SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH NC-SMQ57 FLUX VEHICLE
SDS Number: SDS-IN 432
Revised Date: 31 AUGUST 2018

Product Use: Industrial Use - No-clean solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder. See alloy table for metal mixtures with the same flux.

MANUFACTURER:

In America:
The Indium Corporation of America®.
34 Robinson Rd., Clinton, NY 13323
Information: (315) 853-4900
nswarts@indium.com

EMERGENCY PHONE:
CHEMTREC 24 hrs.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887

In Europe:
The Indium Corporation of America® (European Operations)
7 Newmarket Ct
Kingston, Milton Keynes, UK, MK 10 OAG
Information: +44 [0] 1908 580400

In China:
Indium Corporation (Suzhou), Co., Ltd.
No. 428 Xinglong Street
Suchun Industrial Square
Unit No. 14-C
Jiangsu Province, China 215126
Information: (86) 512-6283-4900

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

http://www.indium.com
2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:  
× Eye  × Inhalation  × Skin  × Ingestion

CARCINOGEN LISTED IN:  
NTP  IARC  OSHA  × Not Listed

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 + P341  IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351  IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Lead 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
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.
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
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P305 + P351 IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Classification:
Specific target organ toxicity - repeated exposure – Category 2
Carcinogenicity (Category 2) (lead)
Reproductive toxicity (Category 2) (lead)
Skin sensitization - Category 1B
Respiratory sensitization - Category 1B
Acute aquatic toxicity – Category 1 for lead containing products
Chronic aquatic toxicity – Category 1 for lead containing products

POTENTIAL HEALTH EFFECTS:

Eye Contact: Contact with material at room temperature or fume from material at typical re-flow temperatures over 100°C may cause eye irritation.

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

Inhalation: Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. Contains rosin that has been known to cause occupational asthma.

Skin Contact: May cause skin irritation or dermatitis.

Chronic:
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.

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.

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

WARNING: This product can expose you to chemicals including [lead] 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. US Federal law prohibits the use of leaded solder in making joints or fittings of any private or public water supply system. Keep out of the reach of children. Not intended for household use.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>% wt</th>
<th>CAS Registry #</th>
<th>EINECS#</th>
<th>PEL (mg/m³)</th>
<th>TLV-TWA (mg/m³)</th>
<th>TLV- STEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIN</td>
<td>*</td>
<td>7440-31-5/231-141-8 (US)</td>
<td>2</td>
<td>2</td>
<td>N.E.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(EU)</td>
<td></td>
<td></td>
<td>N.E.</td>
<td>2</td>
</tr>
</tbody>
</table>
INDALLOY WITH NC-SMQ57

<table>
<thead>
<tr>
<th>ALLOY TABLE</th>
</tr>
</thead>
</table>

### INDALLOY (METAL MIXTURE)

<table>
<thead>
<tr>
<th>%TIN Sn</th>
<th>%SILVER Ag</th>
<th>%LEAD Pb</th>
<th>RoHS 2/3 Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>104(Sn62)</strong> (Sn62/Pb36/Ag2)</td>
<td>51.9-57.5</td>
<td>1.2-1.8</td>
<td>29.9-33.2</td>
</tr>
<tr>
<td><strong>106(Sn63)</strong> (Sn63/Pb37)</td>
<td>52.3-58</td>
<td>-</td>
<td>30.7-34</td>
</tr>
<tr>
<td><strong>132</strong> (95Sn/5Ag)</td>
<td>78.8-87.4</td>
<td>4.2-4.6</td>
<td>-</td>
</tr>
<tr>
<td><strong>155</strong> (90Pb/5Ag/5Sn)</td>
<td>4.2-4.6</td>
<td>4.2-4.6</td>
<td>74.7-82.8</td>
</tr>
<tr>
<td><strong>228</strong> (88Pb/10Sn/5Ag)</td>
<td>8.3-9.2</td>
<td>1.7-1.8</td>
<td>73.0-81.0</td>
</tr>
</tbody>
</table>

RoHS 2 = (2011/65/EU)
RoHS 3 = products do not contain any listed phthalates

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.

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### 5. FIRE FIGHTING MEASURES

- **Flash Point:** Not established.
- **Method:** Not established.
- **Auto-ignition Temperature:** Not established.
- **Flammable Limits:** Limits not established.
- **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.

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### 6. ACCIDENTAL RELEASE MEASURES

- **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. Dispose contaminated cloth rags or paper towels following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations.

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### 7. HANDLING AND STORAGE

- **Handling Precautions:** 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.

- **Storage Precautions:** Store product in tightly capped original containers in a cool, dry area. Refer to product label for specific storage temperature requirements. Rotate stock to ensure use before expiration date on the label.

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### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- **Engineering Controls:** Use only with production equipment (stencil printers and reflow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that they’re TLVs are not exceeded.

- **Personal protection:**
  - **Eyes:** Chemical safety glasses/goggles. Face shield for splash hazards.
  - **Respirator:** A NIOSH approved or EU compliant CE marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances (i.e. when re-flowing manually on a plate instead of a ventilated re-flow furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.
  - **Skin:** Compatible chemical resistant gloves.
Other: Lab coat, eyewash fountain in work area. Avoid the use of contact lenses in high fume areas.

Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately. DO NOT allow rags or paper towels contaminated with solder paste to accumulate in the work area. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Grey colored paste.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild characteristic odor.</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble (paste)</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

General: Stable.

Conditions to Avoid: Not established.

Incompatible Materials: Avoid contact with acids, bases or oxidizing agents.

Hazardous Decomposition / Combustion: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: Yes- 2B reasonably anticipated to cause cancer

OSHA: 1910-1025

IARC: Yes Lead and lead compounds are listed as possible carcinogens.

LD50: Not established.  LC50: Not established.

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

RTECS: OF7525000 (lead)

Lead

reproductive toxicity – rat – inhalation
reproductive toxicity – rat – oral
reproductive toxicity – mouse-oral

Teratogenicity

Developmental toxicity – rat- inhalation
Developmental toxicity- rat- oral
Suspected human reproductive toxicant

GHS- Specific target organ toxicity- repeated exposure

May cause damage to organs through prolonged or repeated exposure
12. ECOLOGICAL INFORMATION

Product mixture not tested.

Lead:
Toxicity to fish:
Rainbow trout- 1.19mg/l-96h
LC50 micropterus dolomieui- 2.2 mg/l-96h
Mortality NOEC-salvelinus fontinalis-1.7 mg/l-10d
Toxicity to algae
Mortality EC50-skeletonema costatum-7.94mg/l-10d

An environmental hazard cannot be excluded in the event of unprofessional handling, use and or disposal of this product. Contains a substance (lead) that is very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATION

Waste Disposal Method: Scrap metal alloy usually has value. Contact a commercial reclamer 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 international regulations and requirements.
Not regulated  (US Department of Transportation).
UN – NONE
MARINE POLLUTANT: NO

Not regulated for ground, IATA, IMDG- non hazardous

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).


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

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. All ingredients are listed on the China Chemical Inventory

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

WARNING: This product can expose you to chemicals including [lead] 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  CAS# 7439-92-1   Silver  CAS# 7440-22-4   Proprietary Ingredient <1% listed

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

All ingredients are listed on the EPA TSCA Inventory.

16. OTHER INFORMATION

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

   Revised Date: 31 AUGUST 2018
   Prepared by: Nancy Swarts, Indium Corporation of America
   Approved by: Nancy Swarts, Indium Corporation of America

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