



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

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.

1. PRODUCT AND COMPANY IDENTIFICATION

General Product Class Identifier: INDALLOY WITH INDIUM8.9HF

(View product table for individual product descriptions)

MSDS Number: MSDS-4771

Revised Date: 28 May 2010

Product Use: Industrial Use -No-clean solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder used for solder applications.

MANUFACTURER:

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2. HAZARDS IDENTIFICATION

GHS



Warning Word: Warning for those products that do not contain lead but do contain rosin.
Warning Word: Danger for those products that contain lead and rosin.

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: Irritating to digestive tract. May cause burns. Some product may contain lead. Lead 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. Rosin fume may cause occupational asthma.

Skin Contact: May cause skin irritation. Rosin may cause dermatitis.

Chronic:

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. Chronic exposure to tin dusts and fume may result in "stannosis" a mild form of pneumoconiosis.

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.

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: This product contains a chemical (s) known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (trace levels of lead not intentionally added)

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/m³	TLV-TWA mg/m³	TLV-STEL mg/m³	
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)	N.E.	0.1	0.3
			(Singapore)	0.1	-	-
(Mexico)	0.1	-	-			
COPPER	*	7440-50-8/231-159-6				
			(US)	0.1	0.2	-
			(EU)	-	0.2 (fume)	2(dust)
			(Canada)	-	0.2	0.6
			(Singapore)	0.2(fume)	1(dust)	-
			(Mexico)	0.2	-	2
(China)	-	0.2(fume)	0.6(fume)			
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)	- -			

ROSIN	4.0-6.0	65997-05-9 (US)	N.E.	N.E.	N.E.
		(EU)	0.05	-	0.15 (sensitiser)
POLYGLYCOL ETHER	3.0-5.0	9038-95-3	N.E.	N.E.	N.E.
PROPRIETARY	1.0-4.0		N.E.	N.E.	N.E.

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

Symbol: X_n Risk Phrases: R20/21/22, R36/37/38, R42/43
N.E. = Not established * See Alloy Table

ALLOY TABLE (DATA)

%Metal Mix in Flux

Indalloy Mixture (%Metal)	%TIN Sn	%SILVER Ag	%COPPER Cu	%LEAD Pb	RoHS* Compliance
100 (62.6Sn/37Pb/0.4Ag)	52-57.6	0.3-0.37	-	30.7-34	NO
(62Sn/36Pb/2Ag)	51.5-57	1.2-1.8	-	29.9-33	NO
106 (Sn63/Pb37)	52-58	-	-	30.7-34	NO
241 (SAC 387) (95.5Sn/3.8Ag/0.7Cu)	79.2-87.9	3.2-3.5	0.58-0.64	-	YES
256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	80.1-88.8	2.5-2.8	0.42-0.46	-	YES
NS (98.5Sn/1Ag/0.5Cu)	81.8-90.6	0.83-0.92	0.42-0.46	-	YES
NS (99Sn/0.3Ag/0.7Cu)	82-91.1	0.25-0.28	0.58-0.6	-	YES
NS (96Sn 4Ag)	79.7-88.3	3.3-3.7	-	-	YES

NS = Non standard alloy mixture

***RoHS = Restriction of Hazardous Substances**

- <http://www.pbfree.com>

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

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. Material may have reclaim value.

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 exposure levels are not exceeded.
- Personal protection:**
- Eyes:** Chemical safety glasses/goggles.
- 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.
- Other:** Lab coat, eyewash 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 | pH: | 4 -8 |
| 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

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 (US Department of Transportation). Not hazardous under shipping regulations.

North American 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).



Canadian WHMIS:

D2B – Materials Causing Other Toxic Effects (skin irritation/skin sensitization)

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 Mexican regulations 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.

For compliance with EU Directive 2002/95/EC, Restriction of Hazardous Substances (RoHS), see Alloy Table.

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
Silver Copper Lead

All ingredients are listed on the EPA TSCA Inventory.

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

All ingredients are listed on the China Chemical Inventory.

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

X_n

Risk Phrases:

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

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

HMIS Hazard Rating:

Health:	2
Fire:	1
Reactivity:	0

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