



SAFETY DATA SHEET

ISOPROPYL ALCOHOL 99%

Preparation Date: 27/Jan/2023

Version: 1

1. IDENTIFICATION

Product identifier

Product Name ISOPROPYL ALCOHOL 99%

Other means of identification

Synonyms Propanol-2, Isopropanol

Recommended use of the chemical and restrictions on use

Recommended Use Use as a solvent only in industrial manufacturing processes.

Restricted Uses No information available

Initial Supplier Identifier

BREEN LABS
849 SANDHILL AVENUE
CARSON, CA 90746 USA
Tel: +1-424-232-8888 Fax: +1-424-232-8878

Emergency telephone number

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTREC (24-Hour Number): 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

2. HAZARD IDENTIFICATION

Hazardous Classification of the substance or mixture

Flammable liquids	Category 2
Acute toxicity - Oral	Category 4
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3

Label elements

Hazard pictograms**Signal Word: Danger****Hazard statements**

Highly flammable liquid and vapor
Harmful if swallowed
Causes serious eye irritation
May cause drowsiness or dizziness

Precautionary Statements**Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep container tightly closed
Ground and bond container and receiving equipment
Use only outdoors or in a well-ventilated area
Use explosion-proof electrical/ ventilating / lighting/ equipment
Use only non-sparking tools
Take action to prevent static discharges
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands thoroughly after handling
Avoid breathing dust/fume/gas/mist/vapors/spray
Do not eat, drink or smoke when using this product
Keep cool

Response

IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container to an approved waste disposal plant

Unknown acute toxicity

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Chemical Name	CAS No	Weight-% (W/W)	Synonyms
Isopropyl Alcohol	67-63-0	90 - 100%	Isopropyl Alcohol

4. FIRST AID MEASURES**Description of first aid measures****General advice**

Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

Inhalation

Remove to fresh air. IF exposed or concerned: Get medical advice/attention.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Ingestion

Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

Self-protection of the first aider

Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed:

Causes serious eye irritation Low toxicity. May cause corneal injury. May cause lachrymation (excessive tears). May cause pain disproportionate to the level of irritation to eye tissue. Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion and breathing difficulties. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Swallowing larger amounts may cause injury. Vapor may cause eye irritation experienced as mild discomfort and redness. May cause drying and flaking of the skin. Prolonged exposure not likely to cause significant skin irritation. Signs and symptoms of excessive exposure may include: Facial flushing. Low blood pressure. Irregular heartbeats. With good ventilation, single exposure is not likely to be hazardous. In poorly ventilated areas, vapors or mists may accumulate and cause respiratory irritation. Prolonged excessive exposure may cause adverse effects. Excessive exposure (400 ppm) to isopropanol may cause eye, nose and throat irritation. Incoordination, confusion, hypotension, hypothermia, circulatory collapse, respiratory arrest and death may follow a longer duration or higher levels. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown.

Indication of any immediate medical attention and special treatment needed:**Note to physicians**

Treatment based on sound judgment of physician and individual reactions of patient. Hemodialysis may be of benefit if substantial amounts have been ingested and the patient is showing signs of intoxication. Consider hemodialysis for patients with persistent hypotension or coma unresponsive to standard therapy (isopropanol levels >400 - 500 mg/dl). (Goldfrank 1998, King et al, 1970). Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against

toxicity when considering emptying the stomach.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Water fog or fine spray, carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream, which will spread fire.

Unsuitable extinguishing media Do not use a solid stream of water; this may cause spattering and spread the fire.

Specific hazards arising from the substance or mixture

Use water spray to cool fire-exposed containers and structures. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Isolate and restrict area access. Move containers from fire area if you can do it without risk. Stop leak only if safe to do so. Container may rupture from gas generation in a fire situation. Fight fire from a safe distance and from a protected location. Flammable concentrations of vapor can accumulate at temperatures above flash point. Use proper bonding and grounding during product transfer. NEVER use a water jet directly on the fire because it may spread the fire to a larger area. Flammable mixtures may exist within the vapor space of containers at room temperature. Keep out of low areas where gases (fumes) can accumulate. Flammable mixtures of this product are readily ignited even by static discharge. Use water spray to disperse vapors; re-ignition is possible. When product is stored in closed containers, a flammable atmosphere can develop. Use caution and test if material is burning before entering area. Material burns with invisible flame.

Hazardous combustion products

Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.

