This safety data sheet represents a family grouping of all metal mixes that are blended with the same flux known as NC-SMQ 92H. A table is provided, that lists all metal groupings. To better serve all of our customers Indium Corporation has generated one SDS, for this product, to be used within the United States as well as internationally. Some of the regulatory information contained within may not be applicable to the customer’s individual state or country. Unless otherwise stated the health and safety information provided within is applicable to all products.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH NC-SMQ92H FLUX VEHICLE
SDS Number: SDS-IN 688          Revised Date: 10 JUNE 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 mixture combinations.

MANUFACTURER:

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

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

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

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

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

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

CARCINOGEN LISTED IN:
- NTP
- IARC
- OSHA
- Not Listed

See Section 11

GHS: Mixture

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  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:

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 (lead)
H361  Suspected of damaging fertility or the unborn child
H373  May cause damage to organs through prolonged or repeated exposure
EUH201A  Warning! Contains lead
H410  Very toxic to aquatic life with long lasting effects
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  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)

Classification:
Acute toxicity, oral- Category 5 (lead)
Sensitization, skin- Category1B
Sensitization, inhalation- Category 1b
Carcinogenicity- Category 2 (lead)
Reproductive toxicity- Category 1B (lead)
Specific target organ toxicity, repeated exposure- Category 2 (lead)
Hazardous to aquatic environment, long term hazard- Category 1 (lead)

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 (lead).
Inhalation: Vapors or fumes from this material at typical re-flow temperatures over 100°C may cause local irritation to the respiratory system. Rosin may 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.

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.

WARNING: This product can expose you to chemicals including [lead] which is known to the State of California to cause cancer, and 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 solders in making joints and fittings in any private or public water supply system. Keep out of the reach of children.
### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>% wt</th>
<th>CAS Registry #/EINECS#</th>
<th>PEL mg/m³</th>
<th>TLV-TWA mg/m³</th>
<th>TLV-STELO mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIN        *</td>
<td>7440-31-5/231-141-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(US)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EU)</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Canada)</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Singapore)</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>COPPER     *</td>
<td>7440-50-8/231-159-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(US)</td>
<td>0.1</td>
<td>0.2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EU)</td>
<td>-</td>
<td>0.2 (fume)</td>
<td>2 (dust)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Canada)</td>
<td>-</td>
<td>0.2</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Singapore)</td>
<td>0.2(fume)</td>
<td>1(dust)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Mexico)</td>
<td>0.2</td>
<td>-</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(China)</td>
<td>-</td>
<td>0.2(fume)</td>
<td>0.6(fume)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1(dust)</td>
<td>2.5(dust)</td>
<td></td>
</tr>
<tr>
<td>LEAD       *</td>
<td>7439-92-1/231-100-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(US)</td>
<td>0.05</td>
<td>0.05</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EU)</td>
<td>-</td>
<td>0.15</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Canada)</td>
<td>0.05</td>
<td>0.05</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Singapore)</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Mexico)</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
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</tr>
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</table>
SILVER

* 7440-22-4/231-131-3

<table>
<thead>
<tr>
<th>Region</th>
<th>Limit (dust)</th>
<th>Limit (fume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(China)</td>
<td>0.05</td>
<td>-</td>
</tr>
<tr>
<td>(US)</td>
<td>0.01</td>
<td>0.1</td>
</tr>
<tr>
<td>(EU)</td>
<td>-</td>
<td>0.1</td>
</tr>
<tr>
<td>(Canada)</td>
<td>-</td>
<td>0.1</td>
</tr>
<tr>
<td>(Singapore)</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>(Mexico)</td>
<td>0.1</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROSIN</th>
<th>3.0-4.0</th>
<th>65997-05-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>(EU)</td>
<td>0.05</td>
<td>N.E.</td>
</tr>
</tbody>
</table>

POLYglycol ether

2.5-6 9038-95-3 N.E. N.E. N.E.

