

IN CASE OF TRANSPORTATION EMERGENCY CONTACT:

CHEMTREC:(800) 424-9300

ALL OTHER INQUIRIES:
(770) 904-7042 // www.ciscochem.com
266 Rue Cezzan Lavonia, GA 30553



1. IDENTIFICATION

Product Identity: Isobutyl Alcohol

CAS#: 78-83-1

Synonyms: 2-Methyl-1-propanol; Isobutanol; Isobutyl alcohol

Chemical Name: 2-Methyl-1-propanol

Chemical Formula: $(CH_3)_2CHCH_2OH$

Recommended Use: Laboratory chemicals

2. HAZARDS IDENTIFICATION

Emergency Overview

Causes severe eye irritation and possible burns. Irritating to respiratory system and skin. Flammable liquid and vapor. Risk of serious damage to the eyes. Vapors may cause drowsiness and dizziness.

Appearance: Colorless liquid

Odor: Aromatic

Target Organs: Eyes, skin, respiratory system, central nervous system, liver.

Potential Health Effects/ Routes of Exposure:

Eyes: Causes irritation and possible burns.

Skin: Causes irritation. May be harmful in contact with skin.

Ingestion: May cause irritation of the digestive tract with nausea, vomiting and diarrhea. Harmful if swallowed.

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

Chronic Effect / Carcinogenicity: May cause adverse liver effects. Tumorigenic effects have been reported in experimental animals.

Aggravated Medical Conditions No information available.

These chemicals are considered hazardous by OSHA.

3. COMPOSITION

Composition:

| Name | CAS # | %by Weight |
|------------------|---------|------------|
| Isobutyl alcohol | 78-83-1 | 100 |

Toxicological Data on Ingredients: Isobutyl alcohol: ORAL (LD50): Acute: 2460 mg/kg [Rat.]. DERMAL (LD50): Acute: 3400

mg/kg [Rabbit].

4. FIRST AID MEASURES

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

5. FIRE FIGHTING MEASURES

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 415.56°C (780°F)

Flash Points: CLOSED CUP: 28°C (82.4°F). OPEN CUP: 37.7°C (99.9°F) (Cleveland).

Flammable Limits: LOWER: 1.2% UPPER: 10.9%

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards:

Vapor may travel considerable distance to source of ignition and flash back. Contact with strong oxidizers may cause fires. Ignites on contact with chromium oxide.

Special Remarks on Explosion Hazards: Contact with strong oxidizers may cause explosions.

6. ACCIDENTAL RELEASE MEASURES

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Personal Precautions Use proper personal protective equipment. Avoid contact with skin, eyes and clothing. Take measures against static discharge.

Environmental Precautions Should not be released in the environment.

Methods for Containment and Clean Up Remove all sources of ignition. Absorb with inert material and containerize for disposal. Provide ventilation. Use a spark-proof tool. Always obey local regulations

7. HANDLING AND STORAGE

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 50 (ppm) from ACGIH (TLV) [United States] TWA: 152 (mg/m³) from ACGIH (TLV) [United States] TWA: 50 (ppm) [Canada] TWA: 152 (mg/m³) [Canada] TWA: 50 STEL: 75 (ppm) [United Kingdom (UK)] TWA: 154 STEL: 231 (mg/m³) [United Kingdom (UK)] TWA: 100 (ppm) from OSHA (PEL) [United States] TWA: 300 (mg/m³) from OSHA (PEL) [United States]³
Consult local authorities for acceptable exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Liquid. (Liquid.)

Odor: Sweetish and musty. Slightly suffocating

Taste: Sweet whiskey- like

Molecular Weight: 74.12g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 108°C (226.4°F)

Melting Point: -108°C (-162.4°F)

Critical Temperature: 274.6°C (526.3°F)

Specific Gravity: 0.806 @ 15 C (Water = 1)

Vapor Pressure: 1.2 kPa (@ 20°C)

Vapor Density: 2.56 (Air = 1)

Volatility: Not available

Odor Threshold: 40 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; $\log(\text{oil/water}) = 0.8$

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Miscible in alcohol or in diethyl ether. Partially soluble in cold water, hot water.

10. STABILITY AND REACTIVITY

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Highly reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Reacts with aluminum at 100 C to form explosive hydrogen gas.

Special Remarks on Corrosivity: Isobutyl will attack some forms of plastic, rubber, and coatings.

Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Absorbed through skin. Eye contact. Inhalation.

Toxicity to Animals:

Acute oral toxicity (LD50): 2460 mg/kg [Rat.]. Acute dermal toxicity (LD50): 3400 mg/kg [Rabbit.].

Chronic Effects on Humans: MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans:

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May cause cancer (tumorigenic) based on animal data. Passes through the placental barrier in human.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes skin irritation. May be absorbed by the skin and affect the liver. Eyes: Causes eye irritation. Inhalation: May be harmful if inhaled. Causes respiratory tract and mucous membrane irritation. May also affect brain, behavior/Central Nervous system (CNS depressant with symptoms including headache, loss of coordination and judgement, dizziness, coma and death with exposure to large amounts), nausea. May also affect respiration (dyspnea). Ingestion: May be harmful if swallowed. May cause digestive tract irritation with nausea. May affect metabolism, blood, liver, behavior/Central nervous (symptoms similar to inhalation).

12. ECOLOGICAL INFORMATION

Ecotoxicity: Do not empty into drains.

Persistence and Degradability: No information available

Bioaccumulation/ Accumulation: No information available

Mobility: 0.79

13. DISPOSAL CONSIDERATIONS

Waste Disposal/Waste Disposal of Packaging:

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Isobutyl Alcohol UNNA: 1212 PG: III

Special Provisions for Transport: Not available.

Proper Shipping Documentation

UN 1212, Isobutyl Alcohol, 3, PG III Flammable liquid

15. REGULATORY INFORMATION

Federal and State Regulations:

Connecticut hazardous material survey.: Isobutyl alcohol Illinois toxic substances disclosure to employee act: Isobutyl alcohol Illinois chemical safety act: Isobutyl alcohol New York release reporting list: Isobutyl alcohol Rhode Island RTK hazardous substances: Isobutyl alcohol Pennsylvania RTK: Isobutyl alcohol Minnesota: Isobutyl alcohol Massachusetts RTK: Isobutyl alcohol Massachusetts spill list: Isobutyl alcohol New Jersey: Isobutyl alcohol New Jersey spill list: Isobutyl alcohol Louisiana spill reporting: Isobutyl alcohol California Director's List of Hazardous Substances: Isobutyl alcohol TSCA 8(b) inventory: Isobutyl alcohol TSCA 4(a) proposed test rules: Isobutyl alcohol TSCA 4(a) final test rules: Isobutyl alcohol TSCA 8(a) IUR: Isobutyl alcohol TSCA 8(d) H and S data reporting: Isobutyl alcohol TSCA 12(b) one time export: Isobutyl alcohol CERCLA: Hazardous substances.: Isobutyl alcohol: 5000 lbs. (2268 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):

R10- Flammable. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3 Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

16. OTHER INFORMATION

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.

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