



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

**MATERIAL SAFETY DATA SHEET**

To better serve all of our customers and reduce the paperwork burden the Indium Corporation has generated one MSDS using the same flux coating, 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:** COPPER DOUBLE CLAD WITH A METAL MIXTURE WITH A RMA FLUX COATING (See alloy table for exact identification)

**MSDS Number:** MSDS-4186

**Revised Date:** 23 OCTOBER 2008

**Product Use:** METAL ALLOY MIX: COPPER WITH FLUX COATED SOLDER PREFORM TO BE USED FOR SOLDER RELATED ACTIVITIES

**MANUFACTURER:**

**In America:**

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

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

**2. 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>
<b>TIN</b>	*	7440-31-5/231-141-8			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
<b>SILVER</b>	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
(Mexico)	-	0.1	-		
<b>COPPER</b>	*	7440-50-8/ 231-159-6			
		(US)	0.1	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.2	0.6
		(Singapore)	0.2(fume)	1(dust)	-
		(Mexico)	-	0.2(fume) 1(dust)	2
(China)	-	1(dust) 0.2(fume)	2.5 0.6		
<b>LEAD</b>	*	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)	- -		
<b>ANTIMONY</b>	*	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	-
<b>INDIUM</b>	*	7440-74-6/231-180-0			
		(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
<b>ROSIN</b>	1-2	65997-05-9	N.E.	N.E.	N.E.
		(EU)	0.05	-	0.15
<b>PROPRIETARY</b>	0.25 -2		N.E.	N.E.	N.E.
Symbol: XI		Risk Phrases: R20/21/22, R36/37/38			
N.E. = Not established		* See alloy table below			

## PRODUCT TABLE

Total copper depends on customer specifications. Solder identified below as Indalloy XX (metal mixture) will vary according to customer's specifications and requirements. Therefore the following information will vary and should not be taken as the only data total percentages. Flux percentage is not included. Consult C of A for actual information on product received. Indalloy is reported as its true percentage of each substance.

% metal mixed with copper of 99+ %

INDALLOY metal mixture	%TIN Sn	%LEAD Pb	%ANTIMONY Sb	%SILVER Ag	%INDIUM In	%COPPER Cu	RoHS* Compliance
104 (Sn62/Pb36/Ag2)	0.49	0.29	-	0.02	-	99.2	No
109 (Sn60/Pb40)	0.48	0.32	-	-	-	99.2	No
121	0.68	-	-	0.02	-	99.2	Yes
121 (Sn96.5/Ag3.5)	0.58	-	-	0.02	-	99.3	Yes
133 (Sn95/Sb5)	0.76	-	0.04	-	-	99.2	Yes
206 (Pb60/In40)	-	0.48	-	-	0.32	99.2	No
228 (Pb88/Sn10/Ag2)	0.07	0.62	-	0.014	-	99.2	No

\*RoHS = Restriction on Hazardous Substances (Review directive for applicable exemptions)

**EU Directive 2002/95/EC**

- [http://europa.eu.int/comm/environment/waste/weee\\_index.tm](http://europa.eu.int/comm/environment/waste/weee_index.tm)
- <http://www.pbfree.com>

**3. HAZARDS IDENTIFICATION****PRIMARY ROUTES OF ENTRY:**

√ Eye    √ Inhalation    √ Skin    √ Ingestion

**CARCINOGEN LISTED IN:**

NTP    IARC    OSHA    √Not Listed  
(See Section 11)

**POTENTIAL HEALTH EFFECTS:**

**Eye Contact:** Contact with powered metal alloy or 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 nausea. May be harmful.

**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. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal. Exposure to copper dust may cause a greenish-black skin discoloration. ANTIMONY has been known to cause dermatitis.

**Chronic:** 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.

TIN: Has been shown to increase incidence of sarcoma in animal tests.

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.

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.

