Section I - Product Identification

A solution of reagent alcohol, formaldehyde and acetic acid in water.

Section II - Hazards Identification

Overview: Toxic by inhalation absorption or ingestion. Can not be made nontoxic. Methanol is a cumulative poison and death has been reported for ingestion of less than 30 milliliters. Causes CNS depression, headache, intoxication, dilation of the pupils, convulsions nausea, and dizziness. Unconsciousness and death may result. Methanol intoxication may produce visual disturbances and blindness.

Safety Ratings

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous</td>
<td>Very Flammable</td>
<td>Slight</td>
<td>Slight</td>
</tr>
</tbody>
</table>

Recommended safety equipment: safety goggles, lab coat and proper gloves

Storage: Room Temperature away from sources of ignition.

NFPA Ratings

Health = 2  Flammability = 4  Reactivity = 0

Potential Health Effects

The toxicology of this compound have not been completely examined. It is presumed that the toxicity of this item is similar to other aliphatic alcohols. Inhalation of formaldehyde can lead to congestion, coughing and shortness of breath. Frequent skin contact leads to drying and scaling. Ingestion will damage the throat, stomach and intestines resulting in nausea, vomiting, abdominal pain and diarrhea. Lowered blood pressure, spontaneous abortion, loss of consciousness and kidney damage may result. Inhalation of high concentrations of vapor (14 ppm) have caused cancer in laboratory animals. Genetic damage in bacteria has been demonstrated.

Inhalation: Can cause irritation and chemical burns to the mouth, throat, esophagus and stomach. Can also cause nausea, vomiting, diarrhea, etc.

Ingestion: Ingestion will produce CNS disturbance, dizziness, photophobia, headache, stupor, coma and death.

Skin contact: Alcohols are absorbed through the skin. Repeated contact causes defatting of the skin with resultant irritation and flaking. May cause skin irritation or aggravation of existing dermatitis. May cause temporary discoloration of the skin.

Eye contact: Vapors may cause stinging sensation and tearing. Solution contact can cause corneal injury which can cause visual impairment if not dealt with immediately.

Chronic Exposure: Unknown

Aggravation of preexisting conditions: Impaired kidney and liver function may be aggravated by exposure to alcohols. Preexisting eye, skin, and respiratory conditions may also be aggravated. Methanol has shown genetic toxicity in some animals. May aggravate preexisting asthma and other lung diseases.

Section III - Composition/Information on Components

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS#</th>
<th>OSHA Pel</th>
<th>ACGIH TLV</th>
<th>Other Limits</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>1000 ppm (TWA)</td>
<td>1000 ppm (TWA)</td>
<td>56% v/v</td>
<td></td>
</tr>
<tr>
<td>Isopropanol</td>
<td>67-63-0</td>
<td>400 ppm (TWA)</td>
<td>400 ppm (STEL)</td>
<td>3.1% v/v</td>
<td></td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>67-56-1</td>
<td>200 ppm (TWA)</td>
<td>200 ppm (TWA)</td>
<td>4.1% v/v</td>
<td></td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>0.75 ppm (TWA)</td>
<td>0.3 ppm (CEIL)</td>
<td>4% w/v</td>
<td></td>
</tr>
<tr>
<td>Acetic acid</td>
<td>64-19-7</td>
<td>25 mg/m³ TWA</td>
<td>25 mg/m³ TWA</td>
<td>6.5% w/v</td>
<td></td>
</tr>
</tbody>
</table>
Section IV - First Aid Measures

Inhalation: Remove from source of exposure and get medical attention for any breathing difficulty.
Ingestion: Drink large quantities of fluids and call a physician immediately. Administer activated charcoal or other adsorbent if available. Get immediate medical attention even if symptoms improve.
Skin Contact: In case of skin contact, remove contaminated clothing and flush with water. Wash affected area with soap and water. Get medical advice if irritation develops.
Eye Contact: In case of eye contact, flush with water for at least 15 minutes and get immediate medical attention.

Section V - Fire Fighting Measures

Flash point: 21°C (70°F) TCC
Flammable Limits (for ethanol): LEL 3%  UEL 19%
Fire: Water is ineffective against alcohol fires but may be used to cool adjacent containers.
Fire Extinguishing Media: Alcohol foam, carbon dioxide or dry chemical.
Special information: Pyrolysis will release toxic carbon monoxide.

