SAFETY DATA SHEET
Isopropyl Alcohol

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name: Isopropyl Alcohol, 99%

Synonyms: Isopropanol, Isopropyl Alcohol, 2-Propanol, sec-propyl alcohol, dimethylcarbinol, Rubbing alcohol, IPA 99%

Other means of identification: CAS# 67-63-0
                    EINECS# 200-661-7

Product Form: Liquid

Recommended use of the chemical and restrictions on use

Recommended Use: General use organic solvent; remediation of contaminated groundwater and soils.
Restrictions on Use: Use as recommended by the label

Details of the supplier and of the safety data sheet

Supplier Tersus Environmental, LLC
1116 Colonial Club Rd
Wake Forest, NC 27587
Phone: +1-919-453-5577
Email: info@tersusenv.com

Contact Person David F. Alden
Phone: +1-919-453-5577 x2002
Email: david.alden@tersusenv.com

Emergency telephone number

For leak, fire, spill or accident emergencies, call:

+1-919-453-5577 (Tersus Office Hours, 8:00 AM to 5:00 PM Eastern)
+1-800-424-9300 (Chemetrec 24 Hour Service – Emergency Only)
+1-703-527-3887 (Chemetrec Outside United States 24 Hour Service – Emergency Only)
+1-919-638-7892 Gary M. Birk (Outside office hours)

2. HAZARD IDENTIFICATION

OSHA Hazards: Flammable Liquid, Target organ effect, Irritant
Target Organs: Cardiovascular system, gastrointestinal tract, kidney, liver, nerves

GHS label elements (including precautionary statements)

Signal Word: DANGER!
Hazard Statement(s):
H225 Highly flammable liquid and vapor
H319 Causes serious eye irritation
H336 May cause drowsiness or dizziness

Precautionary Statement(s):
P261 Avoid breathing dust/fumes/gas/mist/vapors
P312 Call a POISON CENTER or doctor/physician if you feel unwell
P501 Dispose of contents and container to an approved waste disposal plant
P240 Ground/bond container and receiving equipment
P337 + P313 If eye irritation persists: Get medical attention
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361 + P353 IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.
P370 + P378 In case of fire: Use dry sand, dry chemical, or alcohol-resistant foam for extinction.
P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P233 Keep container tightly closed
P102 Keep out of reach of children
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up
P243 Take precautionary measures against static discharge
P241 Use explosion-proof electrical, ventilating and lighting equipment
P242 Use only non-sparking tools
P271 Use only outdoors or in a well-ventilated area
P264 Wash hands thoroughly after handling
P280 Wear protective gloves and eye and face protection

GHS Classification(s):
Eye Irritation (Category 2)
Flammable Liquids (Category 2)
Specific Target Organ Toxicity – single exposure (Category 3)

Other hazards which do not result in classification: Potential Health

Effects:

<table>
<thead>
<tr>
<th>Organ</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Can cause irritation to the eyes</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Can be harmful if ingested</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Can be harmful if inhaled. Can cause respiratory tract irritation. Vapors may cause drowsiness and dizziness.</td>
</tr>
<tr>
<td>Skin</td>
<td>Can cause irritation if absorbed through skin</td>
</tr>
</tbody>
</table>

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity: Isopropyl Alcohol
CAS #: 67-63-0
EINECS #: 200-661-7
4. FIRST AID MEASURES

General Information
Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Eye Contact
Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention.

Inhalation
Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Ingestion
NEVER give anything by mouth to an unconscious person. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Immediately have victim drink several glasses of water to dilute. Seek medical attention.

Indication of any immediate medical attention and special treatment needed
If exposed or concerned, get medical advice and attention.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide

Specific Hazards Arising from the chemical or mixture
Carbon oxides expected to be the primary hazardous combustion product

Special protective equipment and precautions for fire fighters
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Unusual Fire and Explosion Hazards
Vapors may travel to source of ignition and flash back

Flammable Properties
Classification OSHA/NFPA Class IB Flammable Liquid
Flash Point 12° C (53°F) – closed cup
Autoignition temp. 399° C (750°F)

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental Precautions
Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.
Methods for Containment and Clean Up

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put material into a convenient waste disposal container. Keep container closed.

7. HANDLING AND STORAGE

Precautions for safe handling
Do not get on skin or in eyes. Do not inhale vapors or mist. Keep away from sources of ignition—no smoking. Take measures to prevent the buildup of electrostatic charge.

Hygiene measures
Handle in accordance with good industrial hygiene and safety procedures. Use good personal hygiene practices.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a cool, dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control parameters

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>Source</th>
<th>Type</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>US (OSHA)</td>
<td>TWA</td>
<td>400 ppm</td>
<td></td>
</tr>
<tr>
<td>Isopropyl Alcohol</td>
<td>US (ACGIH)</td>
<td>TWA</td>
<td>200 ppm</td>
<td></td>
</tr>
<tr>
<td>Isopropyl Alcohol</td>
<td>US (ACGIH)</td>
<td>STEL</td>
<td>400 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Exposure Control

Protective equipment

Appropriate engineering controls
General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

Eye/face protection
Use chemical safety goggles and/or a full-face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU). Maintain eye wash fountain and quick-drench facilities in work area.

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 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. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Other skin and body protection
Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
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

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance (physical state, color, etc.)</td>
<td>Liquid. Colorless.</td>
</tr>
<tr>
<td>Odor</td>
<td>Specific data not available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Specific data not available</td>
</tr>
<tr>
<td>pH</td>
<td>Specific data not available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>-90°C (-130°F)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>83°C (181°F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>12°C (53°F) – Closed cup</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Specific data not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Flammable</td>
</tr>
<tr>
<td>Upper / Lower flammability or explosive limits</td>
<td>12.7% (V) / 2.0%(V)</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>4.4 kPa at 20°C (68°F)</td>
</tr>
<tr>
<td>Vapor density</td>
<td>1.05 where air = 1 at 20°C (68°F)</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.858 g/cm³ at 25°C (77°F)</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Partition coefficient n-octanol/water(ies)</td>
<td>Log Pow: 0.05</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>399°C (750°F)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Specific data not available</td>
</tr>
<tr>
<td>Formula (ISOPROPYL ALCOHOL)</td>
<td>C3H8O</td>
</tr>
<tr>
<td>Molecular weight (ISOPROPYL ALCOHOL)</td>
<td>60.1 g/mol</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended storage conditions
Possibility of hazardous reactions Vapors may form explosive mixture with air Heat, flames and spark. Extreme temperatures and sunlight.
Conditions to avoid (e.g., static discharge, shock or vibration) Oxidizing agents, Acid anhydrides, Aluminum, Halogenated compounds, Acids
Incompatible materials Hazardous decomposition products Carbon oxides are expected to be, under fire conditions, the primary hazardous decomposition products

11. TOXICOLOGICAL INFORMATION

Product Summary

Long term exposure (2 years) to Isopropyl Alcohol via inhalation at concentrations up to 5000 ppm caused to exposure related increases in tumors in animals. No data available for the teratogenicity, mutagenicity, or reproductive toxicity of this product. No data available to designate the product as causing specific target organ toxicity through repeated exposure. No data available to designate product as an aspiration hazard.

Acute Toxicity

<p>| LC50 Inhalation | Rat | 16,000 mg/kg | 8 hours |</p>
<table>
<thead>
<tr>
<th>LD50 Dermal</th>
<th>Rabbit</th>
<th>12,800 mg/kg</th>
<th>Behavioral abnormalities observed such as altered sleep time and decreased activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Oral</td>
<td>Rat</td>
<td>5,045 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

**Irritation:**

**Eyes**
Rabbit: Irritating to eyes 24 hours

**Eyes (ISOPROPANOL)**
Mildly irritating to the eye at an airborne concentration of 400 ppm, unpleasant at 800 ppm

**Respiratory or Skin Sensitization**
No data available

**Skin**
Rabbit: mild skin irritation

**Specific target organ toxicity - single exposure (Globally Harmonized System)**
Inhalation: May cause drowsiness or dizziness - central nervous system

**Carcinogenicity**
IARC: Group 3: Not classifiable as to its carcinogenicity to humans.

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.

**Other Hazards**

**Organ** | **Description**
--- | ---
Eyes | Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause transient corneal injury.
Ingestion | Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.
Inhalation | Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause narcotic effects in high concentration. Causes upper respiratory tract irritation. Inhalation of vapors may cause drowsiness and dizziness. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. The probable oral lethal dose in humans is 240 ml (2696 mg/kg), but ingestion of only 20 ml (224 mg/kg) has caused poisoning.
Skin | May cause irritation with pain and stinging, especially if the skin is abraded. Isopropanol has a low potential to cause allergic skin reactions; however, rare cases of allergic contact dermatitis have been reported. May be absorbed through intact skin. Dermal absorption has
12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial, where available)

Acute Fish Toxicity
LD50 / 96 hours Pimephales promelas: 9,640 mg/L

Toxic to Daphnia and Other Aquatic Invertebrates
EC50 / 24 h / Water Flea – 5,102 mg/L

Toxicity to Aquatic Plants
EC50 / 72 hours Desmodesmus subspicatus > 2,000 mg/L

Toxicity to Daphnia and other aquatic invertebrates
Immobilization EC50 / 24 h / Water Flea - 6,851 mg/L

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods
Dispose according to federal, state and local laws. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Authority. Waste is suitable for incineration.

14. TRANSPORTATION INFORMATION

U.S. (D.O.T.)
Proper Shipping Name: Isopropanol
Hazard Class: Class 3
Packing Group: II
UN/NA: 1219
Labels: Flammable Liquid

IMDG
Proper Shipping Name: ISOPROPANOL
Hazard Class: Class 3
Packing Group: II
UN/NA: 1219
EMS-No: F-E, S-D
Marine pollutant: No

IATA
Proper Shipping Name: Isopropanol
Hazard Class: Class 3
Packing Group: II
UN/NA: 1219
15. REGULATORY INFORMATION

OSHA Hazards
Flammable liquid, Target Organ Effect, Irritant

All ingredients are on the following inventories or are exempted from listing.

<table>
<thead>
<tr>
<th>Country</th>
<th>Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>AICS</td>
</tr>
<tr>
<td>Canada</td>
<td>DSL</td>
</tr>
<tr>
<td>China</td>
<td>IECS</td>
</tr>
<tr>
<td>European Union</td>
<td>EINECS</td>
</tr>
<tr>
<td>Japan</td>
<td>ENCS/ISHL</td>
</tr>
<tr>
<td>Korea</td>
<td>ECL</td>
</tr>
<tr>
<td>New Zealand</td>
<td>NZIoC</td>
</tr>
<tr>
<td>Philippines</td>
<td>PICCS</td>
</tr>
<tr>
<td>United States of America</td>
<td>TSCA</td>
</tr>
</tbody>
</table>

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
The following components are subject to reporting levels established by SARA Title III, Section 313:
ISOPROPYL ALCOHOL (CAS# 67-63-0) Revision date: 1987-01-01

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

CERCLA
No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA

Massachusetts Right to Know Components
Isopropyl Alcohol CAS-No. 67-63-0 Revision Date 1987-01-01

Pennsylvania Right to Know Components
Isopropyl Alcohol CAS-No. 67-63-0 Revision Date 1987-01-01
New Jersey Right to Know Components
Isopropyl Alcohol CAS-No. 67-63-0 Revision Date 1987-01-01

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

16. OTHER INFORMATION

NFPA:

![NFPA Rating](image)
The information contained in this Safety Data Sheet, as of the issue date, is believed to be true and correct. However, the accuracy or completeness of this information and any recommendations or suggestions are made without warranty or guarantee. Since the conditions of use are beyond the control of our company, it is the responsibility of the user to determine the conditions of safe use of this product. The information in this sheet does not represent analytical specifications; for this information contact Tersus Environmental.

**Disclaimer:** This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. All recommendations for the use of our products, weather given by us, orally or to be implied from data or lab tests results by us, are based on the current state of our knowledge at the time those recommendations are made. When additional information is obtained, these recommendations may be updated. They may also be influenced by circumstances outside our control. Notwithstanding, such recommendation the user is responsible that the product as supplied by us is suitable to the process or purpose he intends to use it. The user of the product is solely responsible for compliance with all laws and regulations applying to the use of this product. Since we cannot control the application, use or processing of the product, we do not accept responsibility. Therefore, the user should assure that the intended use of the product will not infringe in any party’s intellectual property right.