Material Safety Data Sheet

Section 1 - Product and Company Information

Product Name: Glutaraldehyde, 50 wt. % solution in water
Product Number: 340655
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Address: 350 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Fax: 800 326 5952
Emergency Phone: 414 273 3600 Ext. 5996

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
<th>EC no</th>
<th>Annex I Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde, 50% Aqueous Solution</td>
<td>None</td>
<td>No</td>
<td>205-856-5</td>
<td>605-022-00-X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS #</th>
<th>Percent</th>
<th>SARA 313</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>5.500%</td>
<td>Yes</td>
</tr>
<tr>
<td>Glutaraldehyde</td>
<td>111-30-8</td>
<td>50.000%</td>
<td>No</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>49.500%</td>
<td>No</td>
</tr>
</tbody>
</table>

Formula: C8H8O2
Synonyms:

Section 3 - Hazards Identification

Emergency Overview
Highly Toxic (USA) Very Toxic (EU). Dangerous for the environment. Toxic if swallowed. Very toxic by inhalation. Causes burns. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms. Toxic if absorbed through skin. Target organ(s): Nervous, Heart.

HMIS Rating
Health: 3 Star
Flammability: 0
Reactivity: 1

NFPA Rating
Health: 4
Flammability: 0
Reactivity: 1

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately. Do not induce vomiting.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A
Extinguishing Media
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill
Evacuate area.
Procedure(s) of Personal Protection
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.
Methods for Cleaning Up
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage
Suitable: Store under inert gas. Keep tightly closed.

Special Requirements
Store under inert gas. Air sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eyewash. Use only in a chemical fume hood.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>100.12 AMU</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>BP/VP Range</td>
<td>101 °C</td>
<td>760 mmHg</td>
</tr>
<tr>
<td>MP/MP Range</td>
<td>-6 °C</td>
<td></td>
</tr>
<tr>
<td>Freezing Point</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>15 mmHg</td>
<td>20 °C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1.05 g/l</td>
<td></td>
</tr>
<tr>
<td>Saturated Vapor Conc.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>SG/Density</td>
<td>1.105 g/cm3</td>
<td></td>
</tr>
<tr>
<td>Bulk Density</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Volatility</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Water Content</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Solvent Content</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Autoignition Temp</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Refractive Index</td>
<td>1.42</td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble</td>
<td></td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Soluble</td>
<td></td>
</tr>
<tr>
<td>Other Solvents</td>
<td>SOLUBLE IN ALCOHOL, BENZENE, ETHER.</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

Stability
- Stable

Conditions of Instability
- May discolor on exposure to air.

Materials to Avoid
- Strong acids, strong bases, strong oxidizing agents.

Section 11 - Toxicological Information

Route of Exposure
- Skin Contact: Causes burns.
- Skin Absorption: Harmful if absorbed through skin.
- Eye Contact: Causes burns.
- Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
- Ingestion: Toxic if swallowed.

Sensitization
- May cause allergic reaction.

Target Organ(s) or System(s)
- Central nervous system, Heart.

Signs and Symptoms of Exposure
- Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasms, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: N/A

Section 12 - Ecological Information

Acute Ecotoxicity Tests
- **Daphnia magna**
  - Value:
    - 48.0 h: 0.56 - 1 mg/l

- **Ecoleptorhynchus* gracilis**
  - Species: Daphnia magna
  - Value:
    - 48.0 h: 11 - 18 mg/l

- **LC50 Fish**
  - Species: *Leptosoma macrocrurus* (Bluegill)
  - Value:
    - 96.0 h: 7.8 - 32 mg/l

- **LC50 Fish**
  - Species: Cyprinodon variegatus (Sheepshead minnow)
  - Value:
    - 96.0 h: 22 - 61 mg/l
Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Corrosive liquids, toxic, n.o.s.
UN#: 2622
Class: 8
Packing Group: Packing Group II
Hazard Label: Corrosive

IATA
Proper Shipping Name: Corrosive liquid, toxic, n.o.s.
IATA UN Number: 2622
Hazard Class: 8
Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: T N
Indication of Danger:
Toxic. Dangerous for the environment.
Risk Statements: R: 23/25 34 42/43 50
Toxic by inhalation and if swallowed. Causes burns. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms.
Safety Statements: S: 20/21/26/39 45 61
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text
Indication of Danger:
Risk Statements:
Toxic if swallowed. Very toxic by inhalation. Causes burns. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms.
Safety Statements:
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap-suds. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.
US Statements:
Toxic if absorbed through skin. Target organ(s): Nervous. Heart.

United States Regulatory Information
SARA Listed: No