



## SAFETY DATA SHEET

User must review the contents of this (SDS) and determine what is applicable to their own country laws under Health and Safety and apply them as necessary. This (SDS) will not reference every countries Health and Safety Laws. It is the user's responsibility to determine what is applicable to them, including but not limited to review of any specific chemical lists and apply the requirements as necessary.

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identifier:** COPPER MATRIX SPACER WITH METAL ALLOY MIXTURES

**SDS Number:** SDS-5099

**Revised Date:** MAY 30, 2019

**Product Use:** INDUSTRIAL USE - METAL ALLOY MIXTURE WITH COPPER SPACER .  
(METAL PREFORM). REVIEW PAGE 9 METAL ALLOY TABLE FOR MIXTURE COMBINATIONS THAT USE THE SPACER.

#### MANUFACTURER:

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**2. HAZARDS IDENTIFICATION**

**PRIMARY ROUTES OF ENTRY:**

√ Eye    √ Inhalation    √ Skin    √ Ingestion    NTP

**CARCINOGEN LISTED IN:**

IARC    OSHA    √ Not Listed  
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 MixturesPrecautionary 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)

**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.



**WARNING:** This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer and/or birth defects (or other reproductive harm). For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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

**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	% wt	CAS Registry #	PEL mg/m <sup>3</sup>	TLV-TWA mg/m <sup>3</sup>	TLV-STEL mg/m <sup>3</sup>
<b>TIN</b>	*	7440-31-5/231-141-8			
		(US)	2	2	-
		(EU)	-	2	4
		(Canada)	-	2	4
		(Singapore)	2	-	-
<b>SILVER</b>	*	7440-22-4/231-131-3			
		(US)	0.01	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.1	0.3
		(Singapore)	0.1	-	-
(Mexico)	-	0.1	-		
<b>COPPER MESH</b>	*	7440-50-8/231-159-6			
		(US)	0.1	0.1	-
		(EU)	-	0.1	-
		(Canada)	-	0.2	0.6
		(Singapore)	0.2(fume)	1(dust)	-
		(Mexico)	-	0.2(fume) 1(dust)	2
		(China)	-	1(dust) 0.2(fume)	2.5 0.6
<b>LEAD</b>	*	7439-92-1/231-100-4			
		(US)	0.05	0.05	-
		(EU)	-	0.15	-
		(Canada)	0.05	0.05	-
		(Singapore)	0.15	-	-
		(Mexico)	N.E.	0.15	-
(China)	-	0.05(dust) 0.03(fume)	- -		

<b>ANTIMONY</b>	*	7440-36-0/231-146-5			
		(US)	0.5	0.5	-
		(EU)	0.5	-	-
		(Canada)	-	0.5	1.5
		(China)	-	0.5	-
		(Mexico)	-	0.5	-
		(Singapore)	0.5	-	-
<b>INDIUM</b>	*	7440-74-6/231-180-0			
		(US)	0.1	0.1	-
		(EU)	-	0.1	0.3
		(Canada)	-	0.1	0.3
		(Mexico)	0.1	-	0.3
		(Singapore)	0.1	-	-
		(China)	-	0.1	0.3

N.E. = Not established

\*See alloy table

#### 4. 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.

#### 5. FIRE FIGHTING MEASURES

- Flash Point:** Not established. **Method:** Not established.
- Auto-ignition Temperature:** Not established.
- Flammable Limits:** Limits not established. Massive metal is not flammable; however dust or powder may be flammable.
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions.
- 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:** Contain spill. If molten, cool to allow metal to solidify. If a solid metal, wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment. Do not sweep. Use a vacuum, place in barrels and return to process if applicable. Otherwise, dispose of following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations. Metal may have reclaim value.

## 7. HANDLING AND STORAGE

**Handling Precautions:** Only dry metals should be added to molten bath. If working with molten metals, or exposed to fume or dust, use appropriate personal protective equipment.

