



## ISO 9001 Quality System Certified Organization

MANUFACTURER & EXPORTER OF LABORATORY CHEMICALS AND OILS

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## MATERIAL SAFETY DATA SHEET (MSDS)

### SDS/MSDS

#### Material Safety Data Sheet

##### Diethyl ether

Section 1 - Chemical Product Identification

Chemical Name: Diethyl ether

Synonyms: Ether; Ethyl ether.

Section 2 - Composition, Information on Ingredients

CAS# Chemical Name Percent EINECS/ELINCS

60-29-7 Diethyl ether 98+ 200-467-2



Section 3 - Hazards Identification

##### EMERGENCY OVERVIEW

Appearance: APHA: 10 max liquid. Flash Point: -45 deg C.

Danger! Extremely flammable liquid and vapor. Vapor may cause flash fire. Breathing vapors may cause drowsiness and dizziness. Harmful if swallowed. Repeated exposure may cause skin dryness or cracking. Causes eye and skin irritation. May cause respiratory tract irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. May form explosive peroxides. Hygroscopic (absorbs moisture from the air).

Target Organs: Central nervous system, liver, respiratory system, eyes, skin.

##### Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes skin irritation. May be absorbed through the skin in harmful amounts. Repeated or prolonged exposure may cause drying and cracking of the skin.

Ingestion: Harmful if swallowed. May cause irritation of the digestive tract. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system effects.

Inhalation: May cause respiratory tract irritation. May be harmful if inhaled. Exposure to high concentrations may produce narcosis, nausea and loss of consciousness. Inhalation of vapors may cause drowsiness and dizziness.

Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. Chronic exposure may cause liver damage. Laboratory experiments have resulted in mutagenic effects. Repeated exposures may be habit forming. Prolonged or repeated inhalation or ingestion may result in liver and kidney

Section 4 - First Aid Measures

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Eyes: Immediately 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. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Possible aspiration hazard. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to Physician: Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Extremely flammable. Material will readily ignite at room temperature. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Containers may explode in the heat of a fire. May form explosive peroxides. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May re-ignite after fire is extinguished.

Extinguishing Media: Use water spray to cool fire-exposed containers. Use foam, dry chemical, or carbon dioxide. Water may be ineffective.

Flash Point: -45 deg C ( -49.00 deg F)

Autoignition Temperature: 160 deg C ( 320.00 deg F)

Explosion Limits, Lower:1.7 vol %

Upper: 48 vol %

NFPA Rating: (estimated) Health: 1; Flammability: 4; 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. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Remove all sources of ignition. Use a spark-proof tool. Do not let this chemical enter the environment.

### Section 7 - Handling and Storage

Handling: Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Take precautionary measures against static discharges. Keep away from heat, sparks and flame. Do not ingest or inhale. Handle under an inert atmosphere. Container should be opened by a

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technically qualified person. Use only in a chemical fume hood. If peroxide formation is suspected, do not open or move container.

Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area. Store protected from moisture. Store protected from light and air. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. May form explosive peroxides on prolonged storage.

**Section 8 - Exposure Controls, Personal Protection**

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

**Exposure Limits**

Chemical Name ACGIH NIOSH OSHA - Final PELs

Diethyl ether	400 ppm TWA; 500 ppm STEL	1900 ppm IDLH (10% LEL)	400 ppm TWA; 1200 mg/m <sup>3</sup> TWA
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OSHA Vacated PELs: Diethyl ether: 400 ppm TWA; 1200 mg/m<sup>3</sup> 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: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

**Section 9 - Physical and Chemical Properties**

Physical State: Liquid

Appearance: clear, colorless - APHA: 10 max

Odor: sweetish odor - aromatic odor

pH: Not available.

Vapor Pressure: 587 mbar @ 20 deg C

Vapor Density: 2.55 (Air=1)

Evaporation Rate:37.5 (Butyl acetate=1)

Viscosity: 0.2448 cP @ 20 deg C

Boiling Point: 34.6 deg C @ 760 mmHg

Freezing/Melting Point:-116 deg C

Decomposition Temperature:Not available.

Solubility: Soluble.

Specific Gravity/Density:0.714

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Molecular Formula:C4H10O

Molecular Weight:74.12

### Section 10 - Stability and Reactivity

Chemical Stability: May form explosive peroxides. Air sensitive. Light sensitive. Hygroscopic: absorbs moisture or water from the air.

Conditions to Avoid: Incompatible materials, light, ignition sources, exposure to air, exposure to moist air or water, heat.

Incompatibilities with Other Materials: Strong oxidizing agents, halogens, sulfur, permanganates, azides.

Hazardous Decomposition Products: Carbon monoxide, carbon monoxide, carbon dioxide, peroxides.

Hazardous Polymerization: Will not occur.

### Section 11 - Toxicological Information

RTECS#:

CAS# 60-29-7: KI5775000

LD50/LC50:

CAS# 60-29-7:

Draize test, rabbit, eye: 100 mg Moderate;

Inhalation, mouse: LC50 = 31000 ppm/30M;

Oral, mouse: LD50 = 1760 mg/kg;

Oral, rat: LD50 = 1215 mg/kg;

Skin, rabbit: LD50 = >20 mL/kg;

Carcinogenicity:

CAS# 60-29-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: Mutagenic effects have occurred in humans.

Neurotoxicity: No information found

Other Studies:

### Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 2600 mg/L; 96 Hr; Flow-through bioassayFish:

Bluegill/Sunfish: LC50 >10000 mg/L; 96 Hr; Static bioassayBacteria: Phytobacterium phosphoreum:

EC50 = 5625 mg/L; 15 min; Microtox test If ethyl ether is released to soil, it will be subject to

volatilization. It will be expected to exhibit high mobility in soil and, therefore, it may leach to

groundwater. If ethyl ether is released to water, it will not be expected to significantly adsorb to

sediment or suspended particulate matter, bioconcentrate in aquatic organisms or hydrolyze.

Environmental: Ethyl ether will not significantly photooxidize via reaction with photochemically

produced hydroxyl radicals in the water. Ethyl ether in surface water will be subject to rapid

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volatilization with estimated half-lives of 3.1 hr and 1.5 days. It will not be expected to hydrolyze in water or soil. If ethyl ether is released to the atmosphere, it will be expected to exist almost entirely in the vapor phase. It will be susceptible to photooxidation via vapor phase reaction with photochemically produced hydroxyl radicals with a half-life of 29 hours.

Physical: No information available.

Other: Do not empty into drains.

### 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:

CAS# 60-29-7: waste number U117 (Ignitable waste).

### Section 14 - Transport Information

US DOT Canada TDG

Shipping Name: DIETHYL ETHER DIETHYL ETHER

Hazard Class: 3 3

UN Number: UN1155 UN1155

Packing Group: I I

Additional Info: FLASHPOINT -40 C

### Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 60-29-7 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

CAS# 60-29-7: 100 lb final RQ; 45.4 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

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**SARA Codes**

CAS # 60-29-7: immediate, fire, sudden release of pressure, 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 depleters.

This material does not contain any Class 2 Ozone depleters.

**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# 60-29-7 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:**

XN F+

**Risk Phrases:**

R 12 Extremely flammable.

R 19 May form explosive peroxides.

R 22 Harmful if swallowed.

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# 60-29-7: 1

**Canada - DSL/NDSL**

CAS# 60-29-7 is listed on Canada's DSL List.

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Canada - WHMIS

This product has a WHMIS classification of B2.

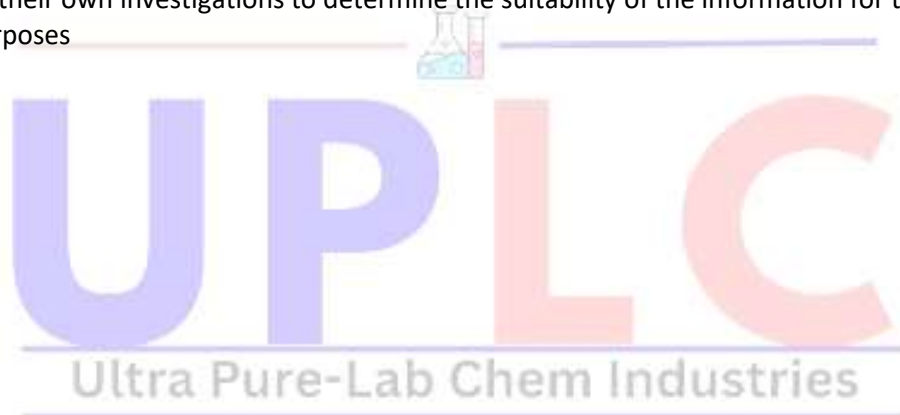
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 60-29-7 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes



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