



**THE 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. To better serve all of our customers 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 INDIUM6.3

MSDS Number: MSDS- 4664

Revised Date: 7 JUNE 2012

Product Use: INDUSTRIAL USE (MIXTURE) - WATER WASH SOLDER PASTE WITH 83-92% METAL ALLOY MIXED WITH FLUX

MANUFACTURER:

In America:

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

CHEMICAL 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

Web site: <http://www.indium.com>

2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

⊗Eye ⊗Inhalation ⊗Skin ⊗Ingestion NTP

Carcinogen listed in

IARC OSHA ⊗Not Listed
***See Section 11**

GHS



(lead containing)

Signal Word: Warning
 Hazard statement(s)

- H302 Harmful if swallowed
- H315 Causes skin irritation
- H318 Causes serious eye damage
- H332 Harmful if inhaled
- H360 May damage fertility or the unborn child (lead)
- H373 May cause damage to organs through prolonged or repeated exposure (lead)
- H400+H413 Very toxic to aquatic life, may cause long lasting harmful effects to aquatic life (lead)

Precautionary statement(s)

- 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/damage.
- Ingestion:** This product may contain lead alloy powder and organic chemicals. Harmful if swallowed. 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. Harmful if inhaled. Contains material at high concentrations are destructive to tissues of the mucous membrane.
- Skin Contact:** May cause skin irritation.

- 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.
- 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.
- TIN:** Has been shown to increase incidence of sarcoma in animal tests. Chronic exposure to tin dusts and fume results in "stannosis" a mild form of pneumoconiosis.
- BISMUTH:** May cause kidney damage.
- Target organs: CNS, blood, kidneys
- NOTE:** **The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption.**
- Warning:** **This product contains chemicals 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.**

3. COMPOSITION / INFORMATION ON INGREDIENTS

Components		CAS Registry #/EINECS#
TIN	*	7440-31-5/231-141-8
SILVER	*	7440-22-4/231-131-3
LEAD	*	7439-92-1/231-100-4
BISMUTH	*	7440-69-9/231-177-4
POLYGLYCOL ETHER	5-8	67700-97-4
ORGANIC ACIDS	2-4	68937-72-4
ETHANOLAMINES	1.0-5.0	68910-05-4

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

Symbol: X_n

Risk Phrases: R20/21/22, R36/37/38 See Section 15

N.E. = Not established

* See table

ALLOY TABLE

Metal alloy mixed with flux

ALLOY MIXTURE	% TIN Sn	%SILVER Ag	%BISMUTH Bi	%LEAD Pb	RoHS Compliance*
Indalloy 97 (43Sn/43Pb/14Bi)	35.7-40	-	11.6-12.9	35.7-40	No
Indalloy 100 (62.6Sn 37Pb 0.4Ag)	51.9 – 57.6	.33-.37	-	30.7-34.0	No
Indalloy 104 (Sn62/Pb36/Ag2)	51.5-57	1.7-1.8	-	29.9-33	No
Indalloy 106 (Sn63/Pb37)	52.3-58	-	-	30.7-34	No
109 (Sn60/Pb40)	49.8-55.2	-	-	33.2-36.8	No
Indalloy 281 (58Bi/42Sn)	34.9 – 38.6	-	48 – 53.4	-	Yes
Indalloy 282 (57Bi/42Sn/1Ag)	34.9 – 38.6	0.83 – 0.92	47 – 52	-	Yes

*RoHS = Restriction of Hazardous Substances (review applicable exemptions related to lead containing materials)

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 applicable **Method:** Not applicable
- Auto-ignition Temperature:** Not established.
- Flammable Limits:** Limits not established
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions. Foam, dry chemical, water spray.
- 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: Wear a respirator and appropriate personal protection (See Exposure Controls/Personal Protective Section). Use spatula, scoop up paste and place in glass or plastic container. Remove traces of paste residue using cloth rags or paper towels moistened with isopropyl alcohol. Dispose of 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. Avoid breathing vapors from heated material. Avoid contact with eyes, skin and clothing. Use with adequate ventilation.