Section VI - Accidental Release Measures

Remove all sources of ignition, absorb with a suitable absorbent (such as paper towels) and dispose.

Section VII - Handling and Storage

Store in a closed container, away from open flames or other sources of ignition.

Section VIII - Exposure Control/Personal Protection

Airborne Exposure Limits: See section III.
Ventilation System: Use appropriate ventilation. Laboratory fume hoods or similar apparatus are recommended for handling formaldehyde solutions. When required, Refer to the ACGIH document, “Industrial Ventilation, a Manual of Recommended Practices” for details about ventilation.
Personal Respirator: Required if threshold limit value for formaldehyde is exceeded. In case of emergency, or when exposure levels are unknown, use a half face or full face respirator with organic vapor cartridges.
Skin protection: Chemical resistant gloves are recommended.
Eye Protection: Laboratory safety goggles, safety glasses or face shield are required.
People who regularly work with formaldehyde are required to have regular medical surveillance.

Section IX - Physical and Chemical Properties

Boiling Point: 183°F
Vapor pressure (mm Hg): 40 @ 19°C
Vapor Density (air = 1): 1.6
Appearance and Odor: A clear colorless liquid with the characteristic odor of alcohol.

Section X - Stability and Reactivity

Stability: Freezes only at very low temperature.
Hazardous Decomposition Products: Nothing unusual.
Hazardous polymerization: Will not occur.
Incompatibilities: Oxidizers.
Conditions to avoid: heat, flame and sources of ignition.

Section XI - Toxicological Information

Chronic consumption of ethanol is believed to be linked to liver disease, cancer and birth defects.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Known Carcinogenicity?</th>
<th>NTP?</th>
<th>Anticipated?</th>
<th>IARC Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>Yes</td>
<td>no</td>
<td>yes</td>
<td>2A</td>
</tr>
<tr>
<td>Ethanol</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>none</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>3</td>
</tr>
<tr>
<td>Methanol</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>none</td>
</tr>
</tbody>
</table>
Section XII - Ecological Information

*Environmental Fate:* Biodegradable

*Environmental Toxicity:* Formaldehyde is expected to be toxic to fish.

Ethanol evaporates quickly and is not expected to bioaccumulate. The material is removed from the air by dry and liquid adsorption. The half-life for ethanol in the atmosphere is one to ten days.

Section XIII - Disposal Considerations

The preferred disposal method is incineration. Local governments may restrict the amounts of alcohol or formaldehyde that may be flushed down drain. Insure compliance with all government regulation.

Section XIV - Transportation Information

**DOT/IATA Shipping name:** Ethanol Solution  
**Hazard Class:** 3  
**Packaging Group:** II  
**Hazard Label:** Flammable liquid  
**UN Identification Number:** UN1170

Bottles smaller than 32 Fl. Oz. are eligible to be shipped under ORM-D or limited quantity exemptions [49 CFR section 173.150(b)(2), 173.150(C) and IATA Y341].

Section XV - Regulatory Information

**Chemical Inventory Status**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TSCA</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Methanol</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Federal, State and International Regulations**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>SARA 302</th>
<th>SARA 313</th>
<th>RCRA</th>
<th>TSCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>RQ: No</td>
<td>TPQ: No</td>
<td>List: No</td>
<td>Category: No</td>
</tr>
<tr>
<td>Ethanol</td>
<td>RQ: No</td>
<td>TPQ: No</td>
<td>List: No</td>
<td>Category: No</td>
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<tr>
<td>Formaldehyde</td>
<td>RQ: 100</td>
<td>TPQ: 500</td>
<td>List: Yes</td>
<td>Category: No</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>RQ: No</td>
<td>TPQ: No</td>
<td>List: Yes</td>
<td>Category: No</td>
</tr>
<tr>
<td>Methanol</td>
<td>RQ: No</td>
<td>TPQ: No</td>
<td>List: Yes</td>
<td>Category: No</td>
</tr>
</tbody>
</table>

Chemical Weapons Convention: No  
TSCA 12(b): No  
CDTA: Yes  
SARA 311/312: Acute: Yes, Chronic: Yes

Section XVI - Other Information

This information is believed to be correct but is not waranteed as such, nor does it purport to be all inclusive.

Revision Date: Mar. 6, 2014