

SAFETY DATA SHEET



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ISOPROPYL ALCOHOL

SDS No. M0128

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Isopropyl Alcohol

Synonyms: 2-propanol, Dimethyl Carbinol, IPA, Isopropanol, Rubbing Alcohol

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 3

Skin Irritation: GHS Category 3

Eye Irritation: GHS Category 2A

Specific Target Organ Exposure, single exposure: GHS Category 3

Label Elements

Signal Word: DANGER!

Hazard Statements:

- H225 – Highly flammable liquid and vapor.
- H302 – Harmful if swallowed
- H305 – May be harmful if swallowed and enters airways..
- H320 – Causes eye irritation.
- H332 – Harmful if inhaled.
- H336 – May cause dizziness and drowsiness.

Precautionary Statements:

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Emergency Overview

May cause central nervous system depression. Aspiration hazard. Can enter lungs and cause damage. Causes irritation to eyes and respiratory tract. Breathing vapors may cause drowsiness and dizziness.. Prolonged or repeated contact with the skin may cause defatting with irritation redness and cracking. Flammable liquid and vapor. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. Hygroscopic. Target Organs: Central nervous system, respiratory system, eyes, and skin.

HMIS Rating:

Health – 2* Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Isopropyl Alcohol	67-63-0	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Ingestion: Aspiration hazard if swallowed. Get medical help immediately. Do not induce vomiting unless directed by medical personnel. If vomiting occurs naturally, have victim lean forward. Never give anything by mouth to an unconscious person.

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

Notes to Physician: Urine acetone test may be helpful in diagnosis. Hemodialysis should be considered in severe intoxication. Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 399° C (750° F)

Flash Point: 12° C (53° F)

Flammable Limits: Lower Limit – 2.0 vol %, Upper Limit – 12.7 vol %

Products of Combustion: May decompose into irritating and highly toxic gases under fire conditions (formaldehyde, carbon monoxide, carbon, dioxide).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Vapors may form explosive mixtures with air. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Specific Explosion Hazards: May form explosive peroxides when evaporated.

Fire Fighting Media: Water may be ineffective. Do not use straight streams of water. For small fires, use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam. For larger fires, use water spray, fog, or alcohol-resistant foam. Cool containers with flooding quantities of water and well after fire is out.

National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that

are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Use water spray to reduce vapors. Water spray may reduce vapors but still not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Do not use sawdust or any combustible material. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from direct sunlight and all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep from contact with oxidizing materials. After opening, purge container with nitrogen before reclosing. Periodically retest for peroxide formation. Addition of water or other appropriate reducing agent will reduce peroxide formation in long-term storage. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 200 ppm TWA; 400 ppm STEL

NIOSH – 400 ppm TWA; 980 mg/m³ TWA; 2000 ppm IDLH

OSHA Final PELs – 400 ppm TWA; 980 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Alcohol-like

Odor Threshold: 22 ppm

Molecular Formula: (CH₃)₂CHOH

Molecular Weight: 60.09

Auto-ignition Temperature: 399° C (750° F)

Flash Point: 12° C (53° F)

Flammable Limits: Lower Limit – 2.0 vol %, Upper Limit – 12.7 vol %

pH: Not available.

Boiling Point: 82° C @ 760 mm Hg

Freezing/Melting Point: -88° C

Decomposition Temperature: Not available

Specific Gravity: 0.7850 g/cm³

Clear focus. Consistent results. Complete confidence.

Vapor Density (Air=1): 2.1

Vapor Pressure: 33 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): 1.7

Viscosity: 2.27 cP 20° C

Solubility: Miscible

Conductivity at 25°C: Conductive; Conductivity = 3.5×10^8 pS/m; Dielectric Constant = 19.92; Relaxation Time Constant = 5×10^{-7} seconds

10. STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions. This material may form peroxides when concentrated by distillation or evaporation.

Conditions to Avoid: Light, ignition sources, moisture, excess heat, evaporation to near dryness, confined spaces.

Incompatibility With Various Substances: Strong oxidizing agents, strong acids, strong bases, amines, ammonia, ethylene oxide, isocyanates, acetaldehyde, chlorine, phosgene, aluminum at high temperatures. Attacks some forms of plastic, rubbers, and coatings.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Inhalation of high concentrations may cause central nervous effects characterized by nausea, headache, dizziness, unconsciousness, and coma. May cause narcotic effects in high concentrations. Causes upper respiratory tract irritation. Inhalation of vapors may cause drowsiness and dizziness.

