MATERIAL SAFETY DATA SHEET
Epichlorohydrin

MSDS Name: Epichlorohydrin
Synonyms: 1-Chloro-2,3-epoxypropane

Company Identification: (INDIA)
Veritas House, 70 Mint Road, Fort, Mumbai - 400 001, INDIA
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Fax: +91 - 22 - 2275 5556 / 6184 0001

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name:</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>106-89-8</td>
<td>Epichlorohydrin</td>
<td>&gt;99.5%</td>
<td>203-439-8</td>
</tr>
</tbody>
</table>

Hazard Symbols: T

Risk Phrases: 45 10 23/24/25 34 43

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Flammable. Toxic by inhalation, in contact with skin and if swallowed. Causes burns. May cause sensitization by skin contact. May cause cancer.

Potential Health Effects

Eye: Causes eye burns.
Skin: Causes skin burns. Toxic in contact with skin. May cause sensitization by skin contact.
Ingestion: Causes gastrointestinal tract burns. Toxic if swallowed.
Inhalation: Causes chemical burns to the respiratory tract. Toxic if inhaled.
Chronic:

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.
### Section 5 - Fire Fighting Measures

**General Information:**
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Flammable liquid and vapor.

**Extinguishing Media:**
Use water spray, dry chemical, carbon dioxide, or chemical foam.

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### Section 6 - Accidental Release Measures

**General Information:**
Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**
Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool.

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### Section 7 - Handling and Storage

**Handling:**
Use spark-proof tools and explosion proof equipment. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Use only in a chemical fume hood.

**Storage:**
Keep away from sources of ignition. Keep refrigerated. (Store below 4°C/39°F.) Store in a tightly closed container. Store in a dry area. Flammables-area. Corrosives area.

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### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:**
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**
- CAS# 106-89-8:
  - United Kingdom, WEL - TWA: 0.5 ppm TWA; 1.9 mg/m3 TWA United Kingdom, WEL - STEL: 1.5 ppm STEL; 5.8 mg/m3 STEL
  - United States OSHA: 5 ppm TWA; 19 mg/m3 TWA
  - Belgium - TWA: 2 ppm VLE; 7.7 mg/m3 VLE
  - France - VLE: 2 ppm VLE; 10 mg/m3 VLE
  - Germany: 3 ppm TWA; 12 mg/m3 TWA Germany: skin notation
  - Malaysia: 0.5 ppm TWA; 1.9 mg/m3 TWA
  - Russia: 1 mg/m3 TWA (vapour)
  - Spain: 0.5 ppm VLA-ED; 1.9 mg/m3 VLA-ED

**Personal Protective Equipment**
- **Eyes:**
  Wear chemical splash goggles.

- **Skin:**
  Wear appropriate protective gloves to prevent skin exposure.

- **Clothing:**
  Wear appropriate protective clothing to prevent skin exposure.

- **Respirators:**
  Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
### Section 9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Color</td>
<td>APHA: 15 max</td>
</tr>
<tr>
<td>Odor</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>17.3 mbar @ 20 deg C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1.12 cP 20 deg C</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>115 - 117 deg C @ 760.00mm Hg</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>-57 deg C (-70.60°F)</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>385 deg C (725.00 deg F)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>28 deg C (82.40 deg F)</td>
</tr>
<tr>
<td>Explosion Limits: Lower</td>
<td>3.80 vol %</td>
</tr>
<tr>
<td>Explosion Limits: Upper</td>
<td>21.00 vol %</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>6g/100ml (10°C)</td>
</tr>
<tr>
<td>Specific Gravity/Density</td>
<td>1.1870 g/cc</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C₃H₅ClO</td>
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<tr>
<td>Molecular Weight</td>
<td>92.52</td>
</tr>
</tbody>
</table>

### Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Polymerization may occur upon heating.

Conditions to Avoid: Incompatible materials, light, ignition sources, heat.

Incompatibilities with Other Materials: Acids, bases, alcohols, aluminum, amines, ammonia, magnesium, zinc, sodium.

Hazardous Decomposition Products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

### Section 11 - Toxicological Information

<table>
<thead>
<tr>
<th>RTECS#</th>
<th>CAS# 106-89-8: TX4900000</th>
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<tbody>
<tr>
<td>LD50/LC50:</td>
<td>RTECS:</td>
</tr>
<tr>
<td></td>
<td>CAS# 106-89-8: Draize test, rabbit, eye: 100 mg Severe;</td>
</tr>
<tr>
<td></td>
<td>Draize test, rabbit, eye: 100 mg/24H Moderate;</td>
</tr>
<tr>
<td></td>
<td>Inhalation, rat: LC50 = 250 ppm/8H;</td>
</tr>
<tr>
<td></td>
<td>Oral, mouse: LD50 = 195 mg/kg;</td>
</tr>
<tr>
<td></td>
<td>Oral, rabbit: LD50 = 345 mg/kg;</td>
</tr>
<tr>
<td></td>
<td>Oral, rat: LD50 = 90 mg/kg;</td>
</tr>
<tr>
<td></td>
<td>Skin, rabbit: LD50 = 515 mg/kg;</td>
</tr>
<tr>
<td>Carcinogenicity:</td>
<td>Epichlorohydrin - ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans California: carcinogen, initial date 10/1/87 NTP: Suspect carcinogen IARC: Group 2A carcinogen</td>
</tr>
</tbody>
</table>

### Section 12 - Ecological Information

Ecotoxicity: Daphnia: EC₅₀: 24 mg/l; 48H;
Bacteria: EC₅₀: 1160 mg/l; 15MIN;
Fish: Pimephals prome: LC₅₀: 10.6-13.2 mg/l; 96H;
Fish: Zebrafish: LC50: 30.5 mg/l; 96H;

Other: Biodegradable.
log Pow: 0.30 - 0.45

Section 13 - Disposal Considerations
Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th></th>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
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</thead>
<tbody>
<tr>
<td>Shipping Name:</td>
<td>EPICHLOROHYDRIN</td>
<td>EPICHLOROHYDRIN</td>
<td>EPICHLOROHYDRIN</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td>6.1 (3)</td>
<td>6.1 (3)</td>
<td>6.1 (3)</td>
</tr>
<tr>
<td>UN Number:</td>
<td>2023</td>
<td>2023</td>
<td>2023</td>
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<tr>
<td>Packing Group:</td>
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<td>II</td>
<td>II</td>
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</tbody>
</table>

USA RQ: CAS# 106-89-8: 100 lb final RQ; 45.4 kg final RQ, Marine Pollutant

Section 15 - Regulatory Information

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: T

Risk Phrases:
- R 45 May cause cancer.
- R 10 Flammable.
- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 34 Causes burns.
- R 43 May cause sensitization by skin contact.

Safety Phrases:
- S 53 Avoid exposure - obtain special instructions before use.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
- CAS# 106-89-8: 3

Canada
- CAS# 106-89-8 is listed on Canada's DSL List

US Federal
- TSCA
- CAS# 106-89-8 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: July 22, 2015
Revision #0 Date

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