

SAFETY DATA SHEET

Creation Date 15-April-2009

Revision Date 25-April-2019

Revision Number 4

1. Identification

Product Name Ethyl ether

Cat No. : E134-1; E134-20; E134-4

CAS-No 60-29-7
Synonyms Ethyl ether; Ether

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Importer/Distributor

Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Manufacturer

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

Flammable liquids	Category 1
Acute oral toxicity	Category 4
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver.	
Aspiration Toxicity	Category 1
Physical Hazards Not Otherwise Classified	Category 1
May form explosive peroxides	
Health Hazards Not Otherwise Classified	Category 1
Prolonged or repeated contact may dry skin and cause irritation or cracking	

Label Elements

Signal Word

Danger

Hazard Statements

Extremely flammable liquid and vapor
 Harmful if swallowed
 May cause respiratory irritation
 May cause drowsiness and dizziness
 May cause damage to organs through prolonged or repeated exposure
 May form explosive peroxides
 Prolonged or repeated contact may dry skin and cause irritation or cracking

**Precautionary Statements****Prevention**

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

Response

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 Call a POISON CENTER/ doctor if you feel unwell
 Rinse mouth
 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage

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

Disposal

Dispose of contents/container to an approved waste disposal plant

Other Hazards

Light sensitive

3. Composition/Information on Ingredients

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. Get 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 method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Obtain medical attention.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	Breathing difficulties. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	CO ₂ , dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media	Water may be ineffective
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 %
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. Vapors may form explosive mixtures with air.

Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO₂) 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
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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. See Section 12 for additional ecological information.
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, closed containers for disposal. Use spark-proof tools and explosion-proof equipment.

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
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suspected, do not open or move container. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

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. Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ethyl ether	TWA: 400 ppm TWA: 1210 mg/m ³ STEL: 500 ppm STEL: 1520 mg/m ³	TWA: 400 ppm STEL: 500 ppm	TWA: 400 ppm STEL: 500 ppm	TWA: 400 ppm TWA: 1210 mg/m ³ STEL: 500 ppm STEL: 1520 mg/m ³	TWA: 400 ppm STEL: 500 ppm	(Vacated) TWA: 400 ppm (Vacated) TWA: 1200 mg/m ³ (Vacated) STEL: 500 ppm (Vacated) STEL: 1500 mg/m ³ TWA: 400 ppm TWA: 1200 mg/m ³	IDLH: 1900 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

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.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment**Eye 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.

Hand Protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Nitrile rubber	< 33 minutes	0.28 - 0.35 mm	Permeation rate 36 µg/cm ² /min As tested under EN374-3 Determination of Resistance to Permeation by Chemicals

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified 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.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Recommended Filter type: low boiling organic solvent Type AX Brown conforming to EN371

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

No information available.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-116 °C / -176.8 °F
Boiling Point/Range	34.6 °C / 94.3 °F
Flash Point	-45 °C / -49 °F
Evaporation Rate	37.5
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	36.0 vol %
Lower	1.9 vol %
Vapor Pressure	587 mbar @ 20 °C
Vapor Density	2.55
Specific Gravity	0.714
Solubility	Slightly soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	160 °C / 320 °F
Decomposition Temperature	No information available
Viscosity	0.2448 cP at 20 °C
Molecular Formula	C4 H10 O
Molecular Weight	74.12

10. Stability and reactivity

Reactive Hazard	Yes
Stability	May form explosive peroxides. Air sensitive. Light sensitive. Hygroscopic.
Conditions to Avoid	Incompatible products. Heat, flames and sparks. Exposure to air. Exposure to light. Exposure to moisture. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Strong acids
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), peroxides
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	May form explosive peroxides.

11. Toxicological information

Acute Toxicity**Product Information
Component Information**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethyl ether	1215 mg/kg (Rat)	20 mL/kg (Rabbit)	LC50 = 32000 ppm (Rat) 4 h

Toxicologically Synergistic Products No information available

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

Irritation No information available

Sensitization No information available

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

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Ethyl ether	60-29-7	Not listed				

Mutagenic Effects Mutagenic effects have occurred in experimental animals.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system Central nervous system (CNS)
STOT - repeated exposure Liver

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

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

12. Ecological information

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Ethyl ether	Not listed	LC50: > 10000 mg/L, 96h static (Lepomis macrochirus) LC50: = 2560 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 5600 mg/L 15 min	EC50 = 165 mg/L/24h

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

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 - 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	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Ethyl ether	X	-	X	200-467-2	-		X	X	X	X	KE-2769 0

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Ethyl ether	Part 4 Substance		

16. Other information

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Revision Summary This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

Disclaimer

The information provided in 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text

End of SDS