Special protective equipment and precautions for fire-fighters

Move containers from fire area if you can do it without risk. Use water spray to keep fire-exposed containers cool. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

Environmental precautions

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with eyes, skin and clothing. Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point and may flash back explosively. Wash thoroughly after handling. Keep away from heat, sparks and flame. Do not ingest. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers may contain hazardous product residues. Bond and ground containers during transfer operations. No smoking or open flame in storage, use or handling areas. Use non-sparking tools. Avoid breathing mist or vapor. Never use air pressure for transferring product. Vapors are heavier than air and will collect in low areas. Do not enter confined spaces unless adequately ventilated.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Keep away from direct sunlight. Peroxides can form if this product is stored in contact with air. Peroxides can be explosive. Shelf life: 20 months in original, sealed container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical Name	Alberta OEL	British Columbia OEL	Ontario	Quebec OEL	Exposure Limit - ACGIH	Immediately Dangerous to Life or Health - IDLH
Isopropyl Alcohol 67-63-0	TWA: 200 ppm TWA: 492 mg/m ³ STEL: 400 ppm STEL: 984 mg/m ³	TWA: 200 ppm STEL: 400 ppm	TWA: 200 ppm STEL: 400 ppm	TWA: 400 ppm TWA: 985 mg/m ³ STEL: 500 ppm STEL: 1230 mg/m ³	400 ppm STEL 200 ppm TLV-TWA	2000 ppm

Consult local authorities for recommended exposure limits

Appropriate engineering controls

Engineering controls

Electrical and mechanical equipment should be explosion proof. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Mechanical ventilation is recommended for all indoor situations to control fugitive emissions.

Individual protection measures, such as personal protective equipment

Eye/face protection

Tight sealing safety goggles.

Hand protection

Nitrile gloves. Neoprene gloves. Polyvinyl alcohol gloves. Ethyl Vinyl Alcohol Laminate (EVAL). Natural rubber gloves. Polyvinylchloride (PVC) gloves. Polyethylene gloves. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials as well as the instructions/specifications provided by the glove supplier. Use gloves chemically resistant to this material, examples of preferred glove barrier materials

include:. Examples of acceptable glove barrier materials include:.

Skin and body protection

Antistatic boots. Chemical resistant apron. Long sleeved clothing. Wear suitable protective clothing.

Respiratory protection

Use a NIOSH-approved chemical cartridge respirator with organic vapor cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH -approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode. NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits.

General hygiene considerations

Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Physical state	Liquid
Color	Colorless
Odor	Alcohol
Odor threshold	No information available

PROPERTIES

	Values	Remarks • Method
pH	No data available	None known
Melting point / freezing point	-89 °C / -128 °F	
Initial boiling point/boiling range	82 °C / 180 °F	
Flash point	12 °C / 54 °F	Tag Closed Cup ASTM D56
Evaporation rate	1.5	
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		
Upper flammability limit:	12	
Lower flammability limit:	2	
Vapor pressure	33 hPa @ 20°C	
Relative vapor density	2.1	
Specific Gravity	0.78 - 0.79 @ 20°C	
Water solubility	Completely miscible	
Solubility in other solvents	No data available	
Partition coefficient	No data available	
Autoignition temperature	425 °C / 797 °F	
Decomposition temperature	No data available	None known
Kinematic viscosity	Dynamic 2.4 mPa.s @ 20°C	
Dynamic viscosity	No data available	None known
Explosive properties	No information available.	
Oxidizing properties	No information available.	
Molecular weight	No information available	
VOC Percentage Volatility	No information available	
Liquid Density	No information available	
Bulk density	No information available	

10. STABILITY AND REACTIVITY

Reactivity/Chemical Stability

Stable

Possibility of hazardous reactions

No additional remark.

Hazardous polymerization

Will not occur.

Conditions to avoid

Product can decompose at elevated temperatures. Avoid contact with heat, sparks, open flame, and static discharge.

Incompatible materials

Strong oxidizers. Strong acids. Aldehydes. Halogens. Halogenated organics.

Hazardous decomposition products

Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation

With good ventilation, single exposure is not likely to be hazardous. In poorly ventilated areas, vapors or mists may accumulate and cause respiratory irritation. Prolonged excessive exposure may cause adverse effects. Excessive exposure (400 ppm) to isopropanol may cause eye, nose and throat irritation. Incoordination, confusion, hypotension, hypothermia, circulatory collapse, respiratory arrest and death may follow a longer duration or higher levels. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown.

Eye contact

Causes serious eye irritation. May cause corneal injury. May cause lachrymation (excessive tears). May cause pain disproportionate to the level of irritation to eye tissue. Vapor may cause eye irritation experienced as mild discomfort and redness.

Skin contact

Prolonged skin contact is unlikely to result in absorption of harmful amounts. May cause drying and flaking of the skin. Prolonged exposure not likely to cause significant skin irritation.

Ingestion

Harmful if swallowed. Low toxicity. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion and breathing difficulties. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Swallowing larger amounts may cause injury. Signs and symptoms of excessive exposure may include: Facial flushing. Low blood pressure. Irregular heartbeats.

Information on toxicological effects

Symptoms

Isopropanol is a moderate to severe eye irritant and a very mild skin irritant. Repeated or prolonged skin contact can cause drying and cracking of the skin (dermatitis). There are no reports of harmful effects developing following short-term exposure to Isopropanol. Exposure produced mild - moderate irritation of the nose and throat. It can probably cause central nervous system (CNS) depression, based on animal information and comparison to related alcohols. Symptoms may include headache, nausea, dizziness, vomiting and incoordination. High exposures may result in unconsciousness and death. Ingestion of large amounts can result in symptoms of CNS depression. Isopropanol can probably be inhaled into the lungs (aspirated) during ingestion or vomiting. Aspiration can result in severe, life-threatening lung damage. In rats and mice long-term exposure by inhalation or ingestion has produced decreased body weight, a reversible increase in motor activity, increased liver weight, and signs of central nervous system (CNS) depression. Decreased testes weight has been observed in mice, while increased testes weight has been observed in rats exposed to high concentrations. Kidney injury has been observed in rats (especially males) and

mice exposed to high concentrations. These effects are believed to be species specific and unlikely to occur in humans. Observations in animals include: Lethargy. Isopropanol toxicity is synergistic with chloroform and carbon tetrachloride resulting in hepatotoxicity.

Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	1,870.00 mg/kg
ATEmix (dermal)	4,059.00 mg/kg

Unknown acute toxicity No information available

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Isopropyl Alcohol 67-63-0	= 1870 mg/kg (Rat)	= 4059 mg/kg (Rabbit)	= 72600 mg/m ³ (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation

Prolonged skin contact is unlikely to result in absorption of harmful amounts. May cause drying and flaking of the skin. Prolonged exposure not likely to cause significant skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation. May cause corneal injury. May cause lachrymation (excessive tears). May cause pain disproportionate to the level of irritation to eye tissue. Vapor may cause eye irritation experienced as mild discomfort and redness.

Respiratory or skin sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

Classification based on data available for ingredients.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Isopropyl Alcohol 67-63-0	Not available	Group 3	Not available	X

Legend

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 3 - Not Classifiable as to Carcinogenicity in Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive toxicity

There is no human information available for Isopropanol. However, Isopropanol is considered teratogenic/embryotoxic based on animal information. One inhalation rat study has shown that 2-propanol is fetotoxic (caused reduced fetal weight gain) in the absence of maternal toxicity. Other studies have shown no effects or effects in the presence of maternal toxicity. Positive and negative mutagenic results have been obtained in mammalian cells in vitro and negative results in bacteria.

Specific target organ systemic toxicity - single exposure

May cause drowsiness or dizziness.

Specific target organ systemic toxicity - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Chemical Name	Ecotoxicity - Freshwater Algae Data	Ecotoxicity - Fish Species Data	Toxicity to microorganisms	Crustacea
Isopropyl Alcohol 67-63-0	1000 mg/L EC50 Desmodesmus subspicatus 72 h 1000 mg/L EC50 Desmodesmus subspicatus 96 h	11130 mg/L LC50 (Pimephales promelas) 96 h static 9640 mg/L LC50 (Pimephales promelas) 96 h flow-through 1400000 µg/L LC50 (Lepomis macrochirus) 96 h	Not available	EC50: =13299mg/L (48h, Daphnia magna)

Persistence and degradability No information available.**Bioaccumulation** No information available.**Component Information**

Chemical Name	Partition coefficient
Isopropyl Alcohol 67-63-0	0.05

Other adverse effects No information available.**13. DISPOSAL CONSIDERATIONS****Waste treatment methods**

Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Recover or recycle if possible.

Empty containers should be recycled or disposed of through an approved waste management facility. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums.

14. TRANSPORT INFORMATION**TDG (Canada):**

UN Number	UN1219
Shipping name	ISOPROPANOL
Class	3
Packing Group	II
Marine pollutant	No.

DOT (U.S.)

UN Number	UN1219
Shipping name	ISOPROPANOL

Class	3
Packing Group	II
Marine pollutant	Not available

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Regulatory Rules

Chemical Name	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Isopropyl Alcohol - 67-63-0	Not Listed	Not Listed	Listed

International Inventories

TSCA

All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

DSL/NDSL

All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

16. OTHER INFORMATION

NFPA:	Health hazards 2	Flammability 3	Instability 0	Physical and chemical properties -
HMIS:	Health hazards 2 *	Flammability 3	Physical hazards 0	Personal protection X

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

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Do not use ingredient information and/or ingredient percentages in this SDS as a product specification. For product specification information refer to a product specification sheet and/or certificate of analysis. These can be obtained from the Breen Labs office.

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This information relates only to the product designated herein, and does not relate to its use in

End of Safety Data Sheet