SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: GALLIUM TRICHLORIDE

SDS Number: SDS-NP 001

Revised Date: 11 NOVEMBER 2019

Synonyms: Industrial Use Only - Gallium (III) Chloride, Gallium Chloride

Chemical Formula: Cl₃Ga (GaCl₃)

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Tel: +82-70-7780-5200
2. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:  
- Eye  
- Inhalation  
- Skin  
- Ingestion  

Carcinogen listed in  
- NTP  
- IARC  
- OSHA  
- Not Listed

GHS:

Signal word: Danger

Hazard statement(s)
H314  Causes severe skin burns and eye damage
H318  Causes serious 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 + 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)
P310  Immediately call a POISON CENTER or doctor/physician

Classification:
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Other hazards: reacts violently with water

POTENTIAL HEALTH EFFECTS:

**Eye Contact:**  Do not allow material to come in contact with the eyes. May cause irritation, burns or severe conjunctivitis.

**Ingestion:**  May be harmful if swallowed.

**Inhalation:**  May be harmful if inhaled. May produce respiratory tract irritation. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory system.
Skin Contact: May be harmful if absorbed through the skin. Causes skin burns.

Chronic: Not established.

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

Signs and Symptoms of Exposure:
Cough, Shortness of breath, headache, nausea, vomiting

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-STEEL mg/m³</th>
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<tbody>
<tr>
<td>Gallium Trichloride</td>
<td>100</td>
<td>13450-90-3/236-610-0</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.

Ingestion: Contact a Poison Control Center. 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. Dry chemical or media suitable for surrounding fire. Water is not recommended.

Special Fire Fighting Procedures: Firefighters must wear NIOSH approved self-contained breathing apparatus and full protective clothing. Hazardous decomposition products formed under fire conditions. – hydrogen chloride gas, gallium oxides
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. Large spills require assistance by the fire department. Keep unnecessary personnel away from spill. Do not allow this material to enter any waterways. Avoid breathing dust/aerosol.

7. HANDLING AND STORAGE
   Handling Precautions: Keep containers tightly closed when not in use. Use care to avoid spills. Avoid breathing dusty material. Avoid contact with eyes, skin and clothing. Use in well-ventilated area. Avoid contact with moisture. Wear appropriate personal protective equipment (PPE), such but not limited to as eye protection/gloves/lab coat/face shield/respirator. Avoid formation of dusts and aerosols.

   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. Air sensitive material. Never allow product to get in contact with water during storage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION
   Engineering Controls: Exhaust ventilation is recommended to control airborne levels of dust/aerosols/fumes.
   Personal protection:
   Eyes: Chemical safety glasses/goggles and face shield for operations that may involve a splash hazard.
   Respirator: A NIOSH approved or EU compliant CE marked air-purifying respirator with a fume particulate/acid chemical cartridge is recommended under certain circumstances where airborne concentrations are expected to be elevated.
   Skin: Compatible chemical resistant rubber gloves such as nitrile should be worn. Lab coat and sleeve protectors or other protective clothing as required for protection. Use proper glove removal techniques to avoid skin contact with this product.
   Other: Eyewash fountain in work area. Safety shower is also recommended. Avoid the use of contact lenses.
   Work/Hygienic Practices: Maintain good housekeeping. Clean up spills immediately.
   Signs and Symptoms of Exposure: Cough, Shortness of breath, headache, nausea, vomiting
   Control of environmental exposure - do not let product enter drains

9. PHYSICAL AND CHEMICAL PROPERTIES
   Appearance: White crystals/spheres/beads
   Odor: Slight or no characteristic odor.
   Specific Gravity: 2.47 at 25C (77F)
   Vapor Pressure: 0.13 at 48 C
   Vapor Density: (air=1) Not established
   Boiling Point: 201 C (394 F)
   Melting Point: 78 C (172 F)
   pH: Corrosive
   Solubility in Water: Very soluble
   Soluble also in: Benzene, CCL₄, CS₄
   Formula Weight: 176.08
10. STABILITY AND REACTIVITY

General: Stable under storage conditions. Moisture sensitive.
Conditions to Avoid: Contact with water. Reacts violently with water.
Incompatible Materials: Avoid strong oxidizing agents and alcohols

Hazardous Decomposition / Combustion: Emits toxic hydrogen chloride and gallium oxide fumes in a fire
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: No
OSHA: No
IARC: No
LC50: Not established.
LD50:
Toxicity: Subcutaneous (rat) 306 mg/kg Intravenous (dog) 41 mg/kg
Intravenous (rat) 47 mg/kg Subcutaneous (rabbit) 245 mg/kg
Parenteral (rat) 1408 mg/kg Intravenous (rabbit) 43 mg/kg

Other: See NIOSH, RTECS LW9100000 for additional data.

12. ECOLOGICAL INFORMATION

No information is available at this time.

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. Product may be considered as hazardous waste. Do not re-use containers for any other material then what it first contained.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Shipping:

UN 3260, Corrosive Solid, Acidic, Inorganic, N.O.S., 8, II (gallium trichloride)

Marine pollutant: No

IATA
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.).

Listed on the State of Massachusetts/New Jersey/Pennsylvania Right to Know Components.

SARA 313 Listing - 40 CFR 372.65 - None

Product is listed on the US TSCA Inventory. TSCA 12(b) – not applicable

CERCLA EHS RQs- 500 lbs

California Prop 65 – No

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.

This product has been classified in accordance with Mexican regulations NOM-018-STPS-2015 and NOM-010-STPS-2014.

Regulatory Information China:
GB/T 16483-2008, GB/T 17519-2013, Safety Data Sheets for Chemical Products
GB 30000.2-29-2013, Rules for classification and labeling of chemicals (GHS)
Decree No. 591: Regulations on the Control Over Safety of Hazardous Chemicals.
This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2007.

Product is listed on the Korean Existing Chemical Inventory.

This product has been classified in accordance with: Malaysian – OCCUPATIONAL SAFETY AND HEALTH (CLASSIFICATION, LABELING AND SAFETY DATA SHEET OF HAZARDOUS CHEMICALS) REGULATION OCTOBER
### 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>HMIS Hazard Rating</th>
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<tbody>
<tr>
<td>Fire</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>2</td>
<td></td>
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<tr>
<td>Special</td>
<td>W</td>
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**Revised Date:** 11 NOVEMBER 2019  
**Prepared by:** Nancy Swarts, Indium Corporation of America  
**Approved by:** Nancy Swarts, Indium Corporation of America

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