Section 1 - Product and Company Information

Product Name: Formaldehyde, 37 wt. % solution in water
Product Number: F15587
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5002

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 Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMALDEHYDE SOLUTION &gt;35% (1015% MEOH)</td>
<td>None</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&gt; 35.000 %</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>METHANOL</td>
<td>67-56-1</td>
<td>&gt; 8.000 %</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>&lt; 15.000 %</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Formulas: CH2O
Synonyms: None

Section 3 - Hazards Identification

Emergency Overview
Toxic: Toxic by inhalation, in contact with skin and if swallowed. Causes burns. Toxic, danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. May cause heritable genetic damage.

HMIS Rating
Health: 3
Flammability: 2
Reactivity: 2

NFPA Rating
Health: 3
Flammability: 2
Reactivity: 2

*additional chronic hazards present.
For additional information on toxicity, please refer to Section 11.

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.

Inhalation Exposure: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure: In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure: In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Flash Point: 133 °F
Explosion Limits: Lower: 7 %
Autoignition Temp: 420 °C
Upper: 70 %

Extinguishing Media
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazards:
Combustible liquid. 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(s):
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.
Methods for Cleaning Up:
Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste 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, or clothing. Avoid prolonged or repeated exposure.

Sigma-Aldrich Corporation
www.sigma-aldrich.com
Section 8 - Exposure Controls / PPE

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

Personal Protective Equipment
Respiratory
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multipurpose combination (US) or type ABEX (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand
Compatible chemical-resistant gloves.

Eye
Chemical safety goggles.

Other
Face shield (5-inch minimum).

General Hygiene Measures
Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

Exposure Limits

<table>
<thead>
<tr>
<th>Source</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>TLV</td>
<td>0.3 ppm</td>
</tr>
<tr>
<td>OSHA</td>
<td>PEL</td>
<td>0.9 mg/m30.75 ppm</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>ACGIH</td>
<td>262 mg/m3200 ppm</td>
</tr>
<tr>
<td>METHANOL</td>
<td>OSHA</td>
<td>260 mg/m3200 ppm</td>
</tr>
</tbody>
</table>

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Physical State</th>
<th>Color</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clear liquid</td>
<td>Colorless</td>
<td>Pungent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Molecular Weight</th>
<th>30.05 AMU</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>N/A</td>
</tr>
<tr>
<td>BP/VP Range</td>
<td>100 °C</td>
</tr>
<tr>
<td>FMP/VP Range</td>
<td>N/A</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>40 mmHg</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1 g/l</td>
</tr>
<tr>
<td>Saturated Vapor</td>
<td>N/A</td>
</tr>
<tr>
<td>SG/Density</td>
<td>1.09 g/cm3</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>N/A</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>N/A</td>
</tr>
<tr>
<td>Water Content</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

Stability
Stable

Materials to Avoid
Strong oxidizing agents, incompatible with: aniline, phenol, isocyanates, arylhydrazines, strong acids, strong bases, amines, peroxides, acid chlorides, acyl peroxides, alkali metals, reductants

Hazardous Decomposition Products
Carbon monoxide

Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

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

Sensitization
Skin: May cause allergic skin reaction.

Target Organ(s) or System(s)
Eyes, kidneys, liver, heart.

Signs and Symptoms of Exposure
Inhalation: May result in respiratory irritation. Inflammation and edema of the larynx, bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include hoisting sensation, coughing, wheezing, laryngitis, tightness of breath, headache, nausea, and vomiting. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Eyes: and skin: Exposure can cause: Coughing, chest pain, difficulty in breathing. Gastrointestinal disturbances. May cause convulsions. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Section 15 - Regulatory Information

EU Additional Classification
- Symbol of Danger: T
- Indication of Danger
  - Toxic
  - Risk Statements
    - R: 32/42/43

US Classification and Label Text
- Indication of Danger
  - Toxic
  - Risk Statements
    - Toxic by inhalation, in contact with skin and if swallowed. Causes burns. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.
    - Safety Statements
      - S: 26 36/37/39 45 51
      - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice/eye or suitable protective clothing, goggles, and eye/face protection. In case of accidental ingestion, seek medical advice immediately (show the label where possible). Use only in well ventilated areas.

United States Regulatory Information
- SARA Listed: Yes
- Notes: This product is or contains a component that is subject to SARA Title III reporting requirements.

United States - State Regulatory Information
- California Prop. 65
- This product is or contains chemical(s) known to the state of California to cause cancer.

Canada Regulatory Information
- WHMIS Classification
- No
- This product has been classified in accordance with the hazard criteria of the DPR, and the MSDS contains all the information required by the DPR.

Section 16 - Other Information

Disclaimer
- For R&D use only. Not for drug, household or other uses.

Warranty
- The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc. shall not be held liable for any resulting damage from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Aldrich Chemical - F15587
Page 6