Storage Precautions: Store product in tightly capped original containers in a cool, dry area. Keep away from heat and flame. Store away from incompatible materials. Empty containers may be hazardous as they contain product residue.

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
		(Singapore)	2	-	-
		(Canada)	N.E.	2	4
SILVER	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Mexico)	-	0.1	N.E.
(Singapore)	0.1	-	-		
LEAD	*	7439-92-1/231-100-4			
		(US)	0.05	0.05	-
		(EU)	-	0.15	-

		(Canada)	0.05	0.05	-
		(Singapore)	0.15	-	-
		(Mexico)	0.15	-	-
		(China)	-	0.05(dust)	-
				0.03(fume)	-
BISMUTH	*	7440-69-9/231-177-4	N.E.	N.E.	N.E.
POLYGLYCOL ETHER	5-8	67700-97-4	N.E.	N.E.	N.E.
ORGANIC ACIDS	2-4	68937-72-4	N.E.	N.E.	N.E.
ETHANOLAMINES	1.0-5.0	68910-05-4	N.E.	N.E.	N.E.

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

Symbol: X_n

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N.E. = Not established

* See table

Engineering Controls: Exhaust ventilation is required to control airborne levels. Use only with production equipment with adequate ventilation and other safety features specifically designed for solder paste. Do not use without proper ventilation.

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 particulate chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated.

Skin: Compatible chemical resistant gloves such, as nitrile should be worn. Protective outer garment, apron and sleeves as appropriate.

Other: Eyewash fountain or safety shower and eyewash unit in work area. Avoid the use of contact lenses.

Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately.

Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area. Follow standard lead work practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey paste	Boiling Point:	Not established
Odor:	Mild characteristic odor.	Melting Point:	Not applicable
Specific Gravity:	Not established	pH:	Not applicable
Vapor Pressure:	Not applicable.	Solubility in Water:	Water Soluble
Vapor Density:	(air=1) Not applicable.		

10. STABILITY AND REACTIVITY

General:	Stable.
Conditions to Avoid:	High temperatures, open flame.
Incompatible Materials:	Not established

Hazardous Decomposition / Combustion:	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. (Decomposition products: Carbon dioxide, carbon monoxide)
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: **NTP:** No
OSHA: CFR1910.1025
IARC: Yes Lead and lead compounds are listed as possible carcinogens.

LD50: Not established. **LC50:** Not established.

Other: Lead can cause potential harm to the developing fetus.

12. ECOLOGICAL INFORMATION

Product not tested.

13. DISPOSAL CONSIDERATION

Waste Disposal Method: Dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations. May have reclaim value. Recycle where possible.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not classified as hazardous in shipping under US DOT.

Product is Non - hazardous under all shipping modes.

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.).

GHS = Globally Harmonized System

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

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 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 2 – Materials Causing Other Toxic Effects – skin irritant



This product has been classified in accordance with the guidelines set by the Dept. of Industrial Health of the Republic of Singapore.

For compliance with EU directive 2002/95/EC, Restriction of Hazardous Substances (RoHS) see alloy table.

California Prop 65- California Safe Drinking Water Standard: 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.

SARA 313 Listing - 40 CFR 372.65 (silver, lead, 3.7% proprietary glycol ether)

All ingredients are listed on the EPA TSCA Inventory.

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

X_n

Risk Phrases:

- R20/21/22 Harmful by inhalation, in contact with skin and if swallowed
- R36/37/38 Irritating to eyes, respiratory system and skin
- R33 Danger of cumulative effects (lead)
- R40 Limited evidence of carcinogenic effect (lead)
- R41 Risk of serious damage to eyes
- R48 Danger of serious damage to health by prolonged exposure (lead)
- R 61 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/gas/vapor/spray
- S24/25 Avoid contact with skin and eyes
- S7 Keep container tightly closed

16. OTHER INFORMATION

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

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Prepared by: Nancy Swarts, The Indium Corporation of America

Approved by: Nancy Swarts, The Indium Corporation of America

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