Material Safety Data Sheet

Section 1 - Product and Company Information

Product Name: Formalin solution, 10% neutral buffered
Product Number: HT501320
Brand: Sigma Chemical
Company: Sigma-Aldrich
Street Address: 2000 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Fax: 800 325 5002
Emergency Phone: 414 273 3850 Ext. 5996

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>Percent</th>
<th>EC No</th>
<th>Annex I Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMALIN, 10% NEUTRAL BUFFERED</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>&gt;93.425%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt;94.580%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METHANOL</td>
<td>67-56-1</td>
<td>&lt;3.700%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DI-SODIUM HYDROGEN PHOSPHATE</td>
<td>7558-79-4</td>
<td>&lt;1.000%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANHYDROUS SODIUM HYDROGEN PHOSPHATE</td>
<td>10049-21-5</td>
<td>&lt;0.650%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MONOHYDRATE</td>
<td></td>
<td>&lt;0.400%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

Emergency Overview

HMIS Rating
Health: 3* Flammability: 2 Reactivity: 0

NFPA Rating
Health: 3 Flammability: 2 Reactivity: 0
*additional chronic hazards present.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure
If inhaled, move 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: 144 °F
Explosion Limits: Lower: 7% Upper: 70%
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)
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 Precaution(s)
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.

Environmental Precaution(s)
Do not allow material to enter drains or water courses.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Do not use if skin is cut or scratched. Wash thoroughly after handling.

Sigma Chemical - HT501320
Sigma-Aldrich Corporation
www.sigma-aldrich.com

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Storage
Suitable
Keep tightly closed. Keep away from heat, sparks, and open flame.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Chemical-resistant gloves.
Eye
Chemical safety goggles.

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

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>N/A</td>
<td></td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>BP/VP Range</td>
<td>100 °C</td>
<td>760 mmHg</td>
</tr>
<tr>
<td>MP/IP Range</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Freezing Point</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>40 mmHg</td>
<td>39 °C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1 g/L</td>
<td></td>
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<tr>
<td>Saturated Vapor Conc.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>SG/Density</td>
<td>1.08 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>Viscosity</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Water Content</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Volatile</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>VOC Content</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Decomposition Temp.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Flash Point 'F</td>
<td>144 °F</td>
<td>Method: closed cup</td>
</tr>
<tr>
<td>Flash Point 'C</td>
<td>62.2 °C</td>
<td>Method: closed cup</td>
</tr>
<tr>
<td>Explosion Limits</td>
<td>Lower: 7 %</td>
<td></td>
</tr>
<tr>
<td>Autocorrelation</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Solubility
Solubility in Water: Miscible.
N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable

Materials to Avoid

Hazardous Decomposition Products
Hazardous Decomposition Products
Nature of decomposition products not known.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
May cause skin irritation.

Skin Absorption
Harmful if absorbed through skin. Ready absorbed through skin.

Eyes Contact
May cause eye irritation.

Inhalation
Harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion
Harmful if swallowed.

Sensitization
Respiratory
May cause allergic respiratory reaction.

Skin
May cause allergic skin reaction.

Target Organ(s) or System(s)

Signs and Symptoms of Exposure

RTECS Number: N/A

Chronic Exposure - Carcinogen

OSHA Carcinogen List

OSHA Classification

OSHA Carcinogen List

OSHA Classification

OSHA Carcinogen List

OSHA Classification

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OSHA Classification
Section 12 - Ecological Information

Acute Ecotoxicity Tests
Test Type
LC50 Fish
Species
Onchorhynchus mykiss (Rainbow trout)
Time: Value: 96.0 h 19.000 mg/l
Test Type
EC50 Daphnia
Species
Daphnia magna
Time: Value: 48.0 h 24.500 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. This combustible material may be burned 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: Combustible liquid, n.o.s.
UN: NA1993
Class: COMBUSTIBLE LIQUID
Packing Group: Packing Group III
Hazmat Label: None
PIH: Not PIH

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport

Section 15 - Regulatory Information

EU Additional Classification
Symbol of Danger: Xn
Indication of Danger: Harmful
Risk Statements: R: 20/21/22 40 43
Harmful by inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.
Safety Statements: S: 36/37
Wear suitable protective clothing and gloves.

US Classification and Label Text
Indication of Danger: Harmful
Risk Statements: Harmful by inhalation, in contact with skin and if swallowed. Harmful: possible risk of irreversible effects through inhalation, in contact with skin, and if swallowed. May cause sensitization by inhalation and skin contact.
Safety Statements: do not breathe vapor. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
US Statements:

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 damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.