



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

SAFETY DATA SHEET

This material safety data sheet represents a family grouping of all metal mixes that are blended with the same flux. A table is provided that lists all metal groupings. To better serve all of our customers and reduce the paperwork burden Indium Corporation has generated one MSDS, 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 INDIUM8.9 FLUX VEHICLE

MSDS Number: MSDS-4550

Revised Date: 26 SEPTEMBER 2012

Product Use: Industrial Use (mixture) - Solder paste consisting of a flux vehicle blended with 88.25 - 92 weight percent pre-alloyed metal powder for soldering applications.

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:

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
 NTP
 IARC
 OSHA
 Not Listed

Carcinogen listed in

GHS general information:



lead containing products only

Signal Word: Warning

Hazard statement(s)

H315	Causes skin irritation
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
H332	Harmful if inhaled
H351	Suspected of causing cancer (lead)
H360	May damage 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)
H400+H413	Very toxic to aquatic life, may cause long lasting harmful effects to aquatic life (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
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P362	Take off contaminated clothing and wash before reuse
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)

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 severe eye irritation.
Ingestion:	This product contains metal alloy powders and organic chemicals. May cause irritation, if swallowed. May cause burns to the digestive tract and systematic effects.
Inhalation:	Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. Harmful if inhaled.
Skin Contact:	May cause skin irritation or dermatitis.

Chronic: 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.

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

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.

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.

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). (trace levels of lead)

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 joints and fittings of any private or public water supply system. Keep out of the reach of children. Not for household use.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	% wt	CAS Registry #/ EINECS#
TIN	*	7440-31-5/231-141-8
SILVER	*	7440-22-4/231-131-3
COPPER	*	7440-50-8
LEAD	*	7439-92-1
INDIUM	*	7440-74-6/231-180-0
BISMUTH	*	7440-69-9
ROSIN	4.0-8.0	65997-05-9
PROPRIETARY ACTIVATORS	1.0-5.0	-
POLYGLYCOL ETHER	3.0-6.0	9038-95-3

**PRODUCT DOES NOT CONTAIN ANY EU SUBSTANCES OF VERY HIGH CONCERN (SVHC)
PRODUCT DOES NOT CONTAIN ANY PFOS/PFOA SUBSTANCES**

N.E. = Not established

* See Alloy Table

Product complies with RoHS Restriction of Hazardous Substances

http://europa.eu.int/comm/environment/waste/weee_index.tm

<http://www.pbfree.com>

ALLOY TABLE

%Metal mixed with flux (88.25-92% metal)

INDALLOY (METAL)	%COPPER Cu	%TIN Sn	%SILVER Ag	%LEAD Pb	%BISMUTH Bi	%INDIUM In	^RoHS Compliance
100 (62.6Sn/37Pb/ 0.4Ag)	-	55-57.6	0.35-0.37	32.7-34	-	-	No
106 (63Sn/36Pb)	-	55.5-58	-	32.7-33	-	-	No
121 (96.5Sn/3.5Ag)	-	85.2-88.8	3.1-3.2	-	--	-	Yes
150 (81Pb/19In)	-	-	-	71.5-74.5	-	16.8-17.5	No
209 (65Sn/25Ag/10 Sb)	-	57.4-60	22-23	-	-	-	Yes
241 (SAC387) (95.5Sn/3.8Ag/ 0.7Cu)	0.6-0.64	84.3-87.9	3.4-3.5	-	-	-	Yes

INDALLOY (METAL)	%COPPER Cu	%TIN Sn	%SILVER Ag	%LEAD Pb	%BISMUTH Bi	%INDIUM In	^RoHS Compliance
243 (99Sn/1Cu)	0.88-0.92	87-91.1	-	-	-	-	Yes
244 (99.3Sn/0.70Cu)	0.6-0.64	87.6-91.4	-	-	-	-	Yes
256 (SAC 305) (96.5Sn/3Ag/ 0.5Cu)	0.44-0.46	85-88.8	2.6-2.8	-	-	-	Yes
258 (SAC 105) (98.5Sn/1.0Ag 0.5Cu)	0.44-0.46	86.9-90.6	0.88-0.92	-	-	-	Yes
263 (SAC0307) 99Sn/0.3Ag/0. 7Cu)	0.62-0.64	87.4-91	0.26-0.28	-	-	-	Yes
Non Standard Mix (86.24Bi/3.73Sn/ 10.03Ag)	-	3.3-3.4	8.85-9.2	-	76-79	-	Yes
Non Standard Mix (91.65Bi/2.82Sn/ 5.53Ag)	-	2.49-2.6	4.9-5.1	-	80.9-84.3	-	Yes
Compositio n 1 Mix (95.6Sn/2.9Ag/ 0.5Cu/1Pb)	0.44-0.46	84-88	2.6-2.7	0.88-0.92		-	Yes
Compositio n 2 Mix (92Sn/2.6Ag/5 Pb/0.4Cu)	0.35-0.37	81-84.6	2.3-2.4	4.4-4.6		-	No
Compositio n 3 Mix (78.4Sn/1.4Ag/ 20Pb/0.2Cu)	0.177-0.18	69-72	1.2-1.3	17.7-18		-	No

^RoHS = Restriction of Hazardous Substances

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. Not 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:	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. In the EU refer to the Special Waste Regulations.
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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

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			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-

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	-	-
			COPPER	*	7440-50-8 (US)	(US)
(EU)	-	0.2 (fume)	-			
(Canada)	-	0.2 (fume)	0.6 (fume)			
(Mexico)	-	0.2(fume)	2			
(Singapore)	0.2	-	-			
(China)	-	1(dust)	2.5			
LEAD	*	7439-92-1 (US)	(US)	0.05	0.05	-
			(EU)	-	0.15	-
			(Canada)	-	0.05	-
			(Singapore)	0.15	-	-
			(Mexico)	-	0.15	-
			(China)	-	0.05(dust)	-
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
BISMUTH	*	7440-69-9	N.E.	N.E.	N.E.	
ROSIN	4.0-8.0	65997-05-9	N.E.	N.E.	N.E.	
			(EU)	0.05	N.E.	0.15 (sensitiser)

PROPRIETARY ACTIVATORS	1.0-5.0		N.E.	N.E.	N.E.
POLYGLYCOL ETHER	3.0-6.0	9038-95-3	N.E.	N.E.	N.E.

PRODUCT DOES NOT CONTAIN ANY REPORTABLE EU SUBSTANCES OF VERY HIGH CONCERN (SVHC)

N.E. = Not established

* See Alloy Table

Product complies with RoHS Restriction of Hazardous Substances

http://europa.eu.int/comm/environment/waste/weee_index.tm

<http://www.pbfree.com>

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. Control concentration of all components so that the permissible exposure limits are not exceeded. Use proper exhaust ventilation. Keep exposures to as low as possible.

Personal protection:

Eyes: Chemical safety glasses/goggles. Face shield for splash hazards.

Respirator: An 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. Suggest a nitril type disposable to keep control direct skin contact. Other chemical gloves may be worn. Latex not recommended.

Other: Lab coat, 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. 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. When applicable follow proper lead work practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey colored paste.	Boiling Point:	Not applicable.
Odor:	Mild characteristic odor.	Melting Point:	Not applicable
Specific Gravity:	Not applicable.	pH:	Not applicable
Vapor Pressure:	Not applicable.	Solubility in Water:	Insoluble (paste)
Vapor Density:	(air=1) Not applicable.	Flash Point:	Not applicable, not flammable

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

Carcinogenicity:	NTP: No	
	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.	

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. In Europe follow the Special Waste Regulations.
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14. TRANSPORT INFORMATION

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

Non hazardous under all shipping requirements.

Not regulated under IATA.

North American Emergency Guide Book 2004 – Not Classified

UN – none.

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.).

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR).

Canadian WHMIS: D2B –Materials Causing Other Toxic Effects (irritant or sensitizer)
D2A-Materials Causing Other Toxic Effects-Very Toxic Material (Chronic) (lead)



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 the Mexican guidelines, NOM-018-STPS-2000 and NOM-010-STPS-1999.

This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2002.

California PROP 65 (Safe Drinking Water Standard):

This product contains a chemical known to the State of California to cause cancer and/or birth defects or other reproductive harm.

SARA 313 Listing - 40 CFR 372.65

Silver Copper Lead

All ingredients are listed on the EPA TSCA Inventory.

Most of the ingredients are listed on the Canadian Domestic Substance List.

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

Xn

Risk Phrases:

- R42/43 May cause sensitization by inhalation or by skin contact
- R36/37/38 Irritating to eyes, respiratory system and skin
- R20/21/22 Harmful by inhalation, in contact with skin and if swallowed (lead)
- R33 Danger of cumulative effects (lead)
- R40 Limited evidence of carcinogenic effect (lead)
- R48 Danger of serious damage to health by prolonged exposure (lead)
- R50/53 Very toxic to aquatic organisms and may cause long-term effects in the aquatic environment
- R61 May cause harm to the unborn child (lead)

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
S62	If swallowed, do not induce vomiting seek medical advice immediately and show container or label
S7	Keep container tightly closed

16. OTHER INFORMATION

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

Revised Date: 2 AUGUST 2011

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.

Note: This MSDS may be translated into an international language. If there is any misinterpretation or misunderstanding of any words or phrases that may occur within any translation the ENGLISH language shall always prevail.