1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Formaldehyde solution

Product Number : F1635
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +18003255832
Fax : +18003255052
Emergency Phone #: (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Formalin
Formula : CH₂O

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>200-001-8</td>
<td>&gt;= 36.5 - &lt;= 38 %</td>
</tr>
<tr>
<td></td>
<td>605-001-00-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>200-659-6</td>
<td>&gt;= 10 - &lt; 15 %</td>
</tr>
<tr>
<td></td>
<td>603-001-00-X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>&lt;= 50 %</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

Target Organs
Eyes, Kidney, Liver, Heart, Central nervous system

Other hazards which do not result in classification
Lachrymator.

HMIS Classification
Health hazard: 4
Chronic Health Hazard: *
| Flammability:     | 2       |
| Physical hazards: | 0       |

**NFPA Rating**
- Health hazard: 4
- Fire: 2
- Reactivity Hazard: 0

**Potential Health Effects**
- **Inhalation**: May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
- **Skin**: Toxic if absorbed through skin. Causes skin burns.
- **Eyes**: Causes eye burns.
- **Ingestion**: Toxic if swallowed. Causes burns.

### 4. FIRST AID MEASURES

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**In case of eye contact**
Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 5. FIRE-FIGHTING MEASURES

**Flammable properties**
- **Flash point**: 56 °C (133 °F) - closed cup
- **Ignition temperature**: no data available

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for fire-fighters**
Wear self contained breathing apparatus for fire fighting if necessary.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods for cleaning up**
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

### 7. HANDLING AND STORAGE
**Handling**
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

**Storage**
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>C</td>
<td>0.3 ppm</td>
<td>2007-01-01</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

**Remarks**
Eye & Upper Respiratory Tract irritation Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans. Sensitizer

Substance listed; for more information see OSHA document 1910.1048

Substance listed; for more information see OSHA document 1910.1048

See 1910.1048

<table>
<thead>
<tr>
<th>Methanol</th>
<th>67-56-1</th>
<th>TWA</th>
<th>200 ppm</th>
<th>2007-01-01</th>
<th>USA. ACGIH Threshold Limit Values (TLV)</th>
</tr>
</thead>
</table>

**Remarks**
Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption

STEL 250 ppm 2007-01-01 USA. ACGIH Threshold Limit Values (TLV)

Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption

TWA 200 ppm 1989-01-19 USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Skin notation

STEL 250 ppm 1989-01-19 USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Skin notation

TWA 200 ppm 1997-08-04 USA. Occupational
Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum).

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form clear, liquid
Colour colourless
Odour pungent

Safety data
pH no data available
Melting point no data available
Boiling point 100 °C (212 °F) at 1,013 hPa (760 mmHg)
Flash point 56 °C (133 °F) - closed cup
Ignition temperature no data available
Lower explosion limit 7 % (V)
Upper explosion limit 70 % (V)
Vapour pressure 53 hPa (40 mmHg) at 39 °C (102 °F)
Water solubility completely soluble
Partition coefficient: log Pow: 0.35
n-octanol/water
Evaporation rate 1

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.
Materials to avoid
Strong bases, Acids, Oxidizing agents, Alkali metals, Strong oxidizing agents, Amines, Strong acids, Acid chlorides, Acid anhydrides, Reducing agents, Peroxides, Isocyanates, Phenol, Aniline

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
no data available

Irritation and corrosion
no data available

Sensitisation
no data available

Chronic exposure

IARC: 1 - Group 1: Carcinogenic to humans (Formaldehyde)
NTP: Reasonably anticipated to be a human carcinogen (Formaldehyde)

Signs and Symptoms of Exposure
spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache

Potential Health Effects

Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Skin Toxic if absorbed through skin. Causes skin burns.

Eyes Causes eye burns.

Ingestion Toxic if swallowed. Causes burns.

Target Organs Eyes, Kidney, Liver, Heart, Central nervous system,

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
no data available

Ecotoxicity effects
no data available

Further information on ecology
no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.
14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1198  Class: 3 (8)  Packing group: III
Proper shipping name: Formaldehyde, solutions, flammable
Reportable Quantity (RQ): 263 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 1198  Class: 3 (8)  Packing group: III  EMS-No: F-E, S-C
Proper shipping name: FORMALDEHYDE SOLUTION, FLAMMABLE
Marine pollutant: No

IATA
UN-Number: 1198  Class: 3 (8)  Packing group: III
Proper shipping name: Formaldehyde solution, flammable

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>2007-07-01</td>
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SARA 313 Components

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<td>2007-07-01</td>
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<td>50-00-0</td>
<td>2007-07-01</td>
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SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>2007-07-01</td>
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New Jersey Right To Know Components

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California Prop. 65 Components

WARNING! This product contains a chemical known in the State of California to cause cancer.
16. OTHER INFORMATION

Further information
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