



**SIGMA-ALDRICH**

## Material Safety Data Sheet

Date Printed: 02/07/2004  
Date Updated: 10/09/2003  
Version 1.0

### Section 1 - Product and Company Information

<b>Product Name</b>	Ether, anhydrous, 99.7+%		
<b>Product Number</b>	296082		
<b>Brand</b>	Aldrich Chemical		
<b>Company</b>	Sigma-Aldrich		
<b>Street Address</b>	3050 Spruce Street		
<b>City, State, Zip, Country</b>	SAINT LOUIS, MO 63103 US		
<b>Technical Phone:</b>	314 771 5765	<b>Emergency Phone:</b>	414 273 3850 Ext. 5996
<b>Fax:</b>	800 325 5052		

### Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	
DIETHYL ETHER STABILIZED WITH BHT	60-29-7	No	
<u>Ingredient Name</u>	<u>CAS #</u>	<u>Percent</u>	<u>SARA 313</u>
Stabilized with: BUTYLATED HYDROXYTOLUENE	128-37-0		
<b>Formula</b>	C4H10O		
<b>Synonyms</b>	Aether, Anaesthetic ether, Anesthesia ether, Anesthetic ether, Diaethylaether (German), Diethyl ether (DOT:OSHA), Diethyl oxide, Dwuetylowy eter (Polish), Etere etilico (Italian), Ether, Ether ethylique (French), Ethoxyethane, Ethyl ether (ACGIH:OSHA), Oxyde d'ethyle (French), RCRA waste number U117, Solvent ether		

### Section 3 - Hazards Identification

#### Emergency Overview

Flammable (USA) Extremely Flammable (EU). Toxic (USA) Harmful (EU).  
Extremely flammable. May form explosive peroxides. Harmful if swallowed. Irritating to eyes, respiratory system and skin. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.  
Target organ(s): Central nervous system. Kidneys.

**HMIS Rating**  
Health: 2\*      Flammability: 4      Reactivity: 3

**NFPA Rating**  
Health: 2      Flammability: 4      Reactivity: 3

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

### Section 4 - First Aid Measures

#### Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### Inhalation Exposure

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

#### Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

#### Eye Exposure

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

### Section 5 - Fire Fighting Measures

**Flammable Hazards:** Yes      **Peroxide Former:** Yes

#### Explosion Hazards

Vapor may travel considerable distance to source of ignition and flash back.  
Container explosion may occur under fire conditions.

**Flash Point:** -40 °F      -40 °C

**Explosion Limits:** Lower: 1.8 %      Upper: 48 %

**Autoignition Temp:** 160 °C      **Flammability:** Yes

#### Extinguishing Media

**Suitable**  
Carbon dioxide, dry chemical powder, or appropriate foam. Water may be ineffective.

#### Firefighting

##### Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

##### Specific Hazard(s)

Flammable liquid. Emits toxic fumes under fire conditions.

### Section 6 - Accidental Release Measures

#### Procedure to be Followed in Case of Leak or Spill

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

#### Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### Methods for Cleaning Up

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

### Section 7 - Handling and Storage

#### Handling

##### User Exposure

Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

8-31-05

**Storage****Suitable**

Keep tightly closed. Keep away from heat, sparks, and open flame.

**Special Requirements**

Light sensitive. Air sensitive. Heat sensitive. Do not distill to dryness. Refrigerate before opening.

**Section 8 - Exposure Controls / PPE****Engineering Controls**

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

**Personal Protective Equipment****Respiratory**

Government approved respirator.

**Hand**

Compatible chemical-resistant gloves.

**Eye**

Chemical safety goggles.

**General Hygiene Measures**

Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

**Exposure Limits**

Country	Type	Value
Poland	NDS	300 MG/M3
Poland	NDSCh	1500 MG/M3
Poland	NDSP	-

**Exposure Limits, RTECS**

Country	Source	Type	Value
USA	ACGIH	STEL	500 PPM
USA	ACGIH	TWA	400 PPM
USA	MSHA Standard-air	TWA	400 PPM (1200 MG/M3)
USA	OSHA.	PEL	8H TWA 400 PPM (1200 MG/M3)
New Zealand	OEL		

**Remarks:** check ACGIH TLV

**Section 9 - Physical/Chemical Properties****Appearance**

Physical State	Color
Liquid	Colorless

Molecular Weight: 74.12 AMU

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	34.6 °C	760 mmHg
MP/MP Range	-116 °C	
Freezing Point	N/A	
Vapor Pressure	442.552 mmHg	20 °C
Vapor Density	2.6 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	0.71 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	

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VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point °F	-40 °F
Flash Point °C	-40 °C
Explosion Limits	Lower: 1.8 % 18 % Upper: 48 % 38 %
Flammability	N/A
Autoignition Temp	160 °C
Refractive Index	1.353
Solubility	N/A

Method: closed cup  
Method: closed cup

N/A = not available

**Section 10 - Stability and Reactivity****Stability****Stable**

Stable.

**Conditions of Instability**

May form peroxides of unknown stability.

**Conditions to Avoid**

Sensitive to light. Sensitive to air. Sensitive to heat.

**Materials to Avoid**

Oxidizing agents, Strong acids.

**Hazardous Decomposition Products****Hazardous Decomposition Products**

Carbon monoxide, Carbon dioxide.

**Hazardous Polymerization****Hazardous Polymerization**

Will not occur.

**Section 11 - Toxicological Information****Route of Exposure****Skin Contact**

Causes skin irritation.

**Skin Absorption**

May be harmful if absorbed through the skin.

**Eye Contact**

Causes eye irritation.

**Inhalation**

May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

**Ingestion**

Harmful if swallowed.

**Target Organ(s) or System(s)**

Central nervous system. Kidneys. Liver. G.I. System. Skeletal muscle.

**Signs and Symptoms of Exposure**

Contact with eyes can cause redness, tearing, and blurred vision. Prolonged or repeated contact with skin can cause defatting and dermatitis. Exposure can cause: Coughing, chest pains, difficulty in breathing. Dizziness. Drowsiness. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: KI5775000

**Toxicity Data**

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Oral - Man: 260 mg/kg (LDLO)  
Oral - Rat: 1215 mg/kg (LD50)  
Inhalation - Mouse: 31,000 ppm (LC50)  
Remarks: Behavioral: Convulsions or effect on seizure threshold.  
Intraperitoneal - Mouse: 2420 MG/KG (LD50)  
Intravenous - Mouse: 996 MG/KG (LD50)  
Skin - Rabbit: >20 ML/KG (LD50)

#### Irritation Data

Eyes - Human: 100 ppm  
Skin - Rabbit: 360 mg  
Remarks: Open irritation test  
Eyes - Rabbit: 100 mg  
Remarks: Moderate irritation effect  
Skin - Guinea pig: 50 mg 24H  
Remarks: Severe irritation effect

#### Chronic Exposure - Mutagen

Species	Dose	Cell Type	Mutation test
Mouse	2850 MG/L	Embryo	DNA inhibition
Hamster	1 PPH	fibroblast	Other mutation test systems

#### Section 12 - Ecological Information

##### Acute Ecotoxicity Tests

**Test Type**  
LC50 Fish  
**Species**  
Daphnia magna Pimephales promelas (Fathead minnow)  
**Time:** **Value:**  
96.0 h 2,560 mg/l

#### Section 13 - Disposal Considerations

##### Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.  
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.  
Observe all federal, state, and local environmental regulations.

#### Section 14 - Transport Information

##### DOT

**Proper Shipping Name:** Diethyl ether [or] Ethyl ether  
**UN#:** 1155  
**Class:** 3  
**Packing Group:** Packing Group I  
**Hazard Label:** Flammable liquid  
**PIH:** Not PIH

##### IATA

**Proper Shipping Name:** ETHYL ETHER  
**IATA UN Number:** 1155  
**Hazard Class:** 3  
**Packing Group:** I

#### Section 15 - Regulatory Information

##### EU Directives Classification

**Symbol of Danger:** F+ Xn

##### Indication of Danger

Extremely Flammable. Harmful.

##### Risk Statements

**R:** 12 19 22 66 67

Extremely flammable. May form explosive peroxides. Harmful if swallowed. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

##### Safety Statements

**S:** 9 16 29 33

Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Do not empty into drains. Take precautionary measures against static discharges.

##### US Classification and Label Text

##### Indication of Danger

Flammable (USA) Extremely Flammable (EU). Toxic (USA) Harmful (EU).

##### Risk Statements

Extremely flammable. May form explosive peroxides. Harmful if swallowed. Irritating to eyes, respiratory system and skin. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

##### Safety Statements

Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Do not empty into drains. Take precautionary measures against static discharges.

##### US Statements

Target organ(s): Central nervous system. Kidneys.

##### United States Regulatory Information

**SARA Listed:** No

**TSCA Inventory Item:** Yes

##### Canada Regulatory Information

##### WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

**DSL:** Yes

**NDSL:** No

#### Section 16 - Other Information

##### Disclaimer

For R&D use only. Not for drug, household or other uses.

##### Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.