



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

SAFETY DATA SHEET

To better serve all of our customers Indium Corporation has generated one SDS, 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. Alloy table with flux family is located at the end of the document.

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH INDIUM 9.32 FLUX VEHICLE

SDS Number: SDS-4385

Revised Date: 16 JUNE 2017

Product Use: Industrial Use - Solder paste consisting of a flux vehicle blended with a 83-92 % pre-alloyed metal powder. Die attach solder paste applications.

MANUFACTURER:

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2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

⊗Eye ⊗Inhalation ⊗Skin ⊗Ingestion

Carcinogen listed in

NTP IARC OSHA ⊗Not Listed

GHS

Lead –free products

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
- 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 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
- P305 + P351 IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Lead containing products:



Signal Word: Warning

Hazard statement(s)

- H303 May be harmful if swallowed
- H351 Suspected of causing cancer
- H361 Suspected of damaging fertility or the unborn child
- H373 May cause damage to organs through prolonged or repeated exposure
- H410 Very toxic to aquatic life with long lasting harmful effects
- EUH201A Warning! Contains lead Review listing.

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Classification:

Acute toxicity,- Category 4 (lead)
 Specific target organ toxicity- repeated exposure – Category 2
 Carcinogenicity (Category 2) (lead)

Reproductive toxicity (Category 2) (lead)
 Acute aquatic toxicity – Category 1 for lead containing products
 Chronic aquatic toxicity – Category 1 for lead containing products

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 contains alloy powder and organic chemicals. May be 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.
- Skin Contact:** May cause mild skin irritation. Antimony may cause skin irritation.
- 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.
 - 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.
 - INDIUM: may cause damage to respiratory system. Kidney and liver damage from injection of indium compounds has been reported based on limited animal testing. Target organs: teeth and gums
- Warning:** **This product may contain a chemical(s) 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. Not intended for household use and should not be used by 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
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TIN	*	7440-31-5/231-141-8 (US)	2	2	-	
			(EU)	N.E.	2	4
			(Canada)	N.E.	2	4
			(Singapore)	2	-	-
LEAD	*	7439-92-1/231-100-4 (US)	0.05	0.05	-	
			(EU)	N.E.	0.15	N.E.
			(Canada)	0.05	0.05	N.E.
			(Singapore)	0.15	-	-
			(Mexico)	0.15	-	-
			(China)	-	0.05(dust) 0.03(fume)	-
SILVER	*	7440-22-4/231-131-3 (US)	0.01	0.1	N.E.	
			(EU)	N.E.	0.1	N.E.
			(Canada)	N.E.	0.1	0.3
			(Singapore)	0.1	-	-
			(Mexico)	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 (fog)	2 (powder)
			(Singapore)	0.2(fume)	1(dust)	-
			(China)	-	1(dust) 0.2(fume)	2.5 0.6
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	-
INDIUM	*	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
BISMUTH	*	7440-69-9/231-177-4	N.E.	N.E.	N.E.
GOLD	*	7440-57-5	N.E.	N.E.	N.E.
PROPRIETARY	2.5-12.5		N.E.	N.E.	N.E.

N.E. = Not established *See Alloy Table

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.
- 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 of contaminated cloth rags or paper towels following all Federal, State and Local regulations. In the EU refer to the Special Waste 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. Control concentration of all components so that the exposure levels are not exceeded.

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 with skin protection.

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:	Not applicable.	pH:	Not applicable
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 29 CFR1910.1025
 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 shipping regulations.

North American Emergency Guide Book: Not classified

Non hazardous for shipping.

UN – none

Not regulated – IATA, ground, ocean

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.).

California PROP 65 Safe Drinking Water Standard: WARNING:

This product contains a chemical(s) 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
 Lead/Silver/ Antimony

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

All ingredients are listed on the EPA TSCA Inventory.

This product has been classified in accordance with Mexican regulations, NOM-018-STPS-2015 and NOM-101-STPS-2014.

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



Canadian WHMIS: Class D 2A-Materials Causing Other Toxic Effects-Very Toxic Material (Chronic) (lead)
 Class D 2B Materials Causing Other Toxic Effects – skin irritant/skin sensitizer

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, GBZ2-2007.

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS).

16. OTHER INFORMATION

HMIS Hazard Rating: **Health:** 2
 Fire: 1
 Reactivity: 0

Revised Date: 16 JUNE 2017

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.

ALLOY TABLE**Alloy with flux mixture**

INDALLOY	LEAD (Pb)	TIN (Sn)	SILVER (Ag)	COPPER (Cu)	ANTIMONY (Sb)	BISMUTH (Bi)	INDIUM (In)	GOLD (Au)
121 (96.5Sn/3.5Ag)	-	80-88	2.9-3,2	-	-	-	-	-
151 (92.5Pb/5Sn/Ag2.5)	76.8-85	4.2-4.6	2.1-2.3	-	-	-	-	-
156 (90Sn/10Ag)	-	74.7-82.8	8.3-9.2	-	-	-	-	-
164 (92.5Pb/5In/2.5Ag)	76.8-85	-	2.1-2.3	-	-	-	4.2-4.6	-
171 (95Pb/5Sn)	78.9-87	4.2-4.6	-	-	-	-	-	-
182 (80Au/20Sn)	-	16.6-18.4	-	-	-	-	-	66.4-73.6
228 (Pb88/10Sn/2Ag)	73-81	8.3-9.2	1.7-1.8	-	-	-	-	-
233 (85Pb/10Sb/5Sn)	70.6-78	4.2-4.6	-	-	8.3-9.2	-	-	-
246 (95.5Sn/4Ag/0.5Cu)	-	79.3-87.9	3.3-3.7	0.42-0.46	-	-	-	-
256 (96.5Sn/3Ag/0.5Cu)	-	80-88.8	2.5-2.8	0.42-0.46	-	-	-	-
259 (90Sn/10Sb)	-	74.7-83	-	-	8.3-9.2	-	-	-
Non Standard Alloy Mixes								
Non Standard (89.5Sn/10Ag/0.5Cu)	-	74.3-82.3	8.3-9.2	0.42-0.46	-	-	-	-
Non Standard (91.5Sn/8.5Sb)	-	76-84	-	-	7.1-7.8	-	-	-
Non Standard (93.5Pb/5Sn/1.5Ag)	77.6-86	4.2 – 4.6	1.2 – 1.4	-	-	-	-	-
Non Standard (83.25Bi/10.5Ag/6.2Sn/0.05Cu)	-	5.1-5.7	8.7-9.7	0.042-0.046	-	69.1-76.6	-	-
Non Standard (87Bi/10.3Ag/2.7Sn)	-	2.2-2.5	8.5-9.5	-	-	72-80	-	-