



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

## SAFETY DATA SHEET

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

**Product Identifier:** INDALLOY WITH ACID CORE FLUX CORED WIRE

**MSDS Number:** MSDS- 4610

**Revised Date:** 9 JANUARY 2012

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

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

**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**

**MANUFACTURER/SUPPLIER/IMPORTER:**

**In America:**

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Technical & Safety Information: (315) 853-4900  
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**2. HAZARDS IDENTIFICATION****PRIMARY ROUTES OF ENTRY:**

⊗Eye    ⊗Inhalation    ⊗Skin    ⊗Ingestion    NTP    IARC    OSHA    ⊗Not Listed

**Carcinogen listed in****Classification:**

Risk Phrases: General Listing

Symbol X    R20/21/22,R36/37/38, R33,R40,R48,R61, R52/53 (review SDS for applicability)

See Section 16 for full text of each relevant hazard statement

General GHS:



LEAD CONTAINING PRODUCTS

Signal Word: Warning

**Hazard statement(s)**

H302	Harmful if swallowed
H319	Causes serious eye irritation
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 containing product)
EUH201A	Warning! Contains lead (applicable only to the products listed that contain 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	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

**OTHER HAZARDS:****POTENTIAL HEALTH EFFECTS:**

In General: Normal handling of wire should not cause any adverse 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 irritation.

**Ingestion:** Harmful if swallowed. 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:** Normal handling should not cause any adverse health effects. May cause skin irritation. Hot molten metal may cause burns to the skin.

**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.

**3. COMPOSITION / INFORMATION ON INGREDIENTS****3.2 Mixture:**

Components	% wt	CAS Registry #/ EINECS#	
TIN	*	7440-31-5/231-141-8	[R36/37] [S26/S37/39]
SILVER	*	7440-22-4/231-131-3	[[S24/25]
COPPER	*	7440-50-8 /231-159-6	[R36/37/38] [S26,S37/39]

<b>LEAD</b>	*	7439-92-1/231-100-4	[R20/22, R33, R40, R61, R52/53] [S23, S36/37/39, S61, S62]
<b>AMMONIUM CHLORIDE</b>	0.1-1	12125-02-9/235-186-4	[R22, R36]
<b>PROPRIETARY</b>	1.5-5	-	

**THIS PRODUCT DOES NOT CONTAIN ANY EU REPORTABLE SUBSTANCES OF VERY HIGH CONCERN (SVHC).**

N.E. = Not established

\* See Alloy Table for breakdown of percentages of alloy mixtures  
Ingredients are listed even though they may not have been categorized as hazardous.

<http://www.indium.com>

## ALLOY TABLE

% Metal mixed with 2-6% flux

Product Identifier	%Tin Sn	%Lead Pb	%Silver Ag	%Copper Cu
Indalloy 161 (97.5Pb/2.5Ag)	-	91.7-95.6	2.35—2.45	-
Indalloy 256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	90.5-94.5	-	2.82-2.94	0.47-0.49
NON STANDARD MIX (96Sn/4Ag)	90 - 94	-	3.8 - 3.9	-

## 4. FIRST AID MEASURES

### Description of 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.

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

Skin contact may cause irritation during certain uses.  
Exposure to metal fumes may cause irritation to the respiratory system.

### 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.

## 5. FIRE FIGHTING MEASURES

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

**Special hazards arising from the substance or mixture:** May produce toxic fumes of carbon monoxide if burning or metal oxide fumes.

**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.

## 6. ACCIDENTAL RELEASE MEASURES

### **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.

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

## 7. HANDLING AND STORAGE

**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. 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 and organic compounds.

### **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.

**Specific End Use(s):** Soldering applications

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control Parameters:

			(TWA)	(STEL)
		CAS#/EINECS#	mg/m3	mg/m3
<b>TIN</b>	*	7440-31-5/231-141-8		
		(UK)	2	4
		(Belgium)	2	-
		(Germany)	2	-
		(Netherlands)	2	-
		(Spain)	2	-
		(Poland)	2	-
<b>SILVER</b>	*	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	-	
<b>COPPER</b>	*	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	-
<b>LEAD</b>	*	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	-
<b>AMMONIUM CHLORIDE</b>	0.1-1	12125-02-9/235-186-4			
			(UK)	10	20
			(France)	10	-
			(Belgium)	10	20
			(Spain)	10	20
			(Portugal)	10	20
			(Denmark)	10	-
			(Switzerland)	3	-

		(Poland)	10	20
		(Norway)	10	20
		(Bulgaria)	10	-
		(Croatia)	10	20
		(Ireland)	10	20
		(Czech Republic)	5	10
		(Greece)	10	20
		(Iceland)	10	20
		(Latvia)	10	-
		(Lithuania)	10	-
		(Romania)	5	10
		(Russia)	10	-
<b>PROPRIETARY</b>	1.5 – 5	-	N.E.	N.E.

**TWA = time weighted average – 8 HRS**

**STEL = short term exposure limit**

N.E. = Not established

### 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 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:** Recommend a nitril 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.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties:

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

**Other Information:** Above data for the whole mixture.

## 10. STABILITY AND REACTIVITY

<b><u>Reactivity:</u></b>	Stable.
<b><u>Chemical Stability:</u></b>	Stable
<b><u>Possibility of Hazardous Reactions:</u></b>	Not established
<b><u>Conditions To Avoid:</u></b>	None known
<b><u>Incompatible Materials:</u></b>	Avoid contact with acids, bases or oxidizing agents.
<b><u>Hazardous Decomposition / Combustion:</u></b>	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures. Metal oxide fumes.
<b><u>Hazardous Polymerization:</u></b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Information on toxicological effects:

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

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

May cause irritation by skin and inhalation.

**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).

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.

**12. ECOLOGICAL INFORMATION**

This section is subject to future development. Product mixtures not tested.

**Toxicity:** No information available

**Persistence and degradability:** No information available

**Bioaccumulative potential:** No information available

**Mobility in soil:** No information available

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

**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

Contains substances that are harmful to the aquatic environment.

### 13. DISPOSAL CONSIDERATION

**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.

### 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.

**UN proper shipping name:** None

**Transport hazard class(s):** None

**Packing group:** None

**Environmental hazards:** None

**Special precautions for user:** None

**Transport in bulk:** Not applicable

### 15. REGULATORY INFORMATION

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

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.).

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.

**Chemical safety assessment:** None performed for mixture.

### 16. OTHER INFORMATION

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

**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)
R48	Danger of serious damage to health by prolonged exposure (lead)
R61	My cause harm to the unborn child (lead)
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in aquatic environment

**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
S7	Keep container tightly closed

**Revised Date:** 9 JANUARY 2012  
**Prepared by:** Nancy Swarts, The Indium Corporation of America, nswarts@indium.com  
**Approved by:** Nancy Swarts, The Indium Corporation of America

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).

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.