



This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux coating. A table is provided that lists all metal groupings. Review the information and compare to the product purchased. To better serve all of our customers Indium Corporation has generated one MSDS, for this product.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH NC-9 - TCI-2 FLUX COATING

SDS Number: SDS- 5910

Revised Date: 5 NOVEMBER 2018

Product Use: Industrial Use (mixture) - Flux Coated Metal Preform for soldering applications with dye coating - orange. Review alloy table for metal mixtures with the same colored flux.

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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
 Lead free products



Signal Word: Warning

Hazard statement(s)

- H317 May cause an allergic skin reaction
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- EUH208 Contains rosin. May produce an allergic reaction

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
- P305 + 351 IF IN EYES: Rinse continuously with water for several minutes (15 MINS)
- P501 Dispose of in accordance with applicable local/state and federal regulations. Consider recycling metal.

Lead/Cadmium containing products:



Signal Word: Warning

Hazard statement(s)

- H303 May be harmful if swallowed
- H317 May cause an allergic skin reaction
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H332 Harmful if inhaled (lead/cadmium)
- H351 Suspected of causing cancer (lead) (cadmium)
- H361 Suspected of damaging fertility or the unborn child (applicable to lead/cadmium containing product)
- H373 May cause damage to organs through prolonged or repeated exposure (applicable to lead containing product)
- H410 Very toxic to aquatic life, with long lasting harmful effects (lead)
- EUH201A Warning! Contains lead (applicable only to the products listed that contain lead) Review listing.
- EUH207: Warning! Contains cadmium. Dangerous fumes are formed during use. Comply with the safety instructions. (applicable only to the products listed that contain cadmium) Review listing.
- EUH208 Contains rosin. May produce an allergic reaction

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

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|-------------|--|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |
| P362 +P364 | Take off contaminated clothing and wash before reuse |
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Classification:

Sensitisation- skin-Category 1B

Sensitisation- respiratory-Category 1B

Reproductive toxicity- Category 2 (lead)

Specific target organ toxicity, repeated exposure- Category 2 (lead)

Carcinogenicity- Category 2 (lead/cadmium)

Hazardous to aquatic environment, long term hazard- Category 1 (lead/cadmium)

POTENTIAL HEALTH EFFECTS:

Eye Contact: Contact with fume from molten metal may cause irritation.

Ingestion: May be harmful if swallowed.

Inhalation: Inhalation of fume or dust may cause local irritation to the respiratory system. Rosin may cause occupational asthma. Product may contain lead or cadmium which may cause harm if inhaled.

Skin Contact: Normal handling should not cause any adverse health effects. May cause skin irritation. Hot molten metal may cause burns to the skin. Wear protective equipment when handling molten metal. Rosin may cause irritation or dermatitis.

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

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.

CADMIUM: Overexposure can cause damage to the lungs and kidneys. Cadmium is a toxic metal and ingestion or inhalation of fumes and dust can be harmful. Included effects may be obstructive lung disease such as emphysema, bone demineralization, micro-fractures and osteomalacia, gastrointestinal symptoms, rhinitis and discoloration of the teeth.

SILVER: Chronic skin contact or ingestion of silver dust, salts, or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes.



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

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

Warning: This product may contain lead. Lead may be harmful to your health. 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 #/EINECS |
|-------------|---------|-----------------------|
| TIN | * | 7440-31-5 /231-141-8 |
| LEAD | * | 7439-92-1/231-100-4 |
| CADMIUM | * | 7440-43-9 /231-152-8 |
| SILVER | * | 7440-22-4/231-131-3 |
| ROSIN | 1 - 4 | 65997-05-9 |
| PROPRIETARY | 0.1 - 2 | - |

N.E. = Not established

* See alloy table for metal mixtures

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 applicable
- Flammable Limits:** Flammable in the form of dust when exposed to heat or flame.
- Extinguishing Media:** Use extinguishers appropriate for the surrounding fire conditions. Use water spray, carbon dioxide, or foam. Do not allow water run-off to enter sewers or waterways.
- Special Fire Fighting Procedures:** Firefighters wear an approved self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

- Spill or Leak Procedures:** Wear HEPA (high efficiency particulate filter) filter respirator and other personal protective clothing. (See Exposure Controls/Personal Protection Section).
Clean up spill without generating or dispersing dust into the air. Vacuum solids instead of sweeping. Reduce airborne dust and prevent scattering by moistening with water. Place spilt material in a container and dispose of in accordance with applicable regulations.

7. HANDLING AND STORAGE

| | |
|-----------------------------|--|
| Handling | Avoid breathing vapors from heated material and dusts from powder form. Avoid contact with eyes, skin and clothing. Follow routine safe handling procedures. Use with adequate ventilation. |
| Precautions: | |
| Storage Precautions: | Keep away from heat and flame. Store in suitable, tightly capped, and labeled containers in cool dry, well-ventilated area. Empty containers may be hazardous as they contain product residue. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Components | % wt | CAS Registry # | PEL mg/m ³ | TLV-TWA mg/m ³ | TLV-STEL mg/m ³ |
|--------------------|---------|----------------|--------------------------|------------------------------|-------------------------------|
| TIN | * | 7440-31-5 (US) | 2 | 2 | - |
| | | (EU) | - | 2 | 4 |
| | | (Singapore) | 2 | - | - |
| | | (Canada) | - | 2 | 4 |
| LEAD | * | 7439-92-1 (US) | 0.05 | 0.05 | - |
| | | (EU) | - | 0.15 | - |
| | | (Canada) | - | 0.05 | - |
| | | (Singapore) | 0.15 | - | - |
| | | (Mexico) | - | 0.15 | - |
| | | (China) | - | 0.05(dust) 0.03(fume) | - |
| CADMIUM | * | 7440-43-9 (US) | 0.005 | 0.01 | - |
| | | (EU) | 0.025 | - | - |
| | | (Singapore) | 0.05 | - | - |
| | | (China) | - | 0.01 | 0.02 |
| | | (Canada) | - | 0.05 | 0.2 |
| SILVER | * | 7440-22-4 (US) | 0.01 | 0.1 | - |
| | | (EU) | - | 0.1 | - |
| | | (Canada) | - | 0.1 | 0.3 |
| | | (Mexico) | - | 0.1 | - |
| | | (Singapore) | 0.1 | - | - |
| ROSIN | 1 - 4 | 65997-05-9 | N.E. | N.E. | N.E. |
| | | (EU) | 0.05 | - | 0.15 |
| PROPRIETARY | 0.1 - 2 | | N.E. | N.E. | N.E. |

