



SAFETY DATA SHEET

According to Regulation 2015/830

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

1.1 Product Identifier

Product Name: INDALLOY WITH FLUXCAKE-232 (CW-232) (LEAD FREE)

SDS Number: SDS- 13431LF

Revised Date: 5 JANUARY 2021

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. Solid metal wire with flux core.

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:

The Indium Corporation of America®
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Safety & SDS Information: nswarts@indium.com
Corporation web page: <http://www.indium.com>

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Information: (86) 512-6283-4900

In Asia:

Indium Corporation of America®
Asia-Pacific Operations-Singapore

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**

France: 33-975181407

In France emergency information (French poison center): INRS (ORFILA) +33 (0) 1 45 42 59 59

Germany: toll free- 0800-181-7059 or (Frankfurt) 49-69643508409

Italy: toll free- 800-789-767

Poland: (Warsaw) 48-223988029

Portugal: 351-308801773

Hungary: (Budapest) 36-18088425

Romania: 40-37-6300026

United Kingdom: (London) 44-870-8200418 and 44-2038073798

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

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification:

Sensitization, skin (Category 1B)

Sensitization, respiratory (Category 1B)

2.2 Label elements

Labeling according Regulation (EC) No 1272/2008

GHS



Signal Word: Warning

Hazard statement(s)

H317 May cause an allergic skin reaction

H319 Causes serious eye irritation

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

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 +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

IF IN EYES: Rinse continuously with water for several minutes (15 mins)

PRIMARY ROUTES OF ENTRY:

Eye Inhalation Skin Ingestion NTP

Carcinogen listed in

IARC OSHA Not Listed

2.3 OTHER HAZARDS:

POTENTIAL HEALTH EFFECTS:

Eye Contact: Irritating to the eyes and if not removed, may result in serious irritation. Contact with fume from molten metal may cause irritation.

Ingestion: This product contains metal alloys and organic chemicals. May be harmful if swallowed.

Inhalation: Inhalation of fume or dust may cause local irritation to the respiratory system. Inhalation of lead fume may be harmful. Rosin may cause occupational asthma.

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

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: Over exposure may cause metal fume fever.

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.

ROSIN FUME: May cause irritation, sensitization by skin contact or if inhaled.

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	
GERMANIUM	TRACE	7440-56-4	
NICKEL	*	7440-02-0	
ROSIN MIX	1-4	65997-05-9	H317/334/319

N.E. = Not established

* See Alloy Table for breakdown of percentages of alloy mixtures

ALLOY TABLE
Metal alloy wire with rosin core mix (1-4%)

INDALLOY	Tin Sn	Copper Cu	Silver Ag	Germanium Ge	Nickel Ni	Specific Gravity (metal mix)	RoHS 2 Compliance
256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	92.6 - 95.5	0.48-0.495	2.88 - 2.97	-	-	7.40	Yes
262 (Sn 995 Cu0.05)	95.5-98.5	0.0495-0.048	-	-	-	-	Yes
291 (Sn99.25Cu0.7Ni0.05Ge<0.01)	95-98	0.67-0.69	-	<0.01	0.0495-0.048		Yes

RoHS 2 = (2011/65/EU) RoHS 3- no phthalates

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 Fire fighter's must wear approved self-contained breathing apparatus and full protective clothing.

5.4 Further information

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.

6.2 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.

6.3 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.

6.4 Reference to other sections: See Section 8 for exposure levels. See Section 13 for disposal.

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	47-98.5	7440-31-5/231-141-8		
		(UK)	2	4
		(Belgium)	2	-
		(Germany)	2	-
		(Netherlands)	2	-

		(Spain)	2	-
		(Poland)	2	-
SILVER	0-3.76	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	0-0.69	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	-
		(Ireland)	0.1	0.3
GERMANIUM	TRACE	7440-56-4	N.E.	N.E.

NICKEL	^	7440-02-0 (EU)		0.5	1.5
		(France)		1	-
		(Belgium)		1	-
		(Spain)		1	-
		(Portugal)		1.5	-
		(Finland)		1	-
		(Austria)		-	2
		(Poland)		0.25	-
		(Norway)		0.05	0.15
		(Bulgaria)		0.05	-
		(Croatia)		0.5	-
		(Ireland)		0.5	-
		(Estonia)		0.5	-
		(Greece)		1	-
		(Hungary)		0.1	0.1
		(Romania)		0.1	0.5
		(Lithuania)		0.5	-
		(Slovenia)		-	2
		(Russia)		0.05	-
		(Czech Republic)		0.5	1
ROSIN	1-4	65997-05-9		N.E.	N.E
		(EU)	0.05	N.E.	0.15 (sensitizer)

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

Personal Protective Equipment:

Follow requirements for proper equipment as outlined under 2016/425.

Eye/face protection:

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection:

Handle with CEN approved nitrile gloves (minimum layer thickness: 5 mil). Gloves must be inspected prior to use. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Use EN 407 approved thermal (hot gloves) for any handling of molten metal.

