1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH RMA-SMQ05 FLUX VEHICLE

SDS Number: SDS-IN 370  Revised Date: 25 JANUARY 2015

Product Use: Industrial Use- Mildly activated solder paste consisting of a flux vehicle blended with an 83-92 % pre-alloyed metal powder.

MANUFACTURER:

In America:
The Indium Corporation of America
1676 Lincoln Ave., Utica NY  13502
Information: (315) 853-4900
nswarts@indium.com

In Europe:
Indium Corporation of Europe
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

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

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
2. HAZARDS IDENTIFICATION

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

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

GHS:

Signal Word: Warning

Hazard statement(s)
- H303 May be harmful if swallowed
- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 May cause respiratory irritation
- H351 Suspected of causing cancer (lead)
- H361 Suspected of damaging fertility or the unborn child (applicable to lead 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 effects (lead)
- EUH201A Warning! Contains lead (applicable only to the products listed that contain 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
- 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 + 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:
- Skin irritant- Category 2
- Specific target organ toxicity- repeated exposure – Category 2
- Carcinogenicity (Category 2) (lead)
- Reproductive toxicity (Category 2 ) (lead)
- Acute aquatic toxicity – Category 1 for lead containing products
- Chronic aquatic toxicity – Category 1 for lead containing products
- For product containing both lead and antimony the Acute and Chronic Classification is (Category 2)
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 alloy powder and organic chemicals.

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

**Skin Contact:** May cause skin irritation.

**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 contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (lead)

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

ALLOY TABLE

<table>
<thead>
<tr>
<th>INDALLOY</th>
<th>%TIN Sn</th>
<th>%SILVER Ag</th>
<th>%LEAD Pb</th>
<th>RoHS2 Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>51.9-57.5</td>
<td>1.2-1.8</td>
<td>29.9-33.2</td>
<td>No</td>
</tr>
<tr>
<td>(Sn62/Pb36/Ag2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>52.3-58</td>
<td>-</td>
<td>30.7-34</td>
<td>No</td>
</tr>
<tr>
<td>(Sn63/Pb37)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>80.1-88.8</td>
<td>2.9-3.2</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>(96.5Sn/3.5Ag)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RoHS 2- (2011/65/EU)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>% wt</th>
<th>CAS Registry #</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 (US)</td>
<td>2</td>
<td>2</td>
<td>-</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.

5. FIRE FIGHTING MEASURES

**Flash Point:** Not established. **Method:** Not established.
### 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.

### 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 (stencil printers and re-flow furnaces) with Adequate exhaust ventilation and other safety features specifically designed for use with solder paste. Control concentration of all components so that they're PEL/TLVs are not exceeded.

**Personal protection:**

<table>
<thead>
<tr>
<th>Part</th>
<th>Protection Required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eyes</strong></td>
<td>Chemical safety glasses/goggles. Face shield for any splash hazards.</td>
</tr>
<tr>
<td><strong>Respirator</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Skin</strong></td>
<td>Compatible chemical resistant gloves.</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Lab coat, eyewash fountain in work area. Avoid the use of contact lenses in high fume areas.</td>
</tr>
<tr>
<td><strong>Work/Hygienic</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Grey colored paste.</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Mild characteristic odor.</td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Vapor Pressure</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Boiling Point</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Melting Point</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Solubility in Water</strong></td>
<td>Insoluble (paste)</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 / Hazardous Polymerization:
Hazardous Decomposition: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity:
- NTP: No (National Toxicology Program)
- OSHA: No (Occupational Safety & Health Administration)
- IARC: Yes (International Agency for Research on Cancer)

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

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 dolomieu- 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 Special Waste Regulations.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements. Not regulated (Department of Transportation). Non-hazardous under shipping. 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).


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

California PROP 65: WARNING:
This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm).

This product has been classified using the Chinese Occupational Exposure Limit for Hazardous Agents in the Workplace, GBZ2-2002.

This product has been classified in accordance with the Mexican regulations: NOM-180-STPS-2000 and NOM-010-STPS-1999.

SARA 313 Listing - 40 CFR 372.65
Lead CAS# 7439-92-1 Silver CAS# 7440-22-4

EPA Genetic Toxicology Program – Lead CAS# 7439-92-1
All ingredients are listed on the EPA TSCA Inventory.
All ingredients are listed on the Canadian Domestic Substance List.
EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

$X_n$

**Risk Phrases:**

- R20/21/22 Harmful by inhalation and if swallowed
- R36/37/38 Irritating to eyes, respiratory system and skin
- R42/43 May cause sensitization by inhalation and skin contact
- R33 Danger of cumulative effects (lead)
- R40 Limited evidence of carcinogenic effect (lead)
- R48 Danger of serious damage to health by prolonged exposure (lead)
- R61 May cause harm to the unborn child (lead)
- R50/53 Very toxic to aquatic organisms and may cause long-term effects in the aquatic environment (lead)

**Safety Phrases:**

- S20/21 When using do not eat, drink or smoke
- S23 Do not breathe fumes
- S24/25 Avoid contact with skin and eyes
- S28 After contact with skin wash immediately with plenty of soap and water
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection
- S62 If swallowed, do not induce vomiting seek medical advice immediately and show container or label
- S7 Keep container tightly closed

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>HMIS Hazard Rating:</th>
<th>Health: 2</th>
<th>Fire: 1</th>
<th>Reactivity: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revised Date:</td>
<td>25 JANUARY 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepared by:</td>
<td>Nancy Swarts, Indium Corporation of America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved by:</td>
<td>Nancy Swarts, Indium Corporation of America</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.