild 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.
- TIN:** Has been shown to increase incidence of sarcoma in animal tests.
- BISMUTH:** Can cause kidneys damage.
- WARNING:** 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.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Components	% wt	CAS Registry #	PEL mg/m <sup>3</sup>	TLV-TWA mg/m <sup>3</sup>	TLV-STEL mg/m <sup>3</sup>
TIN	*	7440-31-5 (US)	2	2	N.E.
		(EU)	N.E.	2	4
		(Canada)	N.E.	2	4
LEAD	*	7439-92-1 (US)	0.05	0.05	N.E.
		(EU)	N.E.	0.15	N.E.

		(Canada)	0.05	0.05	N.E.
<b>SILVER</b>	*	7440-22-4 (US)	0.01	0.1	N.E.
		(EU)	N.E.	0.1	N.E.
		(Canada)	N.E.	0.1	0.3
<b>BISMUTH</b>	*	7440-69-9	N.E.	N.E.	N.E.
<b>ANTIMONY</b>	*	7440-36-0(US)	0.5	0.5	N.E.
		(EU)	0.5	N.E.	N.E.
		(Canada)	N.E.	0.5	1.5
<b>ROSIN</b>	3.0-5.0	65997-05-9 (US)	N.E.	N.E.	N.E.
		(EU)	0.05	N.E.	0.15 (sensitiser)
		(Canada)	N.E.	N.E.	N.E.
<b>PROPRIETARY</b>	5.0-12.0		N.E.	N.E.	N.E.

Symbol: X<sub>n</sub>

Risk Phrases: R20/21/22, R36/37/38, R42/43

N.E. = Not established

EU = European Union Occupational Exposure Limits

\* See alloy table

## ALLOY TABLE

INDALLOY	RoHS Compliance	%BISMUTH Bi	%TIN Sn	ANTIMONY Sb	%SILVER Ag	%LEAD Pb
<b>104(Sn62)</b>	No	-	51.9-57.5	-	1.2-1.8	29.9-33.2
<b>106(Sn63)</b>	No	-	52.3-58	-	-	30.7-34
<b>97</b>	No	11.6-12.9	35.7-39.6	-	-	35.7-39.6
<b>121</b>	Yes	-	79.8-88.8	-	2.9-3.2	-
<b>133</b>	Yes	-	78.9-87.4	4.2-4.6	-	-
<b>233</b>	No	-	4.2-4.6	8.3-9.2	-	70.6-78.2
<b>281</b>	Yes	33.2-36.8	49.8-55.2	-	-	-

RoHS = Restriction of Hazardous Substance EU Directive 2002/95/EC (review applicable exemption that may apply)

Consult <http://pbfree.com> and <http://www.indium.com>

#### 4. FIRST AID MEASURES

- Eye Contact:** Hold eyelids apart and flush eyes with plenty of 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.
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions.
- Special Fire Fighting Procedures:** Firefighters must wear NIOSH approved self-contained breathing apparatus and full 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 contaminated cloth rags or paper towels following all Federal, State and Local regulations.

#### 7. HANDLING AND STORAGE

- Handling Precautions:** 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.
- 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 (stencil printers and re-flow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Use exhaust ventilation.
- Personal protection:**
- Eyes:** Chemical safety glasses/goggles.

<b>Respirator:</b>	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.
<b>Skin:</b>	Compatible chemical resistant gloves.
<b>Other:</b>	Lab coat, eyewash fountain in work area. Avoid the use of contact lenses in high fume areas.
<b>Work/Hygienic Practices:</b>	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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Grey colored paste.	<b>Boiling Point:</b>	Not applicable.
<b>Odor:</b>	Mild characteristic odor.	<b>Melting Point:</b>	Not applicable
<b>Specific Gravity:</b>	Not applicable.	<b>pH:</b>	Not applicable
<b>Vapor Pressure:</b>	Not applicable.	<b>Solubility in Water:</b>	Insoluble (paste)
<b>Vapor Density:</b>	(air=1) Not applicable.		

## 10. STABILITY AND REACTIVITY

<b>General:</b>	Stable.
<b>Conditions to Avoid:</b>	Not established.
<b>Incompatible Materials:</b>	Avoid contact with acids, bases or oxidizing agents.
<b>Hazardous Decomposition / Combustion:</b>	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
<b>Hazardous Polymerization:</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>Carcinogenicity:</b>	<b>NTP:</b> No	
	<b>OSHA:</b> No	
	<b>IARC:</b> Yes	Lead and lead compounds are listed as possible carcinogens.
<b>LD50:</b>	Not established.	<b>LC50:</b> 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.

## 12. ECOLOGICAL INFORMATION

This section is subject to future development.  
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. In Europe follow the Special Waste Regulations.

**14. TRANSPORT INFORMATION**

Transport in accordance with applicable regulations and requirements. Not regulated by US Department of Transportation. Non hazardous under shipping regulations.

**15. REGULATORY INFORMATION**

The information in this Material 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.).

The information in this Material Safety Data Sheet meets the requirements of the EU under Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP 2) Regulation 6.

This product has been classified in accordance with the hazard criteria of the Commission Directive 91/155/EEC and EH40.

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.

California PROP 65: WARNING:

This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (Lead CAS# 7439-92-1)

SARA 313 Listing - 40 CFR 372.65

Lead CAS# 7439-92-1 Silver CAS# 7440-22-4 2- Proprietary Ingredients <1% listed & <2% listed  
Antimony CAS# 7440-36-0

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

All ingredients are listed on the EPA TSCA Inventory.

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

X<sub>n</sub>

**Risk Phrases:**

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed  
R36/37/38 Irritating to eyes, respiratory system and skin  
R42/43 May cause sensitization by inhalation and by skin contact

**Safety Phrases:**

S20/21 When using do not eat, drink or smoke  
S23 Do not breathe fumes  
S24/25 Avoid contact with skin and eyes  
S28 After contact with skin wash immediately with plenty of soap and water  
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection  
S7 Keep container tightly closed

**16. OTHER INFORMATION**

<b>HMIS Hazard Rating:</b>	<b>Health:</b>	2
	<b>Fire:</b>	1
	<b>Physical Hazards:</b>	0

**Revised Date:** 15 APRIL 2009

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**Approved by:** Nancy Swarts, Indium Corporation of America

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