Body Protection:

The type of protective equipment must be selected according to the concentration and amount of any other substances used at the specific workplace. Handling of metal wire does not require PPE protective equipment. However, how it is used may require additional protection such as safety glasses, gloves and proper ventilation.

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a particulate respirator type P100 (US) or type P3 (EN 143) respirator cartridge as a backup to engineering controls.

Work/Hygienic:

Maintain good housekeeping. Clean up spills immediately. Wash hands thoroughly with soap and water immediately upon leaving the work area and before eating. Refrain from eating or smoking in work areas. If applicable in EU, review lead worker requirements. Certain work practice and medical monitoring may be required.

Control of environmental exposure:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties of the whole mixture:

Appearance:	Metal wire	Boiling Point/Range:	No data available*
Odor:	Odorless	Melting Point:	See technical bulletin
Odor Threshold:	No data available-wire	Evaporation Rate:	No data – wire product
Specific Gravity:	Not provided- see technical bulletin		
pH:	Not applicable to solid metal product		
Vapour Pressure:	No data available*	Solubility in Water:	Insoluble
Vapour Density:	(air=1) No data available*	Partition coefficient:	No data available*
Relative Density:	No data available*	Flammability:	wire not flammable

Flash Point: wire not flammable
Auto-ignition Temperature: No data available*
UEL/LEL Limits: Not flammable-wire
Viscosity: solid wire
Oxidizing Properties: No data available*

Method: Not tested
Flammable Limits: Limits not established-wire
Decomposition Temp: No data available for wire
Explosive properties: wire not explosive

*Indium Corporation has not conducted any testing in order to acquire this data for the wire mixture

9.2 Other Information: Above data for the whole metal wire 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.
Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008:

Mixture not tested. No testing information is available on the mixture product.

<u>Acute toxicity:</u> Not established	<u>Mutagenicity:</u> Not established
<u>Irritation:</u> Contains rosin	<u>Toxicity for Reproduction:</u> Not established for mixture
<u>Corrosivity:</u> Not applicable to wire	<u>Absence of specific data:</u> None available (not tested)
<u>Sensitization:</u> Contains rosin.	

Repeated dose toxicity: Not established for mixture

Carcinogenicity: Not established for mixture

Likely Routes of Entry: eyes (irritation) /skin (irritation or sensitization) /inhalation (irritation/sensitization) ingestion (may be harmful)

Interactive effects: None known

Symptoms related to the physical, chemical and toxicological characteristics:

Normal handling of the wire if not harmful. Cutting, melting, grinding may cause irritation or sensitization by skin and inhalation.

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

Exposure to rosin fume has been known to cause occupational asthma.

Mixture verses substance information: None known. Mixture not tested.

Other Information:

Carcinogenicity: NTP: No
 OSHA: No

IARC: No

To the best of our knowledge, the physical, toxicological and chemical properties have not been thoroughly investigated for the following metals.

Copper - LD50 – intraperitoneal mouse 3.5 mg/kg.

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

Tin- LD 50 oral –rat>2000 mg/kg

Refer to NIOSH Registry of Toxic Effects of Chemical Substances for further information: RTECS# VM3500000 (silver), XP7320000 (tin), GL7900000 (fume/copper), .

SECTION 12. ECOLOGICAL INFORMATION

Product mixtures not tested. No information available on mixture product.

12.1 Toxicity: No information available on mixture product

12.2 Persistence and degradability: No information available on mixture product

12.3 Bioaccumulative potential: No information available on mixture product

12.4 Mobility in soil: No information available on mixture product. Product is a solid wire material.

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

12.6 Endocrine disrupting properties: No information

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

To the best of our knowledge, the physical, toxicological and chemical properties have not been thoroughly investigated for the following metals.

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

Silver- Toxicity to fish: semi static test LC 50 (fathead minnow) 0.0021 mg/l- 96h. (Remarks- Ecotox Database). Skin (rabbit) – result – no skin irritation. Eye (rabbit) – result – no eye irritation.

Tin – LD 50 oral-rat >2000 mg/kg

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 2 (2011/65/EU) compliant for some products. Review alloy table of products. Additional RoHS is provided on the alloy table.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Solid metal:

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

Not regulated/non- hazardous under international shipping requirements.

14.1 UN number or ID 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 **Maritime transport in bulk according to IMO instruments:** Not applicable

SECTION 15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No 1907/2006 and other supporting 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. Note Rosin was recently listed under the No Longer Polymer List, Notification of New Chemical Substances in Accordance with Directive 67/548/EEC.

Safety data sheet was developed using guidance from EC 1907/2006 amended as of 6 February 2020, EU No 453/2010 2020/878 June 2020 and information as stated under regulation EC No 1272/2008 CLP Regulation, and EU 649/2012 guidance on exports and imports.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 1005/2009.

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: 5 JANUARY 2021
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Changes provided on this SDS were based on the requirements of EU 2020/171 as of amendments February 6, 2020 and June 2020 2020/878 regarding 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.