



# Fisher Scientific

Part of Thermo Fisher Scientific

## Material Safety Data Sheet

Creation Date 15-Apr-2009

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Revision Number 1

### 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name</b>	<b>Ethyl ether</b>
<b>Cat No.</b>	<b>E134-1; E134-4; E134-20; E136-150; E137RS-19; E138-1; E138-4; E138-20; E138-500; E138RS-19; E138RS-28; E138RS-50; E492-4; E492-20</b>
<b>Synonyms</b>	Diethyl ether; Ethyl oxide; Ether (Laboratory/BHT Stabilized/Certified ACS)
<b>Recommended Use</b>	Laboratory chemicals
<b>Company</b>	<b>Emergency Telephone Number</b>
Fisher Scientific	CHEMTREC®, Inside the USA: 800-424-9300
One Reagent Lane	CHEMTREC®, Outside the USA: 703-527-3887
Fair Lawn, NJ 07410	
Tel: (201) 796-7100	

### 2. HAZARDS IDENTIFICATION

#### **DANGER!**

#### **Emergency Overview**

Extremely flammable liquid and vapor. Vapor may cause flash fire. May form explosive peroxides. Harmful if swallowed. Irritating to eyes and skin. Vapors may cause drowsiness and dizziness. Aspiration hazard if swallowed - can enter lungs and cause damage. May cause irritation of respiratory tract. Repeated exposure may cause skin dryness or cracking. Hygroscopic.

**Appearance** Colorless

**Physical State** Liquid

**odor** aromatic

**Target Organs** Central nervous system (CNS), Eyes, Respiratory system, Skin, Liver

#### Potential Health Effects

#### **Acute Effects**

#### Principle Routes of Exposure

##### **Eyes**

Irritating to eyes.

##### **Skin**

Irritating to skin. May be harmful in contact with skin. Repeated exposure may cause skin dryness or cracking.

##### **Inhalation**

May cause drowsiness and dizziness. May cause irritation of respiratory tract. May be harmful if inhaled.

##### **Ingestion**

Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration hazard if swallowed - can enter lungs and cause damage.

**Chronic Effects** May cause adverse liver effects. Mutagenic effects have occurred in experimental animals..

See Section 11 for additional Toxicological information.

**Aggravated Medical Conditions** Central nervous system disorders. Preexisting eye disorders. Skin disorders.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Haz/Non-haz

Component	CAS-No	Weight %
Ethyl ether	60-29-7	>95

### 4. FIRST AID MEASURES

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

**Inhalation** Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Obtain medical attention.

**Ingestion** Do not induce vomiting. Call a physician or Poison Control Center immediately.

**Notes to Physician** Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Flash Point** -45°C / -49°F

**Method** No information available.

**Autoignition Temperature** 160°C / 320°F

#### Explosion Limits

**Upper** 36.0 vol %

**Lower** 1.9 vol %

**Suitable Extinguishing Media** CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.

**Unsuitable Extinguishing Media** Water may be ineffective.

**Hazardous Combustion Products** No information available.

**Sensitivity to mechanical impact** No information available.

**Sensitivity to static discharge** No information available.

#### Specific Hazards Arising from the Chemical

Extremely flammable. Risk of ignition. Vapors may travel to source of ignition and flash back. Vapors may form explosive mixtures with air. Containers may explode when heated. May form explosive peroxides.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**                      **Health 1**                      **Flammability 4**                      **Instability 1**                      **Physical hazards N/A**

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**                      Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing.

**Environmental Precautions**                      Should not be released into the environment.

**Methods for Containment and Clean Up**                      Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Keep in suitable and closed containers for disposal.

**7. HANDLING AND STORAGE**

**Handling**                      Wear personal protective equipment. Handle under an inert atmosphere. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Keep away from open flames, hot surfaces and sources of ignition. If peroxide formation is suspected, do not open or move container.

**Storage**                      Flammables area. Store under an inert atmosphere. Keep away from open flames, hot surfaces and sources of ignition. May form explosive peroxides. 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.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering Measures**                      Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ethyl ether	TWA: 400 ppm STEL: 500 ppm	(Vacated) TWA: 400 ppm (Vacated) TWA: 1200 mg/m <sup>3</sup> (Vacated) STEL: 500 ppm (Vacated) STEL: 1500 mg/m <sup>3</sup> TWA: 1200 mg/m <sup>3</sup> TWA: 400 ppm	IDLH: 1900 ppm

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Ethyl ether	TWA: 1210 mg/m <sup>3</sup> TWA: 400 ppm STEL: 500 ppm STEL: 1520 mg/m <sup>3</sup>	TWA: 1200 mg/m <sup>3</sup> TWA: 400 ppm STEL: 1500 mg/m <sup>3</sup> STEL: 500 ppm	TWA: 1210 mg/m <sup>3</sup> TWA: 400 ppm STEL: 1515 mg/m <sup>3</sup> STEL: 500 ppm

**NIOSH IDLH:** Immediately Dangerous to Life or Health

**Personal Protective Equipment**

**Eye/face Protection**

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 and body protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection**

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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Liquid
<b>Appearance</b>	Colorless
<b>odor</b>	aromatic
<b>Odor Threshold</b>	No information available.
<b>pH</b>	No information available.
<b>Vapor Pressure</b>	587 mbar @ 20 °C
<b>Vapor Density</b>	2.55 (Air = 1.0)
<b>Viscosity</b>	0.2448 cP at 20 °C
<b>Boiling Point/Range</b>	34.6°C / 94.3°F
<b>Melting Point/Range</b>	-116°C / -176.8°F
<b>Decomposition temperature</b>	No information available.
<b>Flash Point</b>	-45°C / -49°F
<b>Evaporation Rate</b>	(Butyl Acetate = 1.0)
<b>Specific Gravity</b>	0.714
<b>Solubility</b>	Slightly soluble in water
<b>log Pow</b>	No data available
<b>Molecular Weight</b>	74.12
<b>Molecular Formula</b>	C4 H10 O

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	May form explosive peroxides. Air sensitive. Light sensitive. Hygroscopic.
<b>Conditions to Avoid</b>	Incompatible products. Heat, flames and sparks. Exposure to air. Exposure to light. Exposure to moisture.
<b>Incompatible Materials</b>	Strong oxidizing agents, Strong acids
<b>Hazardous Decomposition Products</b>	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), peroxides
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions .</b>	May form explosive peroxides..

## 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**

**Component Information**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethyl ether	1215 mg/kg ( Rat )	20 mL/kg ( Rabbit )	Not listed

**Irritation** Irritating to eyes and skin

**Toxicologically Synergistic Products** No information available.

**Chronic Toxicity**

**Carcinogenicity** There are no known carcinogenic chemicals in this product

**Sensitization** No information available.

**Mutagenic Effects** Mutagenic effects have occurred in experimental animals.

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**Other Adverse Effects** See actual entry in RTECS for complete information.

**Endocrine Disruptor Information** No information available

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Ethyl ether	Not listed	Not listed	EC50 = 5600 mg/L 15 min	EC50 = 165 mg/L/24h

**Persistence and Degradability** No information available

**Bioaccumulation/ Accumulation** No information available

**Mobility**

Component	log Pow
Ethyl ether	0.82

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Methods** 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

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Ethyl ether		

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Ethyl ether - 60-29-7	U117	-

**14. TRANSPORT INFORMATION**

**DOT**

**UN-No** UN1155  
**Proper Shipping Name** DIETHYL ETHER  
**Hazard Class** 3  
**Packing Group** I

**TDG**

**UN-No** UN1155  
**Proper Shipping Name** DIETHYL ETHER  
**Hazard Class** 3  
**Packing Group** I

**IATA**

**UN-No** UN1155  
**Proper Shipping Name** DIETHYL ETHER  
**Hazard Class** 3  
**Packing Group** I

**IMDG/IMO**

**UN-No** UN1155  
**Proper Shipping Name** DIETHYL ETHER  
**Hazard Class** 3  
**Packing Group** I

**15. REGULATORY INFORMATION**

**International Inventories**

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	CHINA	KECL
Ethyl ether	X	X	-	200-467-2	-		X	X	X	X	KE-27690 X

**Legend:**

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

**U.S. Federal Regulations**

**TSCA 12(b)** Not applicable

**SARA 313**  
Not applicable

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

**Clean Water Act**  
Not applicable

**Clean Air Act**  
Not applicable

**OSHA**  
Not applicable

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Ethyl ether	100 lb	-

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**State Right-to-Know**

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Ethyl ether	X	X	X	-	X

**U.S. Department of Transportation**

Reportable Quantity (RQ):	Y
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

**U.S. Department of Homeland Security**

This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Ethyl ether	7500 lb STQ

## Other International Regulations

Mexico - Grade Severe risk, Grade 4

### Canada

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

### WHMIS Hazard Class

B2 Flammable liquid



## 16. OTHER INFORMATION

**Prepared By** Regulatory Affairs  
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**Revision Summary** "\*\*\*\*", and red text indicates revision

### Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of MSDS**