Material Safety Data Sheet

DI Isopropyl Ether

Section 1 - Chemical Product

MSDS Name: Isopropyl ether
Synonyms: Diisopropyl ether; DIPE; 2-Isopropoxypropane.

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
108-20-3	Isopropyl ether	98	203-560-6

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: -29 deg C.
Danger! Extremely flammable liquid and vapor. Vapor may cause flash fire. Breathing vapors may cause drowsiness and dizziness. Repeated exposure may cause skin dryness or cracking. Aspiration hazard if swallowed. Can enter lungs and cause damage. May form explosive peroxides. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. Air sensitive.
Target Organs: Central nervous system.

Potential Health Effects
Eye: Causes mild eye irritation.
Skin: May cause skin irritation. Excessive drying of the skin may result from repeated or prolonged contact.
Ingestion: Aspiration hazard. 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. Aspiration of material into the lungs may cause chemical

pneumonitis, which may be fatal.
Inhalation: May cause respiratory tract irritation. May cause narcotic effects in high concentration. May cause drowsiness, unconsciousness, and central nervous system depression.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation may cause effects similar to those of acute inhalation.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid if irritation develops or persists. Wash clothing before reuse. Rinse area with large amounts of water for at least 15 minutes.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: If breathing is difficult, give oxygen. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Forms peroxides of unknown stability. Extremely flammable liquid and vapor. Vapor may cause flash fire. 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.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.
Flash Point: -29 deg C (-20.20 deg F)
Autoignition Temperature: 443 deg C (829.40 deg F)
Explosion Limits, Lower:1.10 vol %
Upper: 21.00 vol %
NFPA Rating: (estimated) Health: 1; Flammability: 3; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Loosen closure cautiously before opening. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. If peroxide formation is suspected, do not open or move container. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Avoid breathing vapor.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Keep under a nitrogen blanket. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids. Store protected from light. Containers should be dated when opened and tested periodically for the presence of peroxides. Test for peroxide levels in unpreserved product upon expiration. Products with excessive peroxide must be disposed of promptly and properly.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Isopropyl ether	250 ppm TWA; 310 ppm STEL	500 ppm TWA; 2100 mg/m3 TWA 1400 ppm IDLH	500 ppm TWA; 2100 mg/m3 TWA

OSHA Vacated PELs: Isopropyl ether: 500 ppm TWA; 2100 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless
Odor: Ethereal odor
pH: Not available.
Vapor Pressure: 150 mm Hg @ 25 deg C
Vapor Density: 3.52
Evaporation Rate: Not available.
Viscosity: 0.38 mPas 25 deg C
Boiling Point: 68 deg C @ 760 mmHg
Freezing/Melting Point:-85 deg C
Decomposition Temperature: Not available.
Solubility: 0.9 G/100ML (20°C)
Specific Gravity/Density:.7250 g/ml
Molecular Formula:C6H14O
Molecular Weight:102.18

Section 10 - Stability and Reactivity

Chemical Stability: Peroxide formation may occur in containers that have been opened and remain in storage.
Conditions to Avoid: Light, ignition sources, exposure to air.
Incompatibilities with Other Materials: Strong oxidizing agents, chlorosulfonic acid, nitric acid, propionyl chloride.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, peroxides.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 108-20-3: TZ5425000
LD50/LC50:
CAS# 108-20-3:
Inhalation, mouse: LC50 = 131 gm/m3;
Inhalation, mouse: LC50 = 130800 mg/m3;
Inhalation, rabbit: LC50 = 121 gm/m3;
Inhalation, rabbit: LC50 = 120600 mg/m3;
Inhalation, rat: LC50 = 162 gm/m3;
Inhalation, rat: LC50 = 161700 mg/m3;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, rat: LD50 = 5880 mg/kg;
Skin, rabbit: LD50 = 20 mL/kg;
.

Carcinogenicity:
CAS# 108-20-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found

Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 91.7 mg/L; 96 Hr.; Flow-throughFish: Bluegill/Sunfish: LC50 = 6600-7000 mg/L; 96 Hr.; UnspecifiedFish: Goldfish: LC50 = 380 mg/L; 24 Hr.; Modified ASTMD1345Bacteria: Phytobacterium phosphoreum: EC50 = 500 mg/L; 5 Minutes; Microtox test Water danger/protection: WGK 1 Fathead minnow (Pimephales promelas) LC50: 91.7 mg/l/96hr
Environmental: On soil, isopropyl ether will volatilize or based on a Koc of 168, should exhibit moderate mobility and leach to groundwater. In water, it should volatilize (est, half-life from a river 1m deep, flowing 1m/sec, with a wind velocity of 3m/sec = 3.3 hr at 25øC). In air, isopropyl ether is expected to exist almost entirely in the vapor phase and is susceptible to photooxidation via vapor-phase reaction with photochemically produced hydroxyl radicals. Half-life = 17 hr with 5x10 hydroxyl radicals/m3.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	**Canada TDG**
Shipping Name:	DIISOPROPYL ETHER	DIISOPROPYL ETHER
Hazard Class:	3	3
UN Number:	UN1159	UN1159
Packing Group:	II	II
Additional Info:		FLASHPOINT -29 C

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 108-20-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 108-20-3: immediate, fire, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 108-20-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
F
Risk Phrases:
R 11 Highly flammable.
R 19 May form explosive peroxides.
R 66 Repeated exposure may cause skin dryness or cracking.
R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 33 Take precautionary measures against static discharges.
S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)

CAS# 108-20-3: 1

Canada - DSL/NDSL

CAS# 108-20-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 108-20-3 is listed on the Canadian Ingredient Disclosure List.