



INDIUM CORPORATION OF AMERICA®EUROPE®ASIA-PACIFIC®

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDALLOY WITH WMA-SMQ65A FLUX VEHICLE

MSDS Number: MSDS-IN 211 **Revised Date:** 13 JUNE 2003

Product Use: Water-soluble mildly activated solder paste consisting of a flux vehicle blended with 83-92 weight percent prealloyed metal powder.

MANUFACTURER:

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2. COMPOSITION / INFORMATION ON INGREDIENTS

| Components | % wt | CAS Registry # | OSHA PEL mg/m ³ | TLV-TWA mg/m ³ | TLV-STEL mg/m ³ |
|---------------|-------|----------------|-------------------------------|------------------------------|-------------------------------|
| TIN | 0-100 | 7440-31-5 (US) | 2 | 2 | N.E. |
| | | (EU) | N.E. | 2 | 4 |
| | | (Canada) | N.E. | 2 | 4 |
| SILVER | 0-100 | 7440-22-4 (US) | 0.01 | 0.1 | N.E. |
| | | (EU) | N.E. | 0.1 | N.E. |
| | | (Canada) | N.E. | 0.1 | 0.3 |
| | | (Mexico) | N.E. | 0.1 | N.E. |

| | | | | | |
|--------------------|---------|-----------------|------|------|------|
| BISMUTH | 0-100 | 7440-69-9 (US) | N.E. | N.E. | N.E. |
| | | (EU) | N.E. | N.E. | N.E. |
| | | (Canada) | N.E. | N.E. | N.E. |
| ANTIMONY | 0-100 | 7440-36-0 (US) | 0.5 | 0.5 | N.E. |
| | | (EU) | 0.5 | N.E. | N.E. |
| | | (Canada) | N.E. | 0.5 | 1.5 |
| | | (Mexico) | N.E. | 0.5 | N.E. |
| LEAD | 0-100 | 7439-92-1 (US) | 0.05 | 0.05 | N.E. |
| | | (EU) | N.E. | 0.15 | N.E. |
| | | (Canada) | 0.05 | 0.05 | N.E. |
| | | (Mexico) | N.E. | 0.15 | N.E. |
| ALCOHOLS | 1.0-2.0 | 67762-41-8 (US) | N.E. | N.E. | N.E. |
| | | (EU) | N.E. | N.E. | N.E. |
| | | (Canada) | N.E. | N.E. | N.E. |
| PROPRIETARY | 7-15 | | N.E. | N.E. | N.E. |

Symbol: X_n Risk Phrases: R20/21/22, R36/37/38
N.E. = Not established EU = European Union Occupational Exposure Limits

3. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:

Eye
 Inhalation
 Skin
 Ingestion
NTP
 IARC
OSHA
Not Listed

Carcinogen listed in

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 may contain metal alloy powder and organic chemicals. Harmful if swallowed. May cause burns to the digestive tract 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.

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 mild skin irritation. ANTIMONY has been known to cause dermatitis.

Chronic: 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.

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

BISMUTH: May cause kidney damage.

LEAD: Prolonged exposure to vapors or fumes at higher temperatures may cause respiratory irritation and systematic lead poisoning.

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

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

ALLOY TABLE

| INDALLOY | %TIN | %LEAD | %SILVER | %BISMUTH | %ANTIMONY |
|-------------------|-------------|--------------|----------------|-----------------|------------------|
| 42 | 28.0-31.3 | 17.0-18.4 | - | 38-42.3 | - |
| 72 | 28.0-31.0 | 28.0-31.0 | - | 26.0-29.0 | - |
| 104 (Sn62) | 51.9-57.5 | 29.9-33.2 | 1.2-1.8 | - | - |
| 106 (Sn63) | 52.3-58.0 | 30.7-34.0 | - | - | - |
| 109 | 49.8-55.2 | 33.2-36.8 | - | - | - |
| 118 | 74.7-82.8 | 8.3-9.2 | - | - | - |
| 121 | 80.1-88.8 | - | 2.9-3.2 | - | - |
| 132 | 78.9-87.4 | - | 4.2-4.6 | - | - |
| 133 | 78.9-87.4 | - | - | - | 4.2-4.6 |
| 143 | - | 74.7-82.8 | - | - | 8.3-9.2 |
| 233 | 4.2-4.6 | 70.6-78.2 | - | - | 8.3-9.2 |
| 240 | 38.2-42.3 | 38.2-42.3 | - | 6.6-7.4 | - |
| 281 | 34.9-38.6 | - | - | 48.1-53.4 | - |

4. FIRST AID MEASURES

- Eye Contact:** Hold eyelids apart and flush eyes with plenty of 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.
- 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. 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 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. |
| 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, 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. 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

| | | | |
|--------------------------|---------------------------|-----------------------------|-----------------------|
| Appearance: | Grey colored paste. | Boiling Point: | Not applicable. |
| Odor: | Mild characteristic odor. | Melting Point: | Not applicable |
| Specific Gravity: | Not applicable. | pH: | Not applicable |
| Vapor Pressure: | Not applicable. | Solubility in Water: | water soluble (paste) |
| Vapor Density: | (air=1) Not applicable. | | |

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: No | |
| | OSHA: No | |
| | IARC: Yes | Lead and lead compounds are listed as possible carcinogens. |
| LD50: | Not established. | LC50: Not established. |

Other: Chronic Toxicity: Lead can cause potential harm to the developing fetus.

12. ECOLOGICAL INFORMATION

This section is subject to future development.

Biodegradability: Data not established.

Aquatic Toxicity: Data not established.

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). North American Emergency Guide Book – 2000 (Not classified)

15. REGULATORY INFORMATION

The information in this Material 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.).

The information in this Material Safety Data Sheet meets the requirements of the EU under Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP 2) Regulation 6.

This product has been classified in accordance with the hazard criteria of the Commission Directive 91/155/EEC and EH40.

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

WHMIS: D2A - Materials Causing Other Toxic Effects - Very Toxic Material (Chronic). Otherwise may not be classified.

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

This product has been classified in accordance with Mexican Standards NOM-018-STPS-2000 and NOM-010-STPS-1999.

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).

SARA 313 Listing - 40 CFR 372.65:

Silver CAS# 7440-22-4 Antimony CAS# 7440-36-0 Lead CAS# 7439-92-1

All ingredients are listed on the EPA TSCA Inventory.

Most of the ingredients are listed on the Canadian Domestic Substance List.

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

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product

X_n

Risk Phrases:

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed

R36/37/38 Irritating to eyes, respiratory system and skin

Safety Phrases:

S20/21 When using do not eat, drink or smoke

| | |
|-----------|--|
| S22 | Do not breathe dust |
| S23 | Do not breathe fumes |
| S24/25 | Avoid contact with skin and eyes |
| S27 | Take off immediately all contaminated clothing |
| 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

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

Revised Date: 13 JUNE 2003

Prepared by: Nancy Swarts, Indium Corporation of America

Approved by: Nancy Swarts, Indium Corporation of America

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