SAFETY DATA SHEET

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

1.1 Product Identifier: INFORM®/PREFORM COPPER MESH COATED WITH METAL ALLOY MIXTURES

SDS Number: SDS-5098B **Revised Date:** 9 JANUARY 2020

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

Product Use: INDUSTRIAL USE - METAL ALLOY MIXTURE WITH COPPER MESH .
(Metal Inform® Preforms). REVIEW METAL ALLOY TABLE FOR MIXTURE COMBINATIONS.

1.3 **Details of the supplier of the safety data sheet**

MANUFACTURER/SUPPLIER/IMPORTER:

In America:
The Indium Corporation of America®.
34 Robinson Rd, Clinton NY 13323
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: http://www.indium.com

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Information: (86) 512-6283-4900

In Asia:
The Indium Corporation of America
Asia-Pacific Operations-Singapore
29 Kian Teck Avenue
Singapore 628908
Information: +65 6268-8678

1.4 Emergency Telephone Number

FOR CHEMICAL EMERGENCY ONLY PHONE *:
CHEMTREC 24 hrs.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887
China Emergency: 86+ 4008417580
*** 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:				CARCINOGEN LISTED IN:			
√ Eye	√ Inhalation	√ Skin	√ Ingestion	NTP	IARC	OSHA	√ Not Listed

2.1 Classification of substance or mixture: (mixture)

2.2 Label Elements

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

See Section 11

GHS: Non Lead - Indium Containing Products

Signal Word: Warning

Hazard Statement(s)

H335	May cause respiratory irritation

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 +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)

GHS: For Lead Containing Products Only

Signal Word: Warning

Hazard Statement(s)

H303	May be harmful if swallowed
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)

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
P305 + 351	IF IN EYES: Rinse continuously with water for several minutes (15 mins)

GHS – Other Alloy Mixtures

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 +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)

Classification:
Acute toxicity (oral) - Category 4
Carcinogenicity - Category 2
Reproductive toxicity-Category 2
Specific target organ- repeat- Category 2
Acute aquatic toxicity- Category 1 (H400)
Chronic aquatic toxicity- Category 1 (H410)

2.3 OTHER HAZARDS:

POTENTIAL HEALTH EFFECTS:

Eye Contact: Contact with metal alloy fume from molten metal may cause irritation. Severe eye damage may result from hot molten metal being splashed into the eyes. Wear safety glasses and face shield when working with molten metal. Normal handling of metal preform does not pose a hazard.

Ingestion: Ingestion may be harmful. May cause irritation.

Inhalation: Inhalation of fume or dust may cause local irritation or harm to the respiratory system. Avoid inhalation.

Skin Contact: Normal handling of solid metal should not cause any adverse health effects. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal. Exposure to copper dust may cause a greenish-black skin discoloration.

Chronic: **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.

TIN: Has been shown to increase incidence of sarcoma in animal tests.

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.

INDIUM: May cause damage to respiratory system.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture:

Components	% wt	CAS Registry #
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

*See alloy table

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 effects, 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. Long term exposure by inhalation to metal fumes may cause illness such as metal fume fever. Exposure to lead fume may cause harm. Sign of overexposure is anemia. Exposure can cause eye irritation and can cause serious irritation especially during fuming.

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

No specific special treatment information is available on this 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 or 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 fighters must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. Massive metal is not flammable; however dust or powder maybe flammable.

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: Dispose contaminated cloth rags or paper towels following all applicable governmental regulations. Material may have 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: 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.
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 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. 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:

Components	% wt	CAS Registry #	TLV-TWA mg/m³	TLV-STEL mg/m³
TIN	*	7440-31-5/231-141-8		
		(US)	2	-
		(EU)	2	4
		(Canada)	2	4
		(Singapore)	-	-
SILVER	*	7440-22-4/231-131-3		
		(US)	0.1	-
		(EU)	0.1	-
		(Canada)	0.1	0.3
		(Singapore)	-	-
		(Mexico)	0.1	-
COPPER	*	7440-50-8/231-159-6		
		(US)	0.1	-
		(EU)	0.1	-
		(Canada)	0.2	0.6
		(Singapore)	1(dust)	-
		(Mexico)	0.2(fume) 1(dust)	2
		(China)	1(dust) 0.2(fume)	2.5 0.6
LEAD	*	7439-92-1/231-100-4		
		(US)	0.05	-
		(EU)	0.15	-
		(Canada)	0.05	-
		(Singapore)	-	-
		(Mexico)	0.15	-
		(China)	0.05(dust) 0.03(fume)	- -
ANTIMONY	*	7440-36-0/231-146-5		
		(US)	0.5	-

		(EU)	-	-
		(Canada)	0.5	1.5
		(China)	0.5	-
		(Mexico)	0.5	-
		(Singapore)	-	-
INDIUM	*	7440-74-6/231-180-0		
		(US)	0.1	-
		(EU)	0.1	0.3
		(Canada)	0.1	0.3
		(Mexico)	-	0.3
		(Singapore)	-	-
		(China)	0.1	0.3

N.E. = Not established TWA = time weighted average STEL = short term exposure limit

8.2 Exposure Controls:

Engineering Controls: Local exhaust ventilation is recommended to control any air contaminants. Control concentration of all components so that their exposure levels are not exceeded.