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

**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). (lead)**

**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.**

**NOTE:** **The Indium Corporation does not recommend, manufacturer, market or endorse any of its products for human consumption.**

**4. FIRST AID MEASURE**

**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. Massive metal is not flammable; however dust or powder may be flammable.
- 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:** Contain spill. If molten, cool to allow metal to solidify. If a solid metal, wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment. DO NOT SWEEP. Use a vacuum, place in barrels and return to process if applicable. Otherwise, dispose of following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations. Metal may have reclaim value.

## 7. HANDLING AND STORAGE

- Handling Precautions:** Only dry metals should be added to molten bath. If working with molten metals, or exposed to fume or dust, use appropriate personal protective equipment.
- Storage Precautions:** Store product in a cool, dry area away from incompatible materials.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Engineering Controls:** Local exhaust ventilation is recommended to control any air contaminants. Control concentration of all components so that their exposure levels are not exceeded.
- Personal protection:**
- Eyes:** Chemical safety glasses/goggles and face shield with molten metal.
- Respirator:** A NIOSH approved or EU compliant CE marked air-purifying respirator with a fume/dust chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated.
- Skin:** Gloves-leather or impervious (vinyl) type. Heat resistant gloves if handling hot metal. Safety type boots. Personal protective equipment is recommended when working with molten metal to avoid burns.
- Other:** Lab coat, safety shower and 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. 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>	Solid metal	<b>Boiling Point:</b>	2595C (copper)
<b>Odor:</b>	Odorless	<b>Melting Point:</b>	1083C (copper)
<b>Specific Gravity:</b>	See table	<b>pH:</b>	Not applicable
<b>Vapor Pressure:</b>	Not applicable.	<b>Solubility in Water:</b>	Insoluble
<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 mineral acids.
<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: National Toxicity Program (NTP):</b>	No		
<b>Occupational Safety &amp; Health Administration (OSHA):</b>	No		
<b>U.N. International Agency for Research on Cancer (IARC):</b>	Yes (Lead)		
<b>LD50:</b>	Not established	<b>LC50:</b>	Not established
<b>Irritancy of Product:</b>	Not established	<b>Mutagenicity:</b>	Not established
<b>Sensitization to Product:</b>	Not established	<b>Teratogenicity:</b>	Not established
<b>Reproductive Toxicity:</b>	No specific data is available	<b>Synergistic Products:</b>	Not established

### RTECS#

Antimony: CC4025000  
 Copper: GL5325000  
 Lead: OF7525000  
 Silver: VW3500000  
 Tin: XP7320000  
 Indium: NL1050000

## 12. ECOLOGICAL INFORMATION

This section is subject to future development.  
 Product not tested.

### 13. DISPOSAL CONSIDERATION

**Waste Disposal Method:** Scrap metal alloy 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 shipping.

North America Emergency Guide Book – Not applicable

### 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).

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 using the Chinese Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2002.

This product has been classified in accordance with the Mexican regulations NOM-018-STPS-2000 and NOM-010-STPS-1999.

California PROP 65(Safe Drinking Water Standard): WARNING : This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (lead)

SARA 313 Listing - 40 CFR 372.65: Silver CAS# 7440-22-4 Copper CAS# 7440-50-8 Lead CAS# 7439-92-1 Antimony CAS# 7440-36-0

All ingredients are listed on the EPA TSCA Inventory.

Ingredients are listed on the Canadian Domestic Substance List.



WHMIS: D2B materials causing other toxic effects – very toxic material (chronic) (lead) otherwise not classified.

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

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

XI

**Risk Phrases:**

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed (lead)

R36/37/38 Irritating to eyes, respiratory system and skin

**Safety Phrases:**

S20/21 When using do not eat, drink or smoke

S22 Do not breathe dust

S23 Do not breathe fumes

S24/25 Avoid contact with skin and eyes

S27 Take off immediately all contaminated clothing

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

## 16. OTHER INFORMATION

<b>HMIS Hazard Rating:</b>	<b>Health:</b>	2
	<b>Fire:</b>	0
	<b>Reactivity:</b>	0

**Revised Date:** 23 OCTOBER 2008

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

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

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