Section 1 - Product and Company Information

Product Name: ISOPROPYL ALCOHOL, 99.7+%, FCC
Product Number: W292907
Brand: ALDRICH
Company: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name: ISOPROPANOL, FOR MANUFACTURING
CAS #: 67-63-0
SARA 313: Yes

Formula: C3H8O
Synonyms:
- Alcoisol isopropilico (Italian)
- Alcool isopropylique (French)
- Alcojel
- Alcosolve
- Avantin
- Avantine
- Combi-schutz
- Dimethylcarbinol
- Hartosol
- 2-Hydroxypropane
- Imsol A
- Isohol
- Isopropanol
- Isopropyl alcohol (ACGIH:OSHA)
- Iso-propylalkohol (German)
- IPS 1 (alcohol)
- Lutosol
- 1-Methylethanol
- 1-Methylethyl alcohol
- Petrohol
- PRO
- 2-Propanol
- i-Propanol (German)
- n-Propan-2-ol
- sec-Propyl alcohol
- 2-Propyl alcohol
- i-Propylalkohol (German)
- Spectrar
- Sterisol
- hand disinfectant
- Takineocol
- Virahol

RTECS Number: NT8050000

Section 3 - Hazards Identification

Emergency Overview:
Flammable (USA) Highly Flammable (EU). Irritant.
Irritating to eyes. Vapors may cause drowsiness and dizziness.
Target organ(s): Nerves. Kidneys.

HMIS Rating:
- Health: 1*
- Flammability: 3
- Reactivity: 0

NFPA Rating:
- Health: 1
- Flammability: 3
- Reactivity: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.
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, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE
In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE
In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

FLAMMABLE HAZARDS
Flammable Hazards: Yes

EXPLOSION HAZARDS
Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

FLASH POINT
53.6 °F   12 °C   Method: closed cup

EXPLOSION LIMITS
Lower: 2.5 %   Upper: 12 %

AUTOIGNITION TEMP
399 °C

FLAMMABILITY
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): Flammable liquid. Emits toxic fumes under fire conditions. Specific Method(s) of Fire Fighting: Use water spray to cool fire-exposed containers.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.
METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-spark tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a cool dry place.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT
Respiratory: Government approved respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES
Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

<table>
<thead>
<tr>
<th>Country</th>
<th>Source</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>ACGIH</td>
<td>STEL</td>
<td>400 PPM</td>
</tr>
<tr>
<td>USA</td>
<td>ACGIH</td>
<td>TWA</td>
<td>200 PPM</td>
</tr>
<tr>
<td>USA</td>
<td>MSHA Standard-air</td>
<td>TWA</td>
<td>400 PPM (980 MG/M3)</td>
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<tr>
<td>USA</td>
<td>OSHA.</td>
<td>PEL</td>
<td>8H TWA 400 PPM (980 MG/M3)</td>
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<tr>
<td>New Zealand</td>
<td>OEL</td>
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Remarks: check ACGIH TLV

<table>
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<tr>
<th>Country</th>
<th>Source</th>
<th>Type</th>
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<tbody>
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<td>USA</td>
<td>NIOSH</td>
<td>TWA</td>
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<td></td>
<td>STEL</td>
<td>500 PPM</td>
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Section 9 - Physical/Chemical Properties

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<thead>
<tr>
<th>Property</th>
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<th>At Temperature or Pressure</th>
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<tbody>
<tr>
<td>Molecular Weight</td>
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<tr>
<td>pH</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>BP/BP Range</td>
<td>81 - 83 °C</td>
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</tr>
<tr>
<td>MP/MP Range</td>
<td>-89.5 °C</td>
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</tr>
<tr>
<td>Freezing Point</td>
<td>N/A</td>
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<tr>
<td>Vapor Pressure</td>
<td>33 mmHg</td>
<td>20 °C</td>
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<tr>
<td>Vapor Density</td>
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<tr>
<td>Saturated Vapor Conc.</td>
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<td>SG/Density</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<tr>
<td>Volatile%</td>
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<td></td>
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<tr>
<td>VOC Content</td>
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<td></td>
</tr>
</tbody>
</table>
Water Content           < 0.05 %
Solvent Content         N/A
Evaporation Rate        N/A
Viscosity               N/A
Surface Tension         N/A
Partition Coefficient   N/A
Decomposition Temp.     N/A
Flash Point             53.6 °F 12 °C       Method: closed cup
Explosion Limits        Lower: 2.5 %
                        Upper: 12 %
Flammability            N/A
Autoignition Temp       399 °C
Refractive Index        1.378
Optical Rotation        N/A
Miscellaneous Data      N/A
Solubility              N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.
Materials to Avoid: Oxidizing agents, Acids, Acid anhydrides, Halogens, Aluminum.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: May cause skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: May be harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA
Oral
Man
5272 mg/kg
LDLO

Oral
Human
3570 mg/kg
LDLo

Oral
Rat
5045 mg/kg
LD50

Inhalation
Rat
16,000 ppm
LC50

Intraperitoneal
Rat
2735 MG/KG
LD50

Intravenous
Rat
1088 MG/KG
LD50

Oral
Mouse
3600 mg/kg
LD50

Intraperitoneal
Mouse
4477 MG/KG
LD50

Intravenous
Mouse
1509 MG/KG
LD50

Oral
Rabbit
6410 mg/kg
LD50

Skin
Rabbit
12800 mg/kg
LD50

Intraperitoneal
Rabbit
667 MG/KG
LD50
Intravenous  
Rabbit  
1184 MG/KG  
LD50

Intraperitoneal  
Guinea pig  
2560 MG/KG  
LD50

Intraperitoneal  
Hamster  
3444 MG/KG  
LD50

IRRITATION DATA

Skin  
Rabbit  
500 mg  
Remarks: Mild irritation effect

Eyes  
Rabbit  
100 mg  
Remarks: Severe irritation effect

Eyes  
Rabbit  
10 mg  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
100 mg  
24H  
Remarks: Moderate irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: 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 CARCINOGEN LIST

Rating: Group 3

CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 8 GM/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 32400 UG/KG  
Route of Application: Oral  
Exposure Time: (26W PRE)  
Result: Effects on Embryo or Fetus: Fetal death.
Species: Rat  
Dose: 3500 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (1-19D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 7000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (1-19D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

CHRONIC EXPOSURE - MUTAGEN

Species: Rat  
Route: Inhalation  
Dose: 1030 UG/M3/16W-I  
Mutation test: Cytogenetic analysis

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 11340 MG/KG  
Route of Application: Oral  
Exposure Time: (45D PRE)  
Result: Maternal Effects: Menstrual cycle changes or disorders.

Species: Rat  
Dose: 5040 MG/KG  
Route of Application: Oral  
Exposure Time: (1-20D PREG)  
Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Species: Rat  
Dose: 3500 GM/KG  
Route of Application: Oral  
Exposure Time: (MULTIGENERATION)  
Result: Effects on Fertility: Mating performance (e.g., # sperm positive females per # females mated; # copulations per # estrus cycles).

Species: Rat  
Dose: 10000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (1-19D PREG)  
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death.

Species: Rabbit  
Dose: 6240 MG/KG  
Route of Application: Oral  
Exposure Time: (6-18D PREG)  
Result: Maternal Effects: Other effects.
Section 12 - Ecological Information

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. 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.

Section 14 - Transport Information

DOT

Proper Shipping Name: Isopropanol [or] Isopropyl alcohol
UN#: 1219
Class: 3
Packing Group: Packing Group II
Hazard Label: Flammable liquid
PIH: Not PIH

IATA

Proper Shipping Name: Isopropanol
IATA UN Number: 1219
Hazard Class: 3
Packing Group: II

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: F Xi
Indication of Danger: Highly Flammable. Irritant.
R: 11 36 67
Risk Statements: Highly flammable. Irritating to eyes. Vapors may cause drowsiness and dizziness.
S: 7 16 24/25 26
Safety Statements: Keep container tightly closed. Keep away from sources of ignition - no smoking. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

US CLASSIFICATION AND LABEL TEXT

Risk Statements: Irritating to eyes. Vapors may cause drowsiness and dizziness.
Safety Statements: Keep container tightly closed. Keep away from sources of ignition - no smoking. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes
DEMINIMIS: 0.1 %
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes
NDSL: No

Section 16 - Other Information

DISCLAIMER
Caution: for manufacturing, processing, or repacking. This material is not sterile and has not been pyrogen-tested.

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 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.