N.E. = Not established  * See alloy table

**ALLOY TABLE**

<table>
<thead>
<tr>
<th>Indalloy (Metal)</th>
<th>%TIN Sn</th>
<th>%SILVER Ag</th>
<th>%COPPER Cu</th>
<th>%LEAD Pb</th>
<th>RoHS 2/3* Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 (Sn62.6/Pb37/Ag 0.4)</td>
<td>52.0-57.6</td>
<td>0.33-0.37</td>
<td>-</td>
<td>30.7-34.0</td>
<td>No</td>
</tr>
<tr>
<td>104 (Sn62/Pb36/Ag 2)</td>
<td>51.9-57.5</td>
<td>1.2-1.8</td>
<td>-</td>
<td>29.9-33.2</td>
<td>No</td>
</tr>
<tr>
<td>106 (Sn63/Pb37)</td>
<td>52.3-58</td>
<td>-</td>
<td>-</td>
<td>30.7-34</td>
<td>No</td>
</tr>
<tr>
<td>121 (Sn96.5/Ag3.5)</td>
<td>80.1-88.8</td>
<td>2.9-3.2</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>241 (SAC387) (Sn95.5/Ag3.8/ Cu0.7)</td>
<td>79.3-87.9</td>
<td>3.2-3.5</td>
<td>0.58-0.64</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>252 (Sn95.5/Ag3.9/ Cu0.6)</td>
<td>79.3-87.9</td>
<td>3.2-3.6</td>
<td>0.50-0.55</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>256 (SAC305) (Sn96.5/Ag3/Cu 0.5)</td>
<td>80.1-88.8</td>
<td>2.5-2.8</td>
<td>0.42-0.46</td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</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.

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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.

---

**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.

---

**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.

---

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering Controls:** Use only with production equipment (such as stencil printers and re-flow furnaces) with adequate ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that the permissible exposure levels are not exceeded. Use exhaust ventilation.

**Personal protection:**

**Eyes:** Chemical safety glasses/goggles. Face shield for splash hazards.

**Respirator:** An authority approved or compliant 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. Latex gloves not recommended.
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. When working with lead containing products follow standard lead work practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</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>4 - 8 flux</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</td>
<td>(air=1) Not applicable.</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Stable.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>Not established.</td>
</tr>
<tr>
<td>Incompatible Materials</td>
<td>Avoid contact with acids, bases or oxidizing agents.</td>
</tr>
<tr>
<td>Hazardous Decomposition / Combustion</td>
<td>Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenicity</td>
<td>NTP: No</td>
</tr>
<tr>
<td></td>
<td>OSHA: No</td>
</tr>
<tr>
<td></td>
<td>IARC: Yes</td>
</tr>
<tr>
<td>Lead and lead compounds are listed as possible carcinogens.</td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Not established.</td>
</tr>
<tr>
<td>LC50</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

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

Lead- OSHA Hazards- carcinogen/target organ effect/harmful by ingestion/teratogen.

12. ECOLOGICAL INFORMATION

Product 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 reclaimer for recycling. Otherwise, dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the waste assessment rules.

14. TRANSPORT INFORMATION

Transport in accordance with applicable international regulations and requirements.

Not regulated ( US Department of Transportation).
Non hazardous under shipping regulations (all modes).
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 thereunder (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 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
- Lead CAS# 7439-92-1
- Silver CAS# 7440-22-4
- Copper CAS# 7440-50-8

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

All ingredients are listed on the EPA TSCA Inventory.

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).

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 Singapore.

This product has been classified in accordance with Mexican regulations NOM-018-STPS-2015 (NMX-R-019-SCFI-2011) 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).

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.

All ingredients are listed on the Canadian Domestic Substance List.

16. OTHER INFORMATION
HMIS Hazard Rating:  
- Health: 2
- Fire: 0
- Reactivity: 0

Revised Date: 10 JUNE 2018
Prepared by: Nancy Swarts, Indium Corporation of America
Approved by: Nancy Swarts, Indium Corporation of America

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