1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:   WS3401-A FLUX
MSDS Number:        MSDS-5403M
Revised Date:       6 MAY 2011
Product Use:        Industrial Use (mixture) - Flux mixture for solder related use.

MANUFACTURER:

In America:
The Indium Corporation of America
1676 Lincoln Ave., Utica NY 13502
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nswarts@indium.com

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Kingston, Milton Keynes, UK, MK 10 OAG
Information: +44 [0] 1908 580400

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Indium Corporation (Suzhou), Co., Ltd.
No. 428 Xinglong Street
Suzhou Industrial Park
Suchun Industrial Square
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29 Kian Teck Avenue
Singapore 628908
Information: +65 6268-8678

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

<table>
<thead>
<tr>
<th>PRIMARY ROUTES OF ENTRY:</th>
<th>Carcinogen listed in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye</td>
<td>⊗</td>
</tr>
<tr>
<td>Inhalation</td>
<td>⊗</td>
</tr>
<tr>
<td>Skin</td>
<td>⊗</td>
</tr>
<tr>
<td>Ingestion</td>
<td>⊗</td>
</tr>
<tr>
<td>NTP</td>
<td></td>
</tr>
<tr>
<td>IARC</td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
</tr>
<tr>
<td>⊗Not Listed</td>
<td></td>
</tr>
</tbody>
</table>

**GHS:**

![Signal Word: Danger]

<table>
<thead>
<tr>
<th>Hazard statement (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H225</td>
</tr>
<tr>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>H303</td>
</tr>
<tr>
<td>May be harmful if swallowed</td>
</tr>
<tr>
<td>H315</td>
</tr>
<tr>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
</tr>
<tr>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H319</td>
</tr>
<tr>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
</tr>
<tr>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precautionary statement (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P210</td>
</tr>
<tr>
<td>Keep away from heat/sparks/flames/hot surfaces – No smoking</td>
</tr>
<tr>
<td>P261</td>
</tr>
<tr>
<td>Avoid breathing dust/fume/gas/mist/vapors/spray</td>
</tr>
<tr>
<td>P280</td>
</tr>
<tr>
<td>Wear protective gloves/eye protection/face protection</td>
</tr>
<tr>
<td>P264</td>
</tr>
<tr>
<td>Wash..thoroughly after handling</td>
</tr>
<tr>
<td>P270</td>
</tr>
<tr>
<td>Do not eat, drink or smoke when using this product</td>
</tr>
</tbody>
</table>

**POTENTIAL HEALTH EFFECTS:**

- **Eye Contact:** Causes irritation to the eyes. Liquid may cause damage if not removed.
- **Ingestion:** May cause irritation. May be harmful if swallowed.
- **Inhalation:** May cause irritation. Vapours may cause drowsiness and dizziness.
- **Skin Contact:** May cause skin irritation or sensitization and may cause dryness upon contact.

**NOTE:** The Indium Corporation does not recommend, manufacture, market or endorse any of it's product's for human consumption.
3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>% wt</th>
<th>CAS Registry #/EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOPROPANOL</td>
<td>10 - 20</td>
<td>67-63-0/200-661-7</td>
</tr>
<tr>
<td>POLYGLYCOL ETHER</td>
<td>25 - 35</td>
<td>9038-95-3</td>
</tr>
<tr>
<td>PROPRIETARY ACTIVATORS</td>
<td>45 - 65</td>
<td>-</td>
</tr>
</tbody>
</table>

PRODUCT DOES NOT CONTAIN ANY REPORTABLE EU SUBSTANCE OF VERY HIGH CONCERN (SVHC)

Symbol: XI, F  
Risk Phrases: R11, R36/37/38, R43  
N.E. = Not established

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: 15C (59F)  
Method: Not available

Auto-ignition Temperature: Not established.

Flammable Limits: Limits not established. Flammable

Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions.

Special Fire Fighting Procedures: Firefighters must wear approved self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Wear a respirator and appropriate Personal Protective (See Exposure Controls/Personal Protective Section). Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Ventilate area. Keep unnecessary personnel away from the area. Dispose of 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. Avoid breathing vapors from heated material. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Ground containers.

Storage Precautions: Store product in tightly capped original containers in a cool, dry area. Keep away from heat and flame. Store away from incompatible materials. Empty containers may be hazardous as they contain product residue. Ambient temperatures.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components | % wt | CAS Registry # | PEL mg/m³ | TLV-TWA mg/m³ | TLV-STEL mg/m³
--- | --- | --- | --- | --- | ---
ISOPROPANOL | 10 - 20 | 67-63-0 (US) | 980 | 983 | 1225
  (PROPAN-2-OL) | (EU) | - | 999 | 1250
  (Canada) | - | 983 | 1228
  (Mexico) | 980 | - | 1225
  (China) | - | 350 | 700
  (Singapore) | 983 | - | 1230
POLYGLYCOL ETHER | 25 - 35 | 9038-95-3 | N.E. | N.E. | N.E.
PROPRIETARY ACTIVATORS | 45 - 65 | - | N.E. | N.E. | N.E.

Engineering Controls: Good general ventilation or chemical hood should be sufficient to control any contaminate levels especially during heating applications.

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 where airborne concentrations are expected to be elevated or if engineering controls are not available.

Skin: Compatible chemical resistant gloves. Protective outer garment, apron and sleeves as appropriate.

Other: Eyewash fountain in work area. Avoid the use of contact lenses in high fume/splash areas.

Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately.

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: Flux yellow liquid

Boiling Point: Not available

Odor: mild odor characteristic

Melting Point: Not applicable

Specific Gravity: 1 g/cc

pH: 4 - 8

Vapor Pressure: Not applicable.

Vapor Density: (air=1) Not applicable.
10. STABILITY AND REACTIVITY

**General:** Stable

**Conditions to Avoid:**

**Incompatible Materials:** Oxidizing agents, acid chlorides, acid anhydrides

**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:** No

**LD50:** Not established.

**LC50:** Not established.

12. ECOLOGICAL INFORMATION

Product not tested. No information available.

13. DISPOSAL CONSIDERATION

**Waste Disposal Method:** Dispose of in accordance with all Federal, State and Local environmental regulations. In Europe follow the Special Waste Regulations. Material is classified as hazardous (flammable) under US EPA guidelines.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

UN1219, Isopropanol Mixture, 3, PG II


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.).

Basic information follows the recommended changes under GHS Globally Harmonized System.
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR).

Canada WHMIS: Class B Division 2 Flammable, D2B Toxic Material Causing Other Toxic Effects (eye irritation in animals).

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

USA SARA 313 Listing - 40 CFR 372.65 - none

EC Classification, Packaging and Labeling Requirements:
Symbol and Hazard Classification of Product

XI

Risk Phrases:
R11 Flammable
R36/37/38 Irritating to eyes, respiratory system and skin
R43 May cause sensitization by skin contact

Safety Phrases:
S16 Keep away from sources of ignition – No Smoking
S20/21 When using do not eat, drink or smoke
S23 Do not breathe fumes/gas/vapor/spray
S24/25 Avoid contact with skin and eyes
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

16. OTHER INFORMATION

HMIS Hazard Rating:  
Health: 2  
Fire: 3  
Reactivity: 0

Revised Date: 6 MAY 2011
Prepared by: Nancy Swarts, The Indium Corporation of America
Approved by: Nancy Swarts, The Indium Corporation of America

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