Material Safety Data Sheet
Potassium Hydroxide Solutions in Ethanol

Section 1 - Chemical Product and Company Identification

MSDS Name: Potassium Hydroxide Solutions in Ethanol
Catalog Numbers: LC19310, LC19560
Synonyms: None
Company Identification: LabChem Inc
200 William Pitt Way
Pittsburgh, PA 15238
Company Phone Number: (412) 826-5230
Emergency Phone Number: (800) 424-9300
CHEMTREC Phone Number: (800) 424-9300

Section 2 – Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name:</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td>balance</td>
</tr>
<tr>
<td>67-56-1</td>
<td>Methyl alcohol</td>
<td>&lt;5</td>
</tr>
<tr>
<td>67-63-0</td>
<td>Isopropyl alcohol</td>
<td>&lt;5</td>
</tr>
<tr>
<td>1310-58-3</td>
<td>Potassium hydroxide</td>
<td>0.5 - 3</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

Emergency Overview
Appearance: Clear, colorless to orange solution
Danger! Flammable. Corrosive. Causes irritation or burns by all exposure routes. May be fatal or cause blindness if swallowed. May cause central nervous system depression. May cause liver and kidney damage. May cause reproductive and fetal effects.
Target Organs: Kidneys, central nervous system, liver, eyes, skin, respiratory system

Potential Health Effects
Eye:
Causes irritation or burns with redness, pain, tearing, inflammation, and possible corneal injury. May cause painful sensitization to light. Effects may be delayed.
Skin:
Causes skin irritation or burns.
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Ingestion:
Causes digestive tract irritation or burns. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Collapse, unconsciousness, coma, and death due to respiratory failure are possible in advanced stages.

Inhalation:
Causes severe irritation or burns to upper respiratory tract. May cause chemical pneumonitis, pulmonary edema, spasm, and edema of the larynx and bronchi. Inhalation of high concentrations may cause central nervous effects similar to those of ingestion.

Chronic:
Chronic inhalation or ingestion may cause effects similar to those of acute inhalation and ingestion. Prolonged or repeated skin contact may cause defatting and dermatitis. Denatured ethanol is associated with respiratory irritation, central nervous system depression, visual impairment, dermatitis, conjunctivitis, and sensory and motor impairment.

Section 4 - First Aid Measures

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid at once. Do NOT allow victim to rub or keep eyes closed.

Skin:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid at once. Wash clothing before reuse.

Ingestion:
Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid at once.

Inhalation:
Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician:
Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Containers can build up pressure if exposed to heat or flame. Vapors are heavier than air and can flashback from a source of ignition or collect in low-lying areas. Use water spray to keep fire-exposed containers cool. Move containers if possible. Avoid breathing vapors.

Extinguishing Media:
For small fires, use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam.

Autoignition Temperature:
370°C (698°F)

Flash Point:
18°C (65°F)
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NFPA Rating:
- CAS# 64-17-5: Health- 0, Flammability- 3, Instability- 0.
- CAS# 67-56-1: Health- 1, Flammability- 3, Instability- 0.
- CAS# 67-63-0: Health- 1, Flammability- 3, Instability- 0.

Explosion Limits:
- Lower: 4%
- Upper: 19%

Section 6 - Accidental Release Measures

General Information:
Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Absorb spill with inert material (vermiculite, sand, diatomaceous earth), and transfer to a suitable container for disposal. Shut off ignition sources. Use spark-proof tools and equipment.

Section 7 - Handling and Storage

Handling:
Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue and can be dangerous. Avoid contact with heat, sparks, and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames.

Storage:
Keep away from sources of ignition. Store in a tightly closed container in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl alcohol</td>
<td>1000 ppm TWA;</td>
<td>1000 ppm TWA;</td>
<td>1000 ppm TWA;</td>
</tr>
<tr>
<td></td>
<td>1900 mg/m3 TWA</td>
<td>1900 mg/m3 TWA</td>
<td>1900 mg/m3 TWA</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>200 ppm TWA;</td>
<td>200 ppm TWA;</td>
<td>200 ppm TWA;</td>
</tr>
<tr>
<td></td>
<td>250 ppm STEL</td>
<td>260 mg/m3 TWA;</td>
<td>260 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6000 ppm IDLH</td>
<td></td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>200 ppm TWA;</td>
<td>400 ppm TWA;</td>
<td>400 ppm TWA;</td>
</tr>
<tr>
<td></td>
<td>400 ppm STEL</td>
<td>980 mg/m3 TWA;</td>
<td>980 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2000 ppm IDLH</td>
<td></td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td>2 mg/m3 Ceiling</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs:
Ethyl alcohol: 1000 ppm TWA; 1900 mg/m3 TWA
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Methyl alcohol: 200 ppm TWA; 260 mg/m³ TWA
Isopropyl alcohol: 400 ppm TWA; 980 mg/m³ TWA

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless to orange</td>
</tr>
<tr>
<td>Odor</td>
<td>Alcohol-like</td>
</tr>
<tr>
<td>pH</td>
<td>13 - 14</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>40 mm Hg @ 20°C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1.6</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&lt; Ether</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1.2 mPas @ 20°C</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>78°C (172°F)</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>-114°C (-173°F)</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Soluble</td>
</tr>
<tr>
<td>Specific Gravity/Density</td>
<td>0.8 – 0.9</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures. Solutions of potassium hydroxide in ethanol may turn orange over time, but this does not affect product quality or usage.

