1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: INDIUM /TIN TETRACHLORIDE SOLUTION (SnCl₄/InCl₃ Solution)

SDS Number: SDS-5637

Revised Date: 15 APRIL 2014

Product Use: Industrial use - Indium Trichloride/Tin (IV) Chloride Pentahydrate Solution (InCl₃/SnCl₄ - Solution)

MANUFACTURER:

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

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Asia-Pacific Operations-Singapore
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Singapore 628908
Information: +65 6268-8678

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USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887

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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

Signal Word: Danger

Hazard statement(s)

H302  Harmful if swallowed
H314  Causes severe skin burns and eye damage

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 + P303  IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
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 minutes)

GHS Classification

Acute toxicity, Oral (Category 4)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)

POTENTIAL HEALTH EFFECTS:

Eye Contact: May cause severe damage and possible burns.

Ingestion: Harmful if swallowed. May cause burns to the gastrointestinal tract. Kidney and liver damage from injected indium compounds has been reported based on limited animal testing.

Inhalation: May cause respiratory irritation. Severe exposure could cause pulmonary damage. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract.

Skin Contact: May cause skin irritation or burns. May be harmful if absorbed through the skin.

Chronic: Kidney and liver damage from injecting indium compounds has been reported based on limited animal testing but no systematic effects from human exposure has been reported. Injection of inorganic salts produces diarrhea, muscle paralysis and twitching. 
Target Organs: blood, heart, liver, kidney
Other: Hygiene practices should be in place when handling this product. Avoid breathing fumes/vapors.

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

Warning: This product contains a chemical known to the State of California to cause cancer and/or birth defects (or other reproductive harm). (Might have trace levels of lead).

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-STEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIUM TRICHLORIDE</td>
<td>50 - 55</td>
<td>10025-82-8/233-043-0</td>
<td>0.1 (as Indium*)</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>(EU)</td>
<td>-</td>
<td>0.1 (as Indium)</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Canada)</td>
<td>-</td>
<td>0.1 (as Indium)</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Singapore)</td>
<td>0.1(as indium)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Mexico)</td>
<td>-</td>
<td>0.1(as indium)</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(China)</td>
<td>-</td>
<td>0.1(as indium)</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td>41 - 47</td>
<td>7732-18-5</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
<tr>
<td>TIN CHLORIDE PENTAHYDRATE</td>
<td>4 - 7</td>
<td>10026-06-9</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
</tbody>
</table>

[(tin chloride (IV) (CAS# 7646-78-8)]

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

N.E. = Not established   EU = EUROPEAN EXPOSURE LIMITS  SYMBOL: Xn,C   RISK PHRASES: R22, R36/37/38

* Indium CAS# 7440-74-6

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.

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. Not flammable.
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: Isolate spill and clean up with absorbent or neutralize. Place material in proper waste container. An approved air purifying respirator with acid gas/particulate cartridge and other personal protective equipment such as gloves is recommended. Dispose of in accordance with Federal, State and Local regulations. In Europe dispose of following the Special Waste Regulations. Indium may have reclaim value.

7. HANDLING AND STORAGE

Handling: Keep containers tightly closed when not in use. Use care to avoid spills. Wear appropriate personal protective equipment. Use good work practices when handling corrosive material. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed. Avoid contact with skin and eyes.
Storage Precautions: Store product in tightly capped original containers in a cool, well ventilated and dry area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Local and/or Mechanical (general) exhaust ventilation is recommended to control any air contaminants.
Personal protection:
Eyes: Wear chemical safety glasses/tight fitting goggles. The addition of a face shield may be necessary during some work practices. Avoid splash.
Respirator: A NIOSH approved air-purifying respirator with an acid gas/particulate filter is recommended under certain circumstances where airborne concentrations are expected to be elevated.
Skin: Compatible acid resistant chemical gloves are recommended.
Other: Lab coat, apron, eyewash fountain in work area. Avoid the use of contact lenses in high fume/splash areas. Eye wash/shower unit.
Work/Hygienic: Maintain good housekeeping. Clean up spills immediately. 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: Light Yellow Liquid  Boiling Point: Not established
Odor: Slight Odor  Melting Point: Not applicable  
Specific Gravity: 1.703  pH: <1 (Corrosive)  
Vapor Pressure: Not applicable.  Solubility in Water: Soluble  
Vapor Density: Not established

10. STABILITY AND REACTIVITY
General: Stable.  
Conditions to Avoid: Not established.  
Incompatible Materials: Bases  
Hazardous Decomposition / Combustion: Toxic fumes may form at elevated temperatures. Deliquescent, hydrolyzes to form In (OH)₃  
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION
Carcinogenicity: National Toxicology Program (NTP): No  
Occupational Safety & Health Administration (OSHA): No  
U.N. International Agency for Research on Cancer (IARC): No  
LD₅₀: See NIOSH RTECS# NL1400000 (Indium) XP8870000 (tin chloride pentahydrate)  
Irritancy of Product: May be an irritant  
Mutagenicity: Not established  
Sensitization to Product: Not established  
Teratogenicity: Not established  
Reproductive Toxicity: Not established  
Synergistic Products: Not established

Inorganic tin salts are poorly absorbed in the body. Tin salts that have gained access to the blood stream are highly toxic and produce neurologic damage and paralysis. The actual toxicity is complicated by the hydrolysis in the body fluids. Material is extremely destructive to tissue of the mucous membranes and upper respiratory system, eyes and skin.

12. ECOLOGICAL INFORMATION
Product not tested.

13. DISPOSAL CONSIDERATION
Waste Disposal Method: Scrap indium metal may have some 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. Product is corrosive.

14. TRANSPORT INFORMATION
Transport in accordance with applicable regulations and requirements.

Shipping Name: UN3264, Corrosive Liquid, Acidic, Inorganic, N.O.S., 8, PGIII (indium trichloride and stannic chloride
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).

Canadian WHMIS: Class E Corrosive Material

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 using the Chinese Occupational Exposure Limit of Hazardous Agent in the Workplace, GBZ2-2002.

This product has been classified under the Mexican regulations NOM-018-STPS-2000 and NOM-010-STPS-1999.

SARA 313 listing - 40 CFR 372.65: None

California Prop 65: Warning: This product contains a chemical(s) known to the State of California to cause cancer and/or Birth defects (or other reproductive harm). (Might have trace levels of lead).

Swiss Poison Class: 4 (Indium)

All ingredients are listed on the EPA TSCA Inventory.

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

Risk Phrases:
R22 Harmful if swallowed
R36/37/38 Irritating to eyes, respiratory system and skin

Safety Phrases:
S20/21 When using do not eat, drink or smoke
S23 Do not breathe fumes/gas/vapor/spray
16. OTHER INFORMATION

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

Revised Date: 15 APRIL 2014
Prepared by: Nancy Swarts, Indium Corporation of America
Approved by: Nancy Swarts, Indium Corporation of America

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