SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier: OnSpec® Tabbing Flux GS-1414
SDS Number: SDS- 4682 Revised Date: 25 AUGUST 2017

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product Use: Industrial Use (Mixture) - Solder flux.

1.3 Details of the supplier of the safety data sheet

MANUFACTURER/SUPPLIER/IMPORTER:

In America:
The Indium Corporation of America
34 Robinson Road, Clinton NY 13323
Technical & Safety Information: (315) 853-4900
Safety & SDS Information: nswarts@indium.com
Corporation web page: http://www.indium.com

In Europe:
Indium Corporation of Europe
7 Newmarket Ct.
Kingston, Milton Keynes, UK, MK 10 OAG
Information: (normal business hours) +44 [0] 1908 580400
EU Contact: aday@indium.com

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

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

FOR CHEMICAL EMERGENCY ONLY PHONE *:
CHEMTREC 24 hrs.
USA: 1 (800) 424-9300
Outside USA: +1 (703) 527-3887
* Used only for spill/leak/fire/exposure/accident

ALL OTHER INQUIRIES: TOLL FREE: +1-800-448-9240 Indium Corporation

SECTION 2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY: Carcinogen listed in
⊗Eye ⊗Inhalation ⊗Skin ⊗Ingestion NTP IARC OSHA ⊗Not Listed

2.1 Classification:

2.2 Label Elements

Precautionary statement(s)
P233 Keep container tightly closed
P261 Avoid breathing dust/fume/gas/mist/vapours/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 +364 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)

2.3 OTHER HAZARDS

POTENTIAL HEALTH EFFECTS:
Eye Contact: Vapors may be irritating and liquid may damage eyes tissue.

Ingestion: May cause gastric disturbances..

Inhalation: May cause mild throat irritation

Skin Contact: May cause mild irritation.

Chronic: Not established.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture:
SECTION 4. FIRST AID MEASURES

4.1 Description of 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.

4.2 Most important symptoms and effect, both acute and delayed:

Skin contact may cause irritation.

Eye exposure may cause irritation.

4.3 Indication of any immediate medical attention and special treatment needed:

No specific special treatment information is available on this mixture. Review data provided in this document to understand the hazards when working with the product. No other information is available at this time.

Seek medical attention if eye irritation continues after flushing.

If respiratory discomfort is evident seek medical advice.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions. Water, CO2, foam media.

5.2 Special hazards arising from the substance or mixture:

May produce toxic fumes of carbon monoxide if burning.

5.3 Advice for Firefighters

Firefighters must wear approved self-contained breathing apparatus and full protective clothing.

Material product is not flammable. No other information is available.
SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:
Keep away from the spill. Remove sources of ignition. Keep exhaust ventilation system running. In the event of a fire evacuate area.

For emergency responders:
Wear safety glasses, gloves when cleaning up any spill. Other equipment may be necessary based on the immediate area and other chemicals unrelated to the product that may be in use. Adequate ventilation should be available. Keep unnecessary personnel away from area during clean up. If on floor wear foot protection to avoid any direct contamination to shoes and boots.

6.2 Environmental Precautions: Dispose contaminated cloth rags or paper towels following all applicable governmental regulations. Material is non - hazardous. May not have any reclaim value.

6.3 Methods and material for containment and cleaning up:
Spill or leak procedures: Using a spatula, scoop up flux and place into a plastic pail or drum and tightly cap.

6.4 Reference to other sections: See Section 8 for exposure levels.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions
For Safe Handling: Keep containers tightly closed when not in use. Use care to avoid spills. Use only with production equipment specifically designed for use with flux. Wear appropriate personal protective equipment when working or handling flux. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed. Do not eat, drink or smoke when handling this product. Utilize exhaust ventilation especially during heating product. General odor and chemical content require exhaust whenever the container is open.

7.2 Conditions for Safe Storage, including any incompatibilities:
Storage Precautions: Store product in tightly capped original containers in a cool, dry area. Refer to product label and product data sheet for specific storage temperature requirements. Rotate stock to ensure use before expiration date.

7.3 Specific End Use(s): Soldering applications

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters:

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS#/EINECS#</td>
<td>mg/m3</td>
<td>mg/m3</td>
</tr>
<tr>
<td>WATER</td>
<td>85-95</td>
<td>7732-18-5</td>
</tr>
</tbody>
</table>
### 8.2 Exposure Controls:

**Engineering Controls:** Use only with production equipment with adequate exhaust ventilation and other safety features specifically designed for chemical use. Use exhaust ventilation when using the product especially while heating product. Air emission control equipment may be necessary based on the local governmental requirements for contaminants entering the atmosphere. Contains organic related compounds.

**Personal protection:**

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

- **Respiratory:** An approved or EU compliant CE marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated.

- **Skin:** Compatible chemical resistant gloves. Recommend a nitrile disposable or other chemical glove.

- **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 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.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>clear</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild characteristic odor.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not established</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.014 @60°F</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>23.7 mm HG @25°C</td>
</tr>
<tr>
<td>Vapour Density</td>
<td>(air=1) Not applicable.</td>
</tr>
<tr>
<td>Relative Density</td>
<td>Not established</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>UEL/LEL Limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not established</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not established</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>212°F (100°C)</td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>3.15</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>water soluble</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not established</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Method</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammable Limits</td>
<td>Limits not established</td>
</tr>
<tr>
<td>Decomposition Temp</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### 9.2 Other Information: Above data for the whole mixture.
SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: Stable.
10.2 Chemical Stability: Stable
10.3 Possibility of Hazardous Reactions: Not established
10.4 Conditions To Avoid: None known
10.5 Incompatible Materials: Avoid contact with acids, bases or oxidizing agents.
10.6 Hazardous Decomposition: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.
10.7 Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Acute toxicity: Not established
Irritation: Not established
Corrosivity: Not applicable
Sensitization: Not available
Repeated dose toxicity: Not established
Carcinogenicity: Not established

Mutagenicity: Not established
Toxicity for Reproduction: Not established
Absence of specific data: None available (not tested)

Likely Routes of Entry: eyes (irritation)/skin (irritation)/inhalation (irritation)/ingestion (irritation)
Interactive effects: None known

Symptoms related to the physical, chemical and toxicological characteristics:
May cause irritation by skin contact.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:
No data is available on the mixture. Ingredient harmful by ingestion.

Mixture verses substance information: None known

Other Information:
Carcinogenicity: NTP: No (National Toxicity Program)
Listing OSHA: No (US Occupational Safety & Health Administration)
IARC: No (UN International Agency for Research on Cancer)

SECTION 12. ECOLOGICAL INFORMATION

Product mixtures not tested.

12.1 Toxicity: No information available
12.2 Persistence and degradability: No information available
12.3 Bioaccumulative potential: No information available
12.4 Mobility in soil: No information available
12.5 **Results of PBT and vPvB assessments:** No data is available

12.6 **Other adverse effects:** No information is available for mixture. Avoid release to environment.

### SECTION 13. DISPOSAL CONSIDERATION

13.1 **Waste treatment method:**
Dispose of in accordance with environmental regulations. Containerize material and classify according to applicable regulations. No pre-treatment on site is recommended. Do not dispose of down any drain or waterway. Utilize the same personal protective equipment as the user when handling for disposal.

### SECTION 14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

14.1 **UN Number:** None
14.2 **UN proper shipping name:** None
14.3 **Transport hazard class(s):** None
14.4 **Packing group:** None
14.5 **Environmental hazards:** None
14.6 **Special precautions for user:** None
14.7 **Transport in bulk:** Not applicable

### SECTION 15. REGULATORY INFORMATION

15.1 **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
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.).

All ingredients are listed on the USEPA TSCA Inventory.

Safety data sheet was developed using EC 1907/2006 amended as of 20 May 2010 EU No 453/2010 and information as stated under regulation EC No 1272/2008 CLP Regulation.

GHS = Global Harmonized System

CLP= Classification, labeling and packaging

Product does not contain any substances ozone depleting substances and therefore not subject to EC 2037/2000.

15.2 **Chemical safety assessment:** None performed for mixture.

### SECTION 16. OTHER INFORMATION

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

Revised Date: 25 AUGUST 2017
Prepared by: Nancy Swarts, The Indium Corporation of America, nswarts@indium.com
Changes provided on this SDS were based on the requirements of EU No. 453/2010 of May 20, 2010 regarding amendments to EC No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

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.