**Storage Precautions:** Store product in a cool, dry area away from incompatible materials.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Silver grey solid metal	<b>Boiling Point:</b>	2595C (copper)
<b>Odor:</b>	Odorless	<b>Melting Point:</b>	1083C (copper)
<b>Specific Gravity:</b>	8.92 (copper)	<b>pH:</b>	Not applicable
<b>Vapor Pressure:</b>	Not applicable.	<b>Solubility in Water:</b>	Insoluble
<b>Vapor Density:</b>	(air=1) Not applicable.	<b>Viscosity:</b>	Consult product data sheet
<b>Evaporation rate:</b>	Not applicable	<b>Decomposition temp:</b>	Not available
<b>Flash point:</b>	Not flammable	<b>Flammability:</b>	Not applicable
<b>Auto-ignition temp:</b>	Not applicable		

## 10. STABILITY AND REACTIVITY

**General:** Stable.

**Conditions to Avoid:** Not established.

<b>Incompatible Materials:</b>	Avoid contact with mineral acids.
<b>Hazardous Decomposition / Combustion:</b>	Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
<b>Hazardous Polymerization:</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Carcinogenicity:

<b>National Toxicity Program (NTP):</b>	No
<b>Occupational Safety &amp; Health Administration (OSHA):</b>	No (29CFR1910.1025 (lead))
<b>U.N. International Agency for Research on Cancer (IARC):</b>	Yes (Lead and lead compounds are listed as possible carcinogens)

<b>LD50:</b>	Not established	<b>LC50:</b>	Not established
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Other: Lead can cause potential harm to the developing fetus.  
 Lead- may cause damage to organs through prolonged or repeated exposures.  
 Suspected human reproductive toxicant.

### Teratogenicity:

Developmental toxicity- rat-inhalation  
 Developmental toxicity – rat- oral  
 Reproductive toxicity- rat- inhalation  
 Effects on Newborn: biochemical and metabolic  
 Genotoxicity in vivo- rat-inhalation- cytogenetic analysis

RTECS# : OF7525000 (lead), VM3500000 (silver), XP7320000 (tin), GL5325000 (dusts) GL7900000 (fume) (copper)

## 12. ECOLOGICAL INFORMATION

Product not tested.

Lead: Bioaccumulation: Oncorhynchus kisutch – 2 weeks

Lead: Toxicity to fish – mortality LOEC –oncorhynchus mykiss (rainbow trout) – 1.190 mg/l – 96h

Lead: Toxicity to algae – mortality EC50 – Skeletonema costatum – 7.94 mg/l – 10d

An environmental hazard cannot be excluded in the event of unprofessional handling of lead containing product.

## 13. DISPOSAL CONSIDERATION

**Waste Disposal Method:** Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations.

## 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not regulated under US DOT (United States Department of Transportation). Not hazardous under shipping regulations.(ground/IATA/Ocean)

UN- none

North America Emergency Guide Book – Not applicable

## 15. REGULATORY INFORMATION

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.).



**WARNING:** This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer and/or birth defects (or other reproductive harm). For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

SARA 313 Listing - 40 CFR 372.65: Silver, Lead, Copper, Antimony

All ingredients are listed on the EPA TSCA Inventory.

EPA Genetic Toxicology Program - Lead CAS# 7439-92-1

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR).



Canadian WHMIS: D2A - Materials Causing Other Toxic Effects - Very Toxic Material (Chronic).

(lead)

Ingredients are listed on the Canadian Domestic Substance List.

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

Regulatory Information China:

GB/T 16483-2008, GB/T 17519-2013, Safety Data Sheets for Chemical Products

GB 30000.2-29-2013, Rules for classification and labeling of chemicals (GHS)

Decree No. 591: Regulations on the Control Over Safety of Hazardous Chemicals.

This product has been classified using the Chinese Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2007.

Malaysia:

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS).

This product has been classified in accordance with the Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.



**16. OTHER INFORMATION**

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

**Revised Date:**                MAY 30, 2019  
**Prepared by:**                Nancy Swarts, Indium Corporation of America  
**Approved by:**                Nancy Swarts, Indium Corporation of America

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**Alloy Table**

**Metal alloys**

Indalloy (metal mixture)	%Tin Sn	%Lead Pb	%Indium In	%Silver Ag	% Antimony Sb	RoHS 2* 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 (Sn5/Pb90/Ag5)	5	90	-	5	-	Yes**
163 (95.5Pb/2.5Ag/2Sn)	2	95.5	-	2.5	-	Yes**

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

**\*\* RoHS Exemption- 7a**

**No RoHS phthalates**