1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 2-Propanol
Product Number : 270490
Brand : Aldrich
Company : Sigma-Aldrich

3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Isopropanol
Formula : C3H8O
Molecular Weight : 60.1 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propan-2-ol</td>
<td>67-63-0</td>
<td>200-661-7</td>
<td>603-117-00-0</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Flammable Liquid
Target Organ Effect
Irritant

Target Organs
Gastrointestinal tract, Liver, Cardiovascular system., Kidney, Nerves.

HMIS Classification
Health Hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 1

NFPA Rating
Health Hazard: 2
Fire: 3
Reactivity Hazard: 0
Health Hazard: 2
Fire: 3
Reactivity Hazard: 1

Potential Health Effects

Inhalation
Vapours may cause drowsiness and dizziness. May be harmful if inhaled. Causes respiratory tract irritation.

Skin
May be harmful if absorbed through skin. Causes skin irritation.

Eyes
Causes eye irritation.

Ingestion
May be harmful if swallowed.

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. Consult a physician.

In case of eye contact
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 12.0 °C (53.6 °F) - closed cup
Ignition temperature 425 °C (797 °F)

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

Personal precautions
Use personal protective equipment. 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.

Methods for cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

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. Store in cool place.

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>Propan-2-ol</td>
<td>67-63-0</td>
<td>TWA</td>
<td>200 ppm</td>
<td>2003-01-01</td>
<td>US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004:Committees on Threshold Limit Values (TLVs ) and Biological Exposure Indices (BEIs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>400 ppm</td>
<td>2003-01-01</td>
<td>US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004:Committees on Threshold Limit Values (TLVs ) and Biological Exposure Indices (BEIs)</td>
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<td></td>
<td></td>
<td>TWA</td>
<td>400 ppm 980 mg/m³</td>
<td>1989-03-01</td>
<td>US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>500 ppm 1,225 mg/m³</td>
<td>1989-03-01</td>
<td>US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>400 ppm 980 mg/m³</td>
<td>1993-06-30</td>
<td>US. Department of Labor - Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PEL) 29 CFR 1910.1000 Air</td>
</tr>
</tbody>
</table>

Remarks
Refers to Appendix A -- Carcinogens.
ACGIH 2003 Adoption
Contaminants.

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
Safety glasses

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

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Form: liquid
- Colour: colourless

Safety data
- pH: no data available
- Melting point: -89.5 °C (-129.1 °F)
- Boiling point: 81.0 - 83.0 °C (177.8 - 181.4 °F)
- Flash point: 12.0 °C (53.6 °F) - closed cup
- Ignition temperature: 425 °C (797 °F)
- Lower explosion limit: 2 % (V)
- Upper explosion limit: 12.7 % (V)
- Vapour pressure: 43.2 hPa (32.4 mmHg) at 20.0 °C (68.0 °F), 58.7 hPa (44.0 mmHg) at 25.0 °C (77.0 °F)
- Density: 0.78 g/cm³
- Water solubility: completely soluble
- Partition coefficient: log Pow: 0.05

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Oxidizing agents, acids, Acid anhydrides, Halogens, Aluminum
Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Hazardous reactions
Vapours may form explosive mixture with air.

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat - 5,045 mg/kg
LC50 Inhalation - rat - 8 h - 16000 ppm
LD50 Dermal - rabbit - 12,800 mg/kg

Irritation and corrosion
Skin - rabbit - Mild skin irritation
Eyes - rabbit - Eye irritation - 24 h

Sensitisation
no data available

Chronic exposure
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs and Symptoms of Exposure
Central nervous system depression, prolonged or repeated exposure can cause: Nausea, Headache, Vomiting, narcosis, Drowsiness, Overexposure may cause mild, reversible liver effects.

Potential Health Effects

Inhalation Vapours may cause drowsiness and dizziness. May be harmful if inhaled.
Causes respiratory tract irritation.

Skin May be harmful if absorbed through skin. Causes skin irritation.

Eyes Causes eye irritation.

Ingestion May be harmful if swallowed.

Target Organs Gastrointestinal tract, Liver, Cardiovascular system., Kidney, Nerves.,

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
no data available

Ecotoxicity effects
Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 9,640.00 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates.
Immobilization EC50 - Daphnia magna (Water flea) - 6,851 mg/l - 24 h
Toxicity to algae EC50 - Scenedesmus subspicatus - > 2,000.00 mg/l - 72 h
EC50 - No information available. - > 1,000.00 mg/l - 24 h

Further information on ecology
no data available

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. 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: 1219 Class: 3 Packing group: II
Proper shipping name: Isopropanol

IMDG
UN-Number: 1219 Class: 3 Packing group: II
Proper shipping name: ISOPROPANOL
Marine pollutant: No

IATA
UN-Number: 1219 Class: 3 Packing group: II
Proper shipping name: Isopropanol

15. REGULATORY INFORMATION

OSHA Hazards
Flammable Liquid, Target Organ Effect, Irritant

TSCA Status
On TSCA Inventory

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

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
Propan-2-ol CAS-No. 67-63-0 Revision Date 1987-01-01

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

Massachusetts Right To Know Components
Propan-2-ol 67-63-0 1987-01-01

Pennsylvania Right To Know Components
Propan-2-ol 67-63-0 1987-01-01

New Jersey Right To Know Components
Propan-2-ol 67-63-0 1987-01-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Further information
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