MATERIAL SAFETY DATA SHEET
Monochloroacetic Acid

Section 1 - Chemical Product and Company Identification

MSDS Name: Monochloroacetic acid 99%

Synonyms: Chloroacetic acid, MCA

Company Identification: (INDIA)
Veritas House, 70 Mint Road, Fort, Mumbai - 400 001, INDIA
For information in the INDIA, call:
Tel: +91 - 22 - 2275 5555 / 6184 0000,
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>79-11-8</td>
<td>Monochloroacetic acid</td>
<td>99%</td>
<td>201-178-4</td>
</tr>
</tbody>
</table>

Hazard Symbols: T N

Risk Phrases: 25 34 50

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Toxic if swallowed. Causes burns. Very toxic to aquatic organisms. Hygroscopic (absorbs moisture from the air).

Potential Health Effects

Eye: Causes severe eye burns. Causes redness and pain.
Skin: Harmful if absorbed through the skin. Causes skin burns. Causes redness and pain.
Ingestion: Poison by ingestion.
Inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

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.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid. Wash mouth out with water.
Inhalation: If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
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.

Extinguishing Media:
Water or foam may cause frothing. Use water spray, dry chemical, carbon dioxide, or chemical foam.

Section 6 - Accidental Release Measures

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

Spills/Leaks:
Vacuum or sweep up material and place into a suitable disposal container.

Section 7 - Handling and Storage

Handling:
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:
Store in a cool, dry place. Store in a tightly closed container. Corrosives area.

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.

Exposure Limits
CAS# 79-11-8:
United Kingdom, WEL - TWA: 0.3 ppm TWA; 1.2 mg/m3 TWA United Kingdom, WEL - STEL: 0.9 ppm STEL; 3.6 mg/m3 STEL
Germany: 1 ppm TWA; 4 mg/m3 TWA Germany: skin notation
Netherlands: 1 ppm MAC; 4 mg/m3 MAC

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to minimize contact with skin.

Respirators:
A NIOSH/MSHA approved air purifying dust or mist respirator or European Standard EN 149.

Section 9 - Physical and Chemical Properties

Physical State: Crystal
Color: white
Odor: Not available
pH: Not available
Vapor Pressure: 0.22 mbar @ 20 C
Viscosity: Not available
Boiling Point: 189 deg C @ 760.00mm Hg (372.20°F)
Freezing/Melting Point: 61 - 63 deg C
Autoignition Temperature: 470 deg C (878.00 deg F)
Flash Point: 126 deg C (258.80 deg F)
Explosion Limits: Lower: 8.00 vol %
Explosion Limits: Upper: .00 vol %
Decomposition Temperature: Not available
Solubility in water: SOLUBLE IN WATER: 4210 g/l (20°C)
Specific Gravity/Density: 1.5800 g/cc
Molecular Formula: ClCH2CO2H
Molecular Weight: 94.50

Section 10 - Stability and Reactivity
Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, exposure to moist air or water.
Incompatibilities with Other Materials: Metals, strong oxidizing agents, strong reducing agents, strong bases, amines.
Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information
RTECS#: CAS# 79-11-8: AF8575000
LD50/LC50:
Inhalation, rat: LC50 = 180 mg/m3;
Oral, rat: LD50 = 55 mg/kg;
Other: Oral, mus: LD50 = 165 mg/kg Skin, rat: LD50 = 305 mg/kg
Carcinogenicity: Chloroacetic acid, flakes-Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information
Ecotoxicity: Not available

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

Section 14 - Transport Information
<table>
<thead>
<tr>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
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<tbody>
<tr>
<td>Name: CHLOROACETIC ACID, SOLID</td>
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<td>Hazard Class: 6.1 (8)</td>
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<td>UN Number: 1751</td>
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<td>Packing Group: II</td>
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</table>
USA RQ: CAS# 79-11-8: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: T N
Risk Phrases:
- R 25 Toxic if swallowed.
- R 34 Causes burns.
- R 50 Very toxic to aquatic organisms.

**Safety Phrases:**
- S 23 Do not inhale gas/fumes/vapour/spray.
- S 37 Wear suitable gloves.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

**WGK (Water Danger/Protection)**
- CAS# 79-11-8: 2

**Canada**
- CAS# 79-11-8 is listed on Canada's DSL List

**US Federal**
- TSCA
- CAS# 79-11-8 is listed on the TSCA Inventory.

**Section 16 - Other Information**

<table>
<thead>
<tr>
<th>MSDS Creation Date:</th>
<th>July 22, 2015</th>
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<tbody>
<tr>
<td>Revision #0 Date</td>
<td></td>
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