



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

SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier: INDALLOY WITH FLUXCAKE-301 (CW-301)

SDS Number: SDS- 4327

Revised Date: 12 OCTOBER 2017

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product Use: Industrial Use (Mixture) - Flux cored wire for soldering applications

See alloy table for listing of products included under this SDS.

1.3 Details of the supplier of the safety data sheet

MANUFACTURER/SUPPLIER/IMPORTER:

In America:

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Technical & Safety Information: (315) 853-4900
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 Asia-Pacific Operations-Singapore
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1.4 Emergency Telephone Number

FOR CHEMICAL EMERGENCY ONLY PHONE *:

CHEMTREC 24 hrs.

USA: 1 (800) 424-9300

Outside USA: +1 (703) 527-3887

*** Used only for spill/leak/fire/exposure/accident**

ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation

SECTION 2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

Eye Inhalation Skin Ingestion NTP IARC OSHA Not Listed

Carcinogen listed in

2.1 Classification of substance or mixture: (mixture)

2.2 Label Elements

Labeling according to Regulation (EC) No. 1272/2008

GHS:

Lead free products



Signal Word: Warning

Hazard statement(s)

H335 May cause respiratory irritation

Precautionary statement(s)

- P233 Keep container tightly closed
- P261 Avoid breathing dust/fume/gas/mist/vapours/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 +P364 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 + 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)
- P501 Dispose of contents and contains in accordance with applicable regulations.

Lead containing products**Hazard statement(s)**

H303	May be harmful if swallowed
H335	May cause respiratory irritation
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 effects
EUH201A	Warning! Contains lead. Review listing.

Precautionary statement(s)

P233	Keep container tightly closed
P261	Avoid breathing dust/fume/gas/mist/vapours/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 + P364	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 + 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)
P501	Dispose of contents and contains in accordance with applicable regulations.

Classification:

Carcinogenicity (Category 2) (lead)
 Reproductive toxicity (Category 2) (lead)
 Skin sensitizer-Category 1B
 Respiratory sensitizer-Category 1B
 Acute aquatic toxicity – Category 1 for lead containing products (H400)
 Chronic aquatic toxicity – Category 1 for lead containing products (H410)
 Specific organ toxicity – single exposure (Category 3)

OTHER HAZARDS:**POTENTIAL HEALTH EFFECTS:**

Eye Contact:	Irritating to the eyes and if not removed, may result in serious injury. Contact with fume from molten metal may cause serious irritation.
Ingestion:	This product contains metal alloys and organic chemicals. Harmful if swallowed. This product may contain lead. If applicable, may cause 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.
Inhalation:	Inhalation of fume or dust may cause local irritation to the respiratory system. . Inhalation of lead fume may be harmful.
Skin Contact:	May cause skin irritation. Antimony may cause 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.

INDIUM: May cause damage to respiratory system.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture:

Components	% wt	CAS Registry #/ EINECS#
TIN	*	7440-31-5/231-141-8
SILVER	*	7440-22-4/231-131-3
COPPER	*	7440-50-8 /231-159-6
LEAD	*	7439-92-1/231-100-4
ANTIMONY	*	7440-36-0/231-146-5
INDIUM	*	7440-74-6/231-180-0
RESIN MIX	4.0-6.0	—

N.E. = Not established

* See Alloy Table for breakdown of percentages of alloy mixtures

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ALLOY TABLE

ALLOY TABLE
Metal alloy mixed with resin core (1-5%)

INDALLOY	Lead Pb	Tin Sn	Copper Cu	Antimony Sb	Silver Ag	Indium In	Specific Gravity	RoHS Compliance
104 (Sn62/Pb36/Ag2)	34-35.6	58.9-61	-	-	1.9-1.98	-	8.41	No
106 (Sn63/Pb37)	35-36.6	60-62	-	-	-	-	8.40	No
227 (77.2Sn/20In/2.8Ag)	-	73.3-76.4	-	-	2.66-2.77	19-19.8	7.25	Yes
228 (88Pb/10Sn/2Ag)	83.6 - 87	9.5 - 9.9	-	-	1.9 – 1.98	-	10.75	Yes*
254 (86.7Sn/10In/3.1Ag)	-	82.3-85.8	-	-	2.9-3	9.5-9.9	7.37	Yes
256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	-	91.6-95.5	0.475-0.495	-	2.85-2.97	-	7.40	Yes
Sn 995 (99.5Sn/0.5Cu/<50ppm Co)	-	94.5-98.5	0.475-0.495	-	-	-	7.29	Yes
NON STANDARD ALLOY (96.35Sn/3Ag/0.5Cu/0.15Sb)	-	91.5 - 95.4	0.475-0.495	0.14-0.149	2.85-2.97	-	7.35	Yes

*RoHS 2 = Restriction of Hazardous Substances (2011/65/EU)

SECTION 4. FIRST AID MEASURES

4.1 Description of 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.

4.2 Most important symptoms and effect, both acute and delayed:

Skin contact may cause irritation. Long term contact may cause dermatitis.
Inhalation of decomposed rosin fume may cause irritation or occupational asthma.
Exposure to metal fumes may cause irritation to the respiratory system.

4.3 Indication of any immediate medical attention and special treatment needed:

No specific special treatment information is available on this wire mixture. Review data provided in this document to understand the hazards when working with the product. No other information is available at this time.

SECTION 5. FIRE FIGHTING MEASURES

- 5.1 Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions. Water, CO2, foam media.

5.2 Special hazards arising from the substance or mixture:

May produce toxic fumes of carbon monoxide if burning or metal oxide fumes.

5.3 Advice for Firefighters Firefighter's must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. No other information is available.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Keep away from the spill. Remove sources of ignition. Keep exhaust ventilation system running. In the event of a fire evacuate area.

For emergency responders:

Wear safety glasses, gloves when cleaning up any spill. Other equipment may be necessary based on the immediate area and other chemicals unrelated to the product that may be in use. Adequate ventilation should be available. Keep unnecessary personnel away from area during clean up.

Environmental Precautions: Material has reclaim value. Material is non - hazardous. It however does contain metals and organic chemicals which may not be suited for release to any body of water including drains.

Methods and material for containment and cleaning up:

Spill or leak procedures: If molten allow to cool then place into metals reclaim container. If solid wire pick up pieces and place into container for reclaim or reuse.

6.2 Reference to other sections: See Section 8 for exposure levels.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions For Safe Handling: Keep containers tightly closed when not in use. Use care to avoid spills. Use only with production equipment specifically designed for the task. 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. Do not eat, drink or smoke when handling this product. Utilize exhaust ventilation when heating product. Emissions may contain metal fumes, rosin and organic compounds.

7.2 Conditions for Safe Storage, including any incompatibilities:

Storage Precautions: Store product in tightly capped original containers in a cool, dry area. Refer to product label and product data sheet for specific storage temperature requirements.
Rotate stock to ensure use before expiration date.

7.3 Specific End Use(s): Soldering applications

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:

			(TWA)	(STEL)
		CAS#/EINECS#	mg/m3	mg/m3
TIN	*	7440-31-5/231-141-8		
		(UK)	2	4
		(Belgium)	2	-
		(Germany)	2	-
		(Netherlands)	2	-
		(Spain)	2	-
		(Poland)	2	-
SILVER	*	7440-22-4/231-131-3		
		(UK)	0.1	0.3
		(Belgium)	0.1	-
		(France)	0.1	-
		(Germany)	0.1	-
		(Netherlands)	0.1	-
		(Spain)	0.1	-
	(Poland)	0.05	-	
COPPER	*	7440-50-8 /231-159-6		
		(UK)	0.2 (fume)	0.6(fume)
		(France)	2	0.2(fume)
		(Belgium)	1	-
			0.2(fume)	
		(Spain)	1	-
			0.2(fume)	
		(Portugal)	1	0.2(fume)
		(Netherlands)	0.1	-
		(Finland)	1	-
		0.1		
	(Denmark)	1	-	
		0.1		

		(Austria)	1	4
			0.1(fume)	0.4
		(Switzerland)	0.1	0.2
		(Norway)	1	0.1
		(Ireland)	1	2
			0.2 (fume)	
		(Poland)	0.2	-
LEAD	*	7439-92-1/231-100-4		
		(UK)	0.15	-
		(France)	0.1	-
		(Spain)	0.15	-
		(Italy)	0.15	-
		(Portugal)	0.05	-
		(Finland)	0.1	-
		(Denmark)	0.05	-
		(Austria)	0.1	0.4
		(Switzerland)	0.1	0.8
		(Poland)	0.05	-
		(Norway)	0.05	-
		(Ireland)	0.15	-
ANTIMONY	*	7440-36-0/231-146-5		
		(UK)	0.5	-
		(France)	0.5	-
		(Belgium)	0.5	-
		(Spain)	0.5	-
		(Portugal)	0.5	-
		(The Netherlands)	0.5	-
		(Finland)	0.5	-
		(Denmark)	0.5	-
		(Austria)	0.5	5
		(Switzerland)	0.5	-
		(Poland)	0.5	-

		(Norway)	0.5	-
		(Ireland)	0.5	-
INDIUM	*	7440-74-6/231-180-0		
		(UK)	0.1	0.3
		(Belgium)	0.1	-
		(Spain)	0.1	-
		(Portugal)	0.1	-
		(Finland)	0.1	-
		(Denmark)	0.1	-
		(Austria)	0.1	0.2
		(Switzerland)	0.1	-
		(Norway)	0.1	-
		(Ireland)	0.1	0.3
RESIN MIX	4.0-6.0	-	N.E.	N.E.
TWA = time weighted average		STEL = short term exposure limit		
N.E. = Not established				
8.2 Exposure Controls:				
Engineering Controls: Use only with production equipment with adequate exhaust ventilation and other safety features specifically designed for use with wire. Control concentration of all components with established exposure limits so they are not exceeded. Use exhaust ventilation when heating product. Air emission control equipment may be necessary based on the local governmental requirements for contaminants entering the atmosphere. Emissions may contain metal fume, rosin and organic compounds.				
Personal protection:				
Eyes:	Chemical safety glasses/goggles. Face shield for any splash hazards.			
Respiratory:	An approved or EU compliant CE marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated or exceed exposure limits.			
Skin:	Compatible chemical resistant gloves. Recommend a nitrile disposable or other chemical glove. Hot gloves for melting applications.			
Other:	Lab coat, eye-wash fountain in work area. Avoid the use of contact lenses in high fume areas.			
Work/Hygienic	Maintain good housekeeping. Clean up spills immediately. 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. Follow standard lead work practices, if applicable.			

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	Metal wire	Boiling Point/Range:	Not determined
Odor:	Odorless	Melting Point:	Not applicable
Odor Threshold:	Not established	Evaporation Rate:	Not applicable
Specific Gravity:	See table	pH:	Not applicable
Vapour Pressure:	1 mmHg @973C.	Solubility in Water:	Insoluble
Vapour Density:	(air=1) Not applicable.	Partition coefficient:	Not established
Relative Density:	Not established	Flammability:	Not applicable
Flash Point:	Not applicable	Method:	Not applicable
Auto-ignition Temperature:	Not applicable	Flammable Limits:	Limits not established
UEL/LEL Limits:	Not applicable	Decomposition Temp:	Not applicable
Viscosity:	Not established	Explosive properties:	Not applicable
Oxidizing Properties:	Not established		

9.2 Other Information: Above data for the whole mixture.

SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity:** Stable.
- 10.2 Chemical Stability:** Stable
- 10.3 Possibility of Hazardous Reactions:** Not established
- 10.4 Conditions To Avoid:** None known
- 10.5 Incompatible Materials:** Avoid contact with acids, bases or oxidizing agents.
- 10.6 Hazardous Decomposition / Combustion:** Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. Metal oxide fumes.
- 10.7 Hazardous Polymerization:** Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

<u>Acute toxicity:</u>	Not established	<u>Mutagenicity:</u>	Not established
<u>Irritation:</u>	Not established	<u>Toxicity for Reproduction:</u>	Not Established
<u>Corrosivity:</u>	Not applicable	<u>Absence of specific data:</u>	None available (not tested)
<u>Sensitization:</u>	Not available		
<u>Repeated dose toxicity:</u>	Not established		
<u>Carcinogenicity:</u>	Not established		
<u>Likely Routes of Entry:</u>	eyes (irritation) /skin (irritation) /inhalation (irritation) ingestion (harmful)		
<u>Interactive effects:</u>	None known		

11.2 Symptoms related to the physical, chemical and toxicological characteristics:

May cause irritation by skin and inhalation.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure:

Exposure to lead fume, if applicable, may cause harm by inhalation and ingestion. Chronic exposures to lead fume, if applicable, can cause potential harm to the developing fetus. Lead exposure can be toxic.

Mixture verses substance information: None known

Other Information:

Carcinogenicity: NTP: No (National Toxicity Program)
Listing OSHA: No (US Occupational Safety & Health Administration)
 IARC: Yes - Lead and lead compounds are listed as possible carcinogens. (International Agency for Research on Cancer).

Contains <0.2% of an flux ingredient that causes cancer.

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

Silver – LD50 oral – rat > 5,000 mg/kg

Lead – Suspected human reproductive toxicant. May cause damage to organs through prolonged or repeated exposure. Reproductive toxicity – rat –inhalation, oral/ effects on newborn.

SECTION 12. ECOLOGICAL INFORMATION

Product mixtures not tested.

12.1 Toxicity: No information available

12.2 Persistence and degradability: No information available

12.3 Bioaccumulative potential: No information available

12.4 Mobility in soil: No information available

12.5 Results of PBT and vPvB assessments: No data is available

12.6 Other adverse effects: No information is available for mixture. Avoid release to environment.

Copper – Toxicity to daphnia and other aquatic invertebrates mortality NOEC – Daphnia 0.004 mg/l – 24h.

Lead – Toxicity to fish – mortality LOEC – rainbow trout – 1.19 mg/l – 96h. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Bioaccumulation – Oncorhynchus kisutch – 2 weeks

Bioconcentration factor (BCF): 12. Fresh fish: 0.44 mg/l LC50 96h/ 1.32 mg/l LC50 96h/water Flea: 600 ug/l EC50 = 48h

SECTION 13. DISPOSAL CONSIDERATION

13.1 Waste treatment method: Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with environmental regulations. Containerize material and classify according to applicable regulations. No pre-treatment on site is recommended. Do not dispose of down any drain or waterway. Utilize the same personal protective equipment as the user when handling for disposal.

RoHS (Restriction of Hazardous Substances): RoHS compliant. Review alloy table for products.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Not regulated/non- hazardous under US DOT (United States Department of Transportation).

Not regulated/non- hazardous under international shipping requirements.

- 14.1 UN Number:** None
- 14.2 UN proper shipping name:** None
- 14.3 Transport hazard class(s):** None
- 14.4 Packing group:** None
- 14.5 Environmental hazards:** None
- 14.6 Special precautions for user:** None
- 14.7 Transport in bulk:** Not applicable

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

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.).

All ingredients are listed on the USEPA TSCA Inventory.

All ingredients are listed on EINECS.

Safety data sheet was developed using EC 1907/2006 amended as of 20 May 2010 EU No 453/2010 and information as stated under regulation EC No 1272/2008 CLP Regulation.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 2037/2000.

15.2 Chemical safety assessment: None performed for mixture.

SECTION 16. OTHER INFORMATION

NOTE: The Indium Corporation does not recommend, manufacture, market or endorse any of its products for human consumption

Revised Date: 12 OCTOBER 2017

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Changes provided on this SDS were based on the requirements of EU No. 453/2010 of May 20, 2010 regarding amendments to EC No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

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