Personal protection:

Eyes: Chemical safety glasses/goggles and face shield with molten metal.

Respirator: An authority approved or compliant marked air-purifying respirator with a fume/dust chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated and engineering controls are not effective.

Skin: Gloves-leather or impervious (vinyl) type. Heat resistant gloves if handling hot metal. Safety type boots. Personal protective equipment is recommended when working with molten metal to avoid burns.

Other: Lab coat, safety shower and eye-wash fountain in work area. Avoid the use of contact lenses in high fume areas.

Work/Hygienic Practices: 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 proper lead work practices when applicable.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	Silver grey solid metal	**Boiling Point/Range:**	2595C (copper)
Odor:	Odorless	**Melting Point/Freezing Point:**	1083C (copper)
Odor Threshold:	Not established	**Evaporation Rate:**	Not applicable
Specific Gravity:	8.92 (Copper)	**pH:**	Not applicable
Vapour Pressure:	Not applicable.	**Solubility in Water:**	Insoluble
Vapour Density:	(air=1) Not applicable.	**Partition coefficient:**	Not established
Relative Density:	Not established	**Flammability:**	Not applicable, not flammable

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 mineral acids.

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:

Acute toxicity: Not established

Irritation: Not established

Corrosivity: Not applicable

Sensitization: Not available

Repeated dose toxicity: Not established

Carcinogenicity: Not established

Mutagencity: Not established

Toxicity for Reproduction: Not Established

Absence of specific data: None available (not tested)

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

Interactive effects: None known

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

May cause irritation or sensitization by skin and inhalation.

11.3 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. 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 Listing:

NTP: No (National Toxicity Program),

OSHA: No (29CFR1910.1025 (lead)) (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.

Antimony- LD50 oral-rat 7,000 mg/kg

SECTION 12. ECOLOGICAL INFORMATION

Product 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 daphia and other aquatic invertibrates 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

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): some of the product mixtures are RoHS compliant because they are lead free. Product mixtures do not contain any PBB or PBDT brominated compounds.

RoHS – Note that some of the product mixtures do contain lead and are therefore not complaint with RoHS. Users should review their particular use for any applicable exemptions that may apply. Review alloy table for products.

SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable international regulations and requirements.
Not regulated/non - hazardous under US DOT (United States Department of Transportation).
Not regulated/non - hazardous under international shipping requirements (IATA/Ocean).
Not a marine pollutant.

14.1 UN Number	Not applicable
14.2 UN proper shipping name:	Not applicable
14.3 Transport hazard class(s):	No Applicable
14.4 Packing group:	Not Applicable
14.5 Environmental hazards:	Not Applicable
14.6 Special precautions for user:	Not Applicable
14.7 Transport in bulk:	Not applicable

SECTION 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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 EC 1907/2006 amended as of 20 May 2010 EU No 453/2010, 2015/830 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

HMIS Hazard Rating:	**Health:**	2
	Fire:	0
	Reactivity:	0

Revised Date:	9 JANUARY 2020
Prepared by:	Nancy Swarts, Indium Corporation of America
Approved by:	Nancy Swarts, 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).

Alloy Table

Metal alloys

Indalloy (metal mixture)	%Tin Sn	%Lead Pb	%Indium In	%Silver Ag	% Antimony Sb	%Copper Cu	RoHS 2/3* Compliance
1E (48Sn/52In)	48	-	52	-	-	-	Yes
2 (15Pb/80In/5Ag)	-	15	80	5	-	-	No
104 (62Sn/36Pb/Ag2)	62	36	-	2	-	-	No
133 (95Sn/5Sb)	95	-	-	-	5	-	Yes
155 (5Sn/90Pb/5Ag)	5	90	-	5	-	-	Yes**
163 (95.5Pb/2.5Ag/2.0Sn)	2	95.5	-	2.5	-	-	Yes**
256 (SAC 305) (96.5Sn/3Ag/0.5Cu)	96.5	-	-	3	-	0.5	Yes

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

***RoHS 3- products do not contain any listed phthalates**

**** Exemption- 7a**