Conditions to Avoid:
Incompatible materials, ignition sources, excess heat.

Incompatibilities with Other Materials:
Metals, acids, sulfates, carbides, hydrogen peroxide.

Hazardous Decomposition Products:
Formaldehyde, carbon monoxide, carbon dioxide, oxides of potassium.

Hazardous Polymerization:
Has not been reported.
Section 11 - Toxicological Information

RTECS:
   CAS# 64-17-5: KQ6300000.
   CAS# 67-56-1: PC1400000.
   CAS# 67-63-0: NT8050000.
   CAS# 1310-58-3: TT2100000.

LD50/LC50:
   CAS# 64-17-5:
      Inhalation, mouse: LC50 = 39 gm/m3/4H
      Inhalation, rat: LC50 = 20000 ppm/10H
      Oral, mouse: LD50 = 3450 mg/kg
      Oral, rabbit: LD50 = 6300 mg/kg
      Oral, rat: LD50 = 7060 mg/kg.
   CAS# 67-56-1:
      Inhalation, rat: LC50 = 64000 ppm/4H
      Oral, mouse: LD50 = 7300 mg/kg
      Oral, rabbit: LD50 = 14200 mg/kg
      Oral, rat: LD50 = 5628 mg/kg
      Skin, rabbit: LD50 = 15800 mg/kg.
   CAS# 67-63-0:
      Oral, mouse: LD50 = 3600 mg/kg
      Oral, rabbit: LD50 = 6410 mg/kg
      Oral, rat: LD50 = 5045 mg/kg
      Skin, rabbit: LD50 = 12800 mg/kg.
   CAS# 1310-58-3:
      Draize test, rabbit, skin: 50 mg/24H Severe
      Oral, rat: LD50 = 273 mg/kg

Carcinogenicity:
   CAS# 64-17-5: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
   CAS# 67-56-1: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
   CAS# 67-63-0: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
   CAS# 1310-58-3: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

Epidemiology:
   Methanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Specific developmental abnormalities for methanol include the musculoskeletal, urogenital, and cardiovascular systems. Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome". Early epidemiological studies have suggested an association between the strong acid manufacture of isopropyl alcohol and paranasal sinus cancer in workers.

Teratogenicity:
   CAS# 64-17-5: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception)
   Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.

Reproductive:
   CAS# 64-17-5: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception)
   Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.
Mutagenicity:
CAS# 64-17-5: DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis:
Human, Lymphocyte = 1160 gm/L; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm;
Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous); Sister Chromatid Exchange:
Human, Lymphocyte = 500 ppm/72H (Continuous).

Neurotoxicity:
No information found

Section 12 - Ecological Information

Ecotoxicity:
Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°C
Fish: Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified)
Bacteria: Phytobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min; Microtox test
CAS# 64-17-5: When spilled on land it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in ground water is unknown. When released into water it will volatilize and probably biodegrade. It would not be expected to adsorb to sediment or bioconcentrate in fish.

Environmental:
CAS# 64-17-5: When released to the atmosphere it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.

Section 13 - Disposal Considerations

Dispose of in accordance with Federal, State, and local regulations.

Section 14 - Transport Information

US DOT
LC19310
Shipping Name: Ethanol solution
Hazard Class: 3
UN Number: UN1170
Packing Group: PGII

LC19560
Flammable liquid, corrosive, n.o.s. (Ethanol, Potassium hydroxide)
3
UN2924
PG II

Section 15 - Regulatory Information

US Federal
TSCA:
CAS# 64-17-5 is listed on the TSCA Inventory.
CAS# 67-56-1 is listed on the TSCA Inventory.
CAS# 67-63-0 is listed on the TSCA Inventory.
CAS# 1310-58-3 is listed on the TSCA Inventory.
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SARA Reportable Quantities (RQ):
- CAS# 67-56-1: final RQ = 5000 pounds (2270 kg)
- CAS# 1310-58-3: final RQ = 1000 pounds (454 kg)

CERCLA/SARA Section 313:
This material contains Methyl alcohol (CAS# 67-56-1, 5%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
This material contains Isopropyl alcohol (CAS# 67-63-0, 5%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

OSHA - Highly Hazardous:
None of the chemicals in this product are considered highly hazardous by OSHA.

US State
State Right to Know:
- Ethyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
- Methyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
- Isopropyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
- Potassium hydroxide can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California Regulations:
WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause developmental reproductive toxicity.

European/International Regulations
Canadian DSL/NDSL:
- CAS# 64-17-5 is listed on Canada's DSL List.
- CAS# 67-56-1 is listed on Canada's DSL List.
- CAS# 67-63-0 is listed on Canada's DSL List.
- CAS# 1310-58-3 is listed on Canada's DSL List.

Canada Ingredient Disclosure List:
- CAS# 64-17-5 is listed on Canada's Ingredient Disclosure List.
- CAS# 67-56-1 is listed on Canada's Ingredient Disclosure List.
- CAS# 67-63-0 is listed on Canada's Ingredient Disclosure List.
- CAS# 1310-58-3 is listed on Canada's Ingredient Disclosure List.

Section 16 - Other Information

MSDS Creation Date: December 21, 1999
Revision Date: October 19, 2009

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