* Review alloy table for list of metal mixtures.

Engineering Controls: Local exhaust ventilation is recommended to control any fume or dust air contaminants. Keep exposures as low as possible. Avoid exposure to dust and fume containing lead and/or cadmium.

Personal protection:

Eyes: Chemical safety glasses/goggles and face shield with molten metal. Safety glasses should be worn at all times.

Respirator: An approved or compliant marked air-purifying respirator with a fume/dust HEPA type chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated. Warning: Air purifying respirators do not protect the worker in oxygen-deficient atmospheres.

Skin: Wear protective gloves, clothing such as lab coat, coveralls, apron and boots.

Other: Eye-wash fountain/shower in work area. Avoid the use of contact lenses in high fume and dust areas. Regular shower facilities and industry laundry service may be required. Review regulations regarding lead and cadmium proper work practices, if applicable.

Work/Hygienic Maintain good housekeeping. Clean up spills immediately. Good personal hygiene is essential especially when working with lead and cadmium products.
Avoid eating, smoking or drinking in the lead/cadmium work areas. Wash hands and face thoroughly with soap and water immediately upon leaving the work area and before eating.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, gray metal with orange colored coating

Boiling Point: Not available

Odor: Odorless

Melting Point: See Table

Specific Gravity: See Table

pH: Not applicable

Vapor Pressure: Not established

Solubility in Water: Insoluble

Vapor Density: (air=1) Not applicable.

10. STABILITY AND REACTIVITY

General: Stable.

Conditions to Avoid: Not established

Incompatible Materials: Not established

Hazardous Decomposition / Combustion: Toxic fumes are emitted at elevated temperatures.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP(National Toxicity Program): No
 OSHA (Occupational Safety & Health Administration): Yes, Cadmium is listed as a possible carcinogen.
 IARC (International Agency for Research on Cancer): Yes – lead and lead compounds and cadmium and cadmium compounds are listed as possible carcinogens.

LD50: Not established.**LC50:** Not established.

Other: Prolonged or repeated exposure to rosin flux fume may cause workers to develop occupational asthma. Lead and cadmium can cause potential harm to the developing fetus.

NIOSH RTECS# EU9800000 Cadmium

NIOSH RTECS# OF7525000 Lead

NIOSH RTECS# XP7320000 Tin

NIOSH RTECS# VM3500000 Silver

Product mixtures not tested.

12. ECOLOGICAL INFORMATION

Product mixtures not tested.

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

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. Do not dispose of down any drain or waterway.

14. TRANSPORT INFORMATION

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

North American Emergency Guide Book – Not applicable

UN – none

Marine Pollutant: No

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.).

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).
D1A – Materials causing immediate and serious toxic effects –Very Toxic Material (cadmium)

D2B Materials Causing Other Toxic Effects -irritant

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

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

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). (GHS)

In China:

Decree No. 591: Regulations on the Control over Safety of Hazardous Chemicals
GB 30000.2-29-2013, Rules for classification and labeling of chemicals. (GHS)
GB/T 16483-2008, GB/T 17517-2013

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

New Jersey Right To Know – Tin #1858, Silver #1669, Lead #1096, Copper #0528, Cadmium #0305 and Indium #1025



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

SARA 313 Listing - 40 CFR 372.65 – Lead, Silver, Cadmium

EPA Genetic Toxicology Program – Lead CAS# 7439-92-1, Cadmium CAS# 7440-43-9

Ingredient is listed on the USEPA TSCA Inventory.

Ingredients are listed on the Canadian Domestic Substance List.

Ingredients are listed on the Philippines Inventory of Chemicals

Ingredients are listed on the Korean Existing Inventory of Chemicals.

Ingredients are listed on the China Inventory of Chemicals.

ALLOY TABLE

% Metal Alloy Content Only

| INDALLOY/METAL MIXTURE | RoHS 2/3** Compliance | %TIN Sn | %SILVER Ag | %LEAD Pb | %CADMIUM Cd | SPECIFIC GRAVITY |
|------------------------|-----------------------|---------|------------|-----------|-------------|------------------|
| 106 (Sn63/Pb37) | No | 59-62.3 | - | 34.8-36.6 | - | 8.417 |
| (Sn50/Cd18/Pb32) | No | 47-49.5 | - | 30-31.6 | 16.9-17.8 | 8.515 |
| (Sn96/Ag4) | Yes | 90-94.9 | 3.8-3.96 | - | - | 7.4 |

RoHS 2 (2011/65/EU)

RoHS 3 = products do not contain any listed phthalates

16. OTHER INFORMATION

| | | |
|----------------------------|--------------------|---|
| HMIS Hazard Rating: | Health: | 2 |
| | Fire: | 1 |
| | Reactivity: | 0 |

Revised Date: 5 NOVEMBER 2018

Prepared by: Nancy Swarts, Indium Corporation of America

Approved by: Nancy Swarts, Indium Corporation of America

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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.