SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: NF220 No Flow Underfill
SDS Number: SDS-UF005
Revised Date: 29 OCTOBER 2018
Product Use: Industrial Use-No-Flow Underfill Adhesive

MANUFACTURER:

In America:
The Indium Corporation of America®.
34 Robinson Rd., Clinton, NY 13323
Information: (315) 853-4900
nswarts@indium.com

In Europe:
The Indium Corporation of America® (European Operations)
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: Emergency 86+ 4008417580

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

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

PRIMARY ROUTES OF ENTRY: Carcinogen listed in

- Eye  
- Inhalation  
- Skin  
- Ingestion  
- 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
H318  Causes serious eye damage
H334  May cause allergy or asthma symptoms or breathing difficulties if inhaled

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 +P364  Take off contaminated clothing and wash before reuse
P301 +P312  IF SWALLOWED: Call POISON CENTER or doctor/physician if you feel unwell
P302 +P352  IF ON SKIN: Wash with plenty of soap and water
P304 +P341  IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351  IF IN EYES: Rinse continuously with water for several minutes (15 mins)

Classification:

- Skin irritant- Category 2
- Skin sensitization- Category 1B
- Respiratory sensitization- Category 1B
- Eye irritant- Category2A

POTENTIAL HEALTH EFFECTS:

Eye Contact:  Do not allow material to come in contact with the eyes. Will cause eye injury if not immediately removed.

Ingestion:  May be harmful if swallowed. May cause irritation.

Inhalation:  Heated vapor concentrations may be harmful if inhaled. May cause irritation if heated, otherwise harmful effects are not expected at ambient temperatures.

Skin Contact:  Causes skin irritation. Allergic reactions or dermatitis are possible, especially with repeated or prolonged exposure. May cause skin sensitization. Epoxy systems are known to cause de-fatting and drying of the skin. Heating of epoxy may cause irritation or sensitization.

Chronic:  Prolonged or repeated overexposure to mist or vapor generated at high temperatures may result in the inhalation of harmful amounts of material.
WARNING: This product can expose you to chemicals including [trace amounts of 1,4 dioxane] which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov

Note: The Indium Corporation does not recommend, manufacture, market or endorse any of it’s products for human consumption.

3. 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>EPOXY RESINS</td>
<td>38-52</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
<tr>
<td>HARDENER</td>
<td>31-44</td>
<td>19438-60-9</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
<tr>
<td>PROPRIETARY INTERMEDIATES</td>
<td>1-10</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
<tr>
<td>NON HAZARDOUS PROPRIETARY</td>
<td>10-20</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
</tbody>
</table>

N.E. = Not established

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 applicable
Method: Not applicable

Auto-ignition Temperature: Not established.

Flammable Limits: Limits not established

Extinguishing Media: Use extinguishers appropriate for the surrounding fire conditions. Foam, dry chemical, water spray.

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: Under certain situations, as appropriate, wear a respirator and personal protective equipment (See Exposure Controls/Personal Protective Section). Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Dispose of following all Federal, State and Local regulations. In the EU refer to the Special Waste Regulations. Avoid contamination of the environment.

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.
   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 considered hazardous as they contain product residue.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
   Engineering Controls: Local exhaust ventilation is necessary to control airborne levels especially during heating. Avoid breathing fumes. If ventilation is not adequate or if not available respiratory protection is recommended to keep exposures to as low as possible.
   Personal protection:
   Eyes: Chemical safety glasses/goggles. Face shield for splash hazards.
   Respirator: A NIOSH 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, such as nitrile should be worn. Protective outer garment, apron and sleeves as appropriate.
   Other: Eyewash fountain in work area. Avoid the use of contact lens especially during mixing and heating application.
   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: Epoxy
   Odor: Slight characteristic odor.
   Specific Gravity: Not established
   Vapor Pressure: Not applicable.
   Vapor Density: (air=1) Not applicable.
   Boiling Point: Not established
   Melting Point: Not applicable
   pH: Not applicable
   Solubility in Water: Not established

10. STABILITY AND REACTIVITY
    General: Stable.
    Conditions to Avoid: High temperatures
    Incompatible Materials: Not established
11. **TOXICOLOGICAL INFORMATION**

- **Carcinogenicity:**
  - NTP: No
  - OSHA: No Product not classified.
  - IARC: No

- **LD50:** Not established.
- **LC50:** Not established.
- **Other:** None known

12. **ECOLOGICAL INFORMATION**

- **Aquatic Toxicity:** Data not established.

13. **DISPOSAL CONSIDERATION**

- **Waste Disposal Method:** Dispose of in accordance with all Federal, State and Local environmental regulations.
  Non - hazardous under US EPA.

14. **TRANSPORT INFORMATION**

- Transport in accordance with applicable international regulations and requirements. Not regulated under US DOT.
  Not regulated under IATA/IMDG
  UN-None

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.).

- **SARA 313 Listing - 40 CFR 372.65 - None**

All ingredients are listed on the EPA TSCA Inventory.

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 set by the Dept of Industrial Health of the Republic of Singapore.

![WARNING: This product can expose you to chemicals including [trace amounts of 1,4 dioxane] which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)](http://www.P65Warnings.ca.gov)

This product has been classified in accordance with the Mexican guidelines, NOM-018-STPS-2015 and NOM-010-STPS-2014.
Malaysia:
This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER 2013 – (CLASS). (GHS)

In China:
Decree No. 591: Regulations on the Control over Safety of Hazardous Chemicals
GB 30000.2-29-2013, Rules for classification and labeling of chemicals. (GHS)
GB/T 16483-2008, GB/T 17517-2013
This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007.

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>HMIS Hazard Rating</th>
<th>Health:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fire:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Reactivity:</td>
<td>0</td>
</tr>
</tbody>
</table>

Revised Date: 29 OCTOBER 2018
Prepared by: Nancy Swarts, Indium Corporation of America
Approved by: Nancy Swarts, Indium Corporation of America

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