



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

This material safety data sheet represents a family grouping of all metal mixes that are blended with the same flux.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH INDIUM 9.91 FLUX

MSDS Number: MSDS-5743

Revised Date: 10 MAY 2013

Product Use: Industrial Use (mixture) - solder paste consisting of a flux vehicle blended with 78-81 weight percent pre-alloyed metal powder.

MANUFACTURER:

In America:

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In Europe:

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In Asia:

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2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

⊕Eye

⊕Inhalation

⊕Skin

⊕Ingestion

NTP

IARC

OSHA

⊕Not Listed

Carcinogen listed in

GHS:



lead containing products

Signal Word: Warning

Hazard statement(s)

H302	Harmful if swallowed
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
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 serious eye irritation.
Ingestion:	This product contains metal alloy powders and organic chemicals. Harmful if swallowed.
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. Inhalation of rosin fume may cause occupational asthma.
Skin Contact:	May cause skin irritation. Rosin may cause dermatitis and skin sensitization.

- 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.
- Warning:** **State of California Only: This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm).** (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 making joints or fittings in any private or public water supply system. Keep out of the reach of children.**

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			
		(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	*	7440-50-8/231-159-6			
		(US)	0.1 (fume)	0.2 (fume)	-
		(EU)	-	0.2 (fume)	-

		(Canada)	-	0.2 (fume)	0.6 (fume)
		(Mexico)	-	0.2(fume)	2
		(Singapore)	0.2	-	-
		(China)	-	1(dust)	2.5
				0.2(fume)	0.6
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)	-
BISMUTH	*	7440-69-9/231-177-4	N.E.	N.E.	N.E.
ROSIN	8.0 – 10.0	65997-05-9	N.E.	N.E.	N.E.
		(EU)	0.05	N.E.	0.15 (sensitiser)
POLYGLYCOL ETHER	7.0 – 9.0	9038-95-3	N.E.	N.E.	N.E.
PROPRIETARY ACTIVATORS	3.0 – 4.0	-	N.E.	N.E.	N.E.
PRODUCT DOES NOT CONTAIN ANY REPORTABLE EU SUBSTANCES OF VERY HIGH CONCERN (SVHC)					
N.E. = Not established					
Product complies with *RoHS Restriction of Hazardous Substances (review directive for applicable exemptions)					
http://europa.eu.int/comm/environment/waste/weee_index.tm					
* See Alloy Table					

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. 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

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 any permissible exposure limits are not exceeded.
Personal protection:	
Eyes:	Chemical safety glasses/goggles. Face shield for splash hazards.
Respirator:	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.
Skin:	Compatible chemical resistant gloves. Latex gloves 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey colored paste.	Boiling Point:	Not applicable.
Odor:	Mild characteristic odor.	Melting Point:	Not applicable
Specific Gravity:	1 g/cc (flux)	pH:	4 – 8 (flux)
Vapor Pressure:	Not applicable.	Solubility in Water:	Insoluble (paste)
Vapor Density:	(air=1) Not applicable.		

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.

14. TRANSPORT INFORMATION

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

Non - hazardous under shipping requirements.

UN – none

North American Emergency Guide Book 2004 – Not Classified

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 – irritation/sensitization

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. (lead)

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

X_i

Risk Phrases:

R42/43 May cause sensitization by inhalation or by skin contact

R36/37/38	Irritating to eyes, respiratory system and skin
R33	Danger of cumulative effects (lead)
R40	Limited evidence of carcinogenic effect (lead)
R48	Danger of serious damage to health by prolonged exposure (lead)
R61	May cause harm to the unborn child (lead)
R50/53	Very toxic to aquatic organisms and may cause long-term effects in the aquatic environment (lead)

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
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

ALLOY TABLE

% Metal mix with flux (78-81%)

INDALLOY (METAL)	%COPPER Cu	%TIN Sn	%SILVER Ag	%LEAD Pb	%BISMUTH Bi	*RoHS Compliance
106 (63Sn/37Pb)	-	49-51	-	28.9-30	-	No
241 (95.5Sn/3.8Ag/ 0.7Cu)	0.55-0.57	74.5-77.4	3-3.1	-	-	Yes
256 (96.5Sn/3Ag/ 0.5Cu)	0.39-0.405	75.3-78.2	2.3-2.4	-	-	Yes
258 (98.5Sn/1Ag/ 0.5Cu)	0.42-0.46	81.8-90.6	0.83-0.92	-	-	Yes
281 (58Bi/42Sn)	-	32.8-34	-	-	45-47	Yes

RoHS= Restriction of Hazardous Substances EU Directive 2011/65/EU

16. OTHER INFORMATION

HMIS Hazard Rating: Health: 2

Fire: 1
Reactivity: 0

Revised Date: 10 MAY 2013
Prepared by: Nancy Swarts, Indium Corporation of America
Approved by: Nancy Swarts, Indium Corporation of America

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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.