INGESTION HAZARD: Causes gastrointestinal irritation with nausea, vomiting, and diarrhea. May cause kidney damage. May cause central nervous system depression with excitement followed by headache, drowsiness, nausea, and vomiting. Advanced stages may cause collapse, unconsciousness, coma, and possible death. Aspiration into lungs may cause chemical pneumonitis, which may be fatal. The probable lethal dose in humans is 240 ml (2696 mg/kg) but ingestion of only 20 ml (224 mg/kg) has caused poisoning.

SKIN CONTACT HAZARD: May cause irritation and stinging, particularly if the skin is abraded. Isopropanol has a low potential for causing allergic skin reactions; however, rare cases allergic dermatitis have been reported. May be absorbed through intact skin. Dermal absorption has been considered toxicologically insignificant. The cases of deep coma with skin contact are thought to be a consequence of gross isopropanol vapor inhalation in rooms with inadequate ventilation, rather than be attributed to skin of absorption of isopropanol.

EYE CONTACT HAZARD: Produced irritation characterized by a burning sensation, redness, tearing, inflammation, and possible corneal damage. May cause transient corneal injury. In the eyes of a rabbit, 0.1 ml of 70% isopropanol caused conjunctivitis and corneal opacity.

Chronic Exposure Hazards: Repeated or prolonged exposure may cause dermatitis and defatting of skin.

Animal Toxicity:

- Draize test, rabbit, eye: 100 mg Severe;
- Draize test, rabbit, eye: 10 mg Moderate;
- Draize test, rabbit, eye: 100 mg/24 hr Moderate;
- Draize test, rabbit, skin: 500 mg Mild;
- Inhalation, mouse: LC50 = 53,000 mg/m³;
- Inhalation, rat: LC50 = 16,000 ppm/8 hr;
- Inhalation, rat: LC50 = 72,600 mg/kg;
- Oral, mouse: LD50 = 3600 mg/kg;
- Oral, mouse: LD50 = 3600 mg/kg;
- Oral, rabbit: LD50 = 6410 mg/kg;
- Oral, rat: LD50 = 5045 mg/kg;
- Oral, rat: LD50 = 5000 mg/kg;

Skin, rabbit: LD50 = 12,800 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: Experimental teratogenic and reproductive effects have been reported. Early epidemiological studies have suggested an association between the strong acid manufacture of isopropyl alcohol and paranasal sinus cancer in workers.

Teratogenicity: A rat and rabbit developmental toxicity study showed no teratogenic effects at doses that were clearly toxic to the mother. In a separate rate study, no evidence of developmental neurotoxicity was associated with gestational exposures to isopropanol up to 1200 mg/kg/d.

Reproductive Effects: No information found.

Mutagenicity: Mutagenic effects in animals have not been observed.

Neurotoxicity: No information available.

Other Studies: Standard Draize test – administration onto the skin (rabbit) = 500 mg (Mild); Standard Draize test – administration into the eye (rabbit) = 100 mg (Moderate); Standard Draize test – administration into the eye = 10 mg (Moderate); Standard Draize test – administration into the eye (rabbit) = 100 mg/24H (Moderate)

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Fathead minnow: 1000 ppm; 96 Hr; LC50

Daphnia: 1000 ppm; 96 Hr; LC50

Fish: Golden orfe: 8970-9280 ppm, 48 Hr, LC50

IPA has a high biochemical oxygen demand and a low potential to cause oxygen depletion in aqueous systems. It has a low potential to affect aquatic organisms, secondary waste treatment microbial metabolism, and the germination of some plants. It has a high potential to biodegrade (low persistence) with unacclimated microorganisms from activated sludge.

Environmental Fate: No information available.

Physical: THOD: 2.40 g oxygen/g; COD: 2.23 g oxygen/g; BOD-5: 1.19-1.72 g oxygen/g

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

US DOT, IATA, IMO

Proper Shipping Name: Isopropanol

Hazard Class: 3

UN Number: UN1219

Packing Group: II

Canada TDG

Additional Information: Flashpoint 12 C

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 67-63-0 is listed on the TSCA Inventory.

Health and Safety Reporting List: Effective 12/15/86, Sunset 12/15/96.

Chemical Test Rules: CAS# 67-63-0: 40 CFR 799.2325

Section 12b: Not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 67-63-0 does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 67-63-0 – acute, chronic, flammable

Section 313: Isopropanol (CAS# 67-63-0) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 67-63-0 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 67-63-0 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 67-63-0 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDL: CAS# 67-63-0 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2, D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 67-63-0 is listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: Xi; F

Risk Phrases: R11 – Highly Flammable; R36 – Irritating to eyes; R67 – vapors may cause dizziness and dizziness.

Safety Phrases: S16 – Keep away from sources of ignition-no smoking; S24/25 – Avoid contact with skin and eyes; S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice; S7 – Keep container tightly closed.

WGK (Water Danger/protection): CAS# 67-63-0: 1

16. OTHER INFORMATION

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The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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