# SAFETY DATA SHEET

**Creation Date** 15-Apr-2009 **Revision Date** 16-Dec-2024 **Revision Number** 7

## 1. Identification

**Product Name** **Ethyl ether**

**Cat No. :** **E138-1; E138-20; E138-4; E138-4LC; E138-500; E138RS-19; E138RS-28; E138RS-50**

**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**
Fisher Scientific Company
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**
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| | |
|---|---|
| Flammable liquids | Category 1 |
| Acute oral toxicity | Category 4 |
| Specific target organ toxicity (single exposure) | Category 3 |
| Target Organs - Central nervous system (CNS). | |

**Label Elements**

**Signal Word**
Danger

**Hazard Statements**
Extremely flammable liquid and vapor
Harmful if swallowed
May cause drowsiness or dizziness

**Precautionary Statements**
**Prevention**
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Keep cool
**Inhalation**
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
**Skin**
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
**Ingestion**
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
**Fire**
In case of fire: Use CO2, dry chemical, or foam for extinction
**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
**Hazards not otherwise classified (HNOC)**
May form explosive peroxides
Repeated exposure may cause skin dryness or cracking

## 3. Composition/information on Ingredients

| Component | CAS No | Weight % |
|---|---|---|
| Ethyl ether | 60-29-7 | <=100 |

## 4. First-aid measures

**General Advice** If symptoms persist, call a physician.

**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. If skin irritation persists, call a physician.

| | |
|---|---|
| **Inhalation** | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. |
| **Ingestion** | Clean mouth with water and drink afterwards plenty of water. |
| **Most important symptoms and effects** | Difficulty in breathing. 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. Water mist may be used to cool closed containers. |
| **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 ($CO_2$). 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.

**NFPA**

| Health | Flammability | Instability | Physical hazards |
|---|---|---|---|
| 2 | 4 | 1 | N/A |

## 6. Accidental release measures

| | |
|---|---|
| **Personal Precautions** | Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
| **Environmental Precautions** | Should not be released into the environment. See Section 12 for additional Ecological Information. |
| **Methods for Containment and Clean Up** | Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |

## 7. Handling and Storage

| | |
|---|---|
| **Handling** | Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static |

discharges.

**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, sparks and flame. Keep container tightly closed in a dry and well-ventilated place. Protect from moisture. Incompatible Materials. Strong oxidizing agents. Strong acids.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component | ACGIH TLV | OSHA PEL | NIOSH | Mexico OEL (TWA) |
|---|---|---|---|---|
| Ethyl ether | TWA: 400 ppm<br>STEL: 500 ppm | (Vacated) TWA: 400 ppm<br>(Vacated) TWA: 1200 mg/m$^3$<br>(Vacated) STEL: 500 ppm<br>(Vacated) STEL: 1500 mg/m$^3$<br>TWA: 400 ppm<br>TWA: 1200 mg/m$^3$ | IDLH: 1900 ppm | TWA: 400 ppm<br>STEL: 500 ppm |

*Legend*

*ACGIH - American Conference of Governmental Industrial Hygienists*
*OSHA - Occupational Safety and Health Administration*
*NIOSH: NIOSH - National Institute for Occupational Safety and 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.

**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.

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

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

## 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. Exposure to moist air or water.

**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** None under normal processing.

## 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) | 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 | Not listed | Not listed | Not listed | 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** Central nervous system (CNS)
**STOT - repeated exposure** None known

**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** The toxicological properties have not been fully investigated.

## 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

**United States of America Inventory**

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | TSCA - EPA Regulatory Flags |
|---|---|---|---|---|
| Ethyl ether | 60-29-7 | X | ACTIVE | - |

**Legend:**
**TSCA** US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)** Not applicable

**TSCA 12(b)** - Notices of Export Not applicable

**International Inventories**
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

| Component | CAS No | DSL | NDSL | EINECS | PICCS | ENCS | ISHL | AICS | IECSC | KECL |
|---|---|---|---|---|---|---|---|---|---|---|
| Ethyl ether | 60-29-7 | X | - | 200-467-2 | X | X | X | X | X | KE-27690 |

**KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

**U.S. Federal Regulations**

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CWA (Clean Water Act)** Not applicable

**Clean Air Act** Not applