1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Formaldehyde solution
Product Number: F8775
Brand: Sigma
Company: Sigma-Aldrich

3050 Spruce Street
SAINT LOUIS MO  63103
USA

Telephone: +18003255832
Fax: +18003255052
Emergency Phone #: (314) 776-6555

2. 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

GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)
H227  Combustible liquid
H301 + H311  Toxic if swallowed or in contact with skin.
H315  Causes skin irritation.
H317  May cause an allergic skin reaction.
H318  Causes serious eye damage.
H331  Toxic if inhaled.
H334  May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351  Suspected of causing cancer.
H370  Causes damage to organs.
H402  Harmful to aquatic life.

Precautionary statement(s)
P260  Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280  Wear protective gloves/ eye protection/ face protection.
P301 + P310  IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307 + P311  IF exposed: Call a POISON CENTER or doctor/ physician.

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.  

3. 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>605-001-00-5</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>200-659-6</td>
<td>603-001-00-X</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>-</td>
</tr>
</tbody>
</table>

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  
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  

Suitable extinguishing media  
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.  

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

Further information  
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES  

Sigma - F8775  
Page 2 of 8
**Personal precautions**
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**Methods and materials for containment and cleaning up**
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

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### 7. HANDLING AND STORAGE

**Precautions for safe 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.

**Conditions for safe 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 |
| Listed |

| Substance listed; for more information see OSHA document 1910.1048 |
| Listed |

| See 1910.1048 |
| Listed |

| TWA | 0.016 ppm | 2005-09-01 | USA. NIOSH Recommended Exposure Limits |
| Potential Occupational Carcinogen See Appendix A 15 minute ceiling value |

| C | 0.1 ppm | 2005-09-01 | USA. NIOSH Recommended Exposure Limits |
| Potential Occupational Carcinogen See Appendix A 15 minute ceiling value |

| TWA | 0.016 ppm | 2005-09-01 | USA. NIOSH Recommended Exposure Limits |
| Potential Occupational Carcinogen Formalin is an aqueous solution that is 37% formaldehyde by weight; inhibited solutions usually contain 6-12% methyl alcohol. Also see specific listings for Formaldehyde and Methyl alcohol. See Appendix A 15 minute ceiling value |

| C | 0.1 ppm | 2005-09-01 | USA. NIOSH Recommended Exposure Limits |
| Potential Occupational Carcinogen Formalin is an aqueous solution that is 37% formaldehyde by weight; inhibited solutions usually contain 6-12% methyl alcohol. Also see specific listings for Formaldehyde and Methyl alcohol. See Appendix A 15 minute ceiling value |
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**Methanol** 67-56-1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Date</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>TWA</td>
<td>200 ppm</td>
<td>2007-01-01</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>STEL</td>
<td>250 ppm</td>
<td>2007-01-01</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
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<tr>
<td>TWA</td>
<td>200 ppm</td>
<td>2007-01-01</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<tr>
<td>STEL</td>
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<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<td>1989-01-19</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<tr>
<td>STEL</td>
<td>250 ppm</td>
<td>1989-01-19</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
</tbody>
</table>

**Remarks**

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

**TWA** 200 ppm

260 mg/m³

1997-08-04 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

Potential for dermal absorption

**ST** 250 ppm

325 mg/m³

2005-09-01 USA. NIOSH Recommended Exposure Limits

**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. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection**

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**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: liquid, clear
- Colour: colourless

**Safety data**
- pH: no data available
- Melting point: no data available
- Boiling point: no data available
- Flash point: 64 °C (147 °F) - closed cup
- Ignition temperature: 300 °C (572 °F)
- Lower explosion limit: 7 % (V)
- Upper explosion limit: 73 % (V)
- Vapour pressure: 69 hPa (52 mmHg) at 37 °C (99 °F)
- Density: 1.016 g/cm³
- Water solubility: no data available
- Relative vapour density: 1.04
- - (Air = 1.0)

10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Conditions to avoid**
Heat, flames and sparks.

**Materials to avoid**
Aniline, Phenol, Isocyanates, Acid anhydrides, Strong acids, Strong bases, Strong oxidizing agents, Amines, Peroxides

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

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**
- LD₅₀ Oral - rat - 100 mg/kg (Formaldehyde)
- LC₅₀ Inhalation - rat - 203 mg/m³ (Formaldehyde)


- LD₅₀ Dermal - rabbit - 274 mg/kg (Formaldehyde)

**Skin corrosion/irritation**
Skin - rabbit - Severe skin irritation - 24 h (Formaldehyde)

**Serious eye damage/eye irritation**
Eyes - rabbit - Severe eye irritation (Formaldehyde)

**Respiratory or skin sensitization**
May cause allergic respiratory and skin reactions (Formaldehyde)

**Germ cell mutagenicity**
May alter genetic material. (Formaldehyde)
Carcinogenicity
This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. (Formaldehyde)

Limited evidence of carcinogenicity in animal studies (Formaldehyde)

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

Reproductive toxicity
(no data available (Formaldehyde)

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals. (Formaldehyde)

Specific target organ toxicity - single exposure (Globally Harmonized System)
(no data available (Formaldehyde)

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
(no data available

Aspiration hazard
(no data available (Formaldehyde)

Potential health effects

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

Signs and Symptoms of Exposure
Cough, chest pain, Difficulty in breathing, Gastrointestinal disturbance, May cause convulsions. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Formaldehyde)

Additional Information
RTECS: LP8925000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - 121 mg/l - 96 h (Formaldehyde)
Toxicity to daphnia and other aquatic invertebrates. EC50 - Daphnia magna (Water flea) - 14.6 mg/l - 48 h (Formaldehyde)
Toxicity to algae mortality LOEC - Phyllospora comosa - 0.1 mg/l - 96 h (Formaldehyde)
mortality NOEC - Phyllospora comosa - < 0.1 mg/l - 96 h (Formaldehyde)

Persistence and degradability
Biodegradability Biotic/Aerobic (Formaldehyde)
Result: 90 % - Readily biodegradable.

Bioaccumulative potential
(no data available

Mobility in soil
(no data available (Formaldehyde)
**PBT and vPvB assessment**
no data available

**Other adverse effects**
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.
no data available

### 13. DISPOSAL CONSIDERATIONS

**Product**
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. 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>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-00-0</td>
<td>2007-07-01</td>
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**SARA 313 Components**

<table>
<thead>
<tr>
<th>CAS-No.</th>
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<tbody>
<tr>
<td>67-56-1</td>
<td>2007-07-01</td>
</tr>
<tr>
<td>50-00-0</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

**SARA 311/312 Hazards**
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

<table>
<thead>
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<th>CAS-No.</th>
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<tbody>
<tr>
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<td>50-00-0</td>
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</tbody>
</table>
Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>2007-07-01</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>2007-07-01</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
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New Jersey Right To Know Components

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<tr>
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</tr>
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<td>Formaldehyde</td>
<td>50-00-0</td>
<td>2007-07-01</td>
</tr>
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</table>

California Prop. 65 Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING! This product contains a chemical known to the State of California to cause cancer.</td>
<td>50-00-0</td>
<td>2007-09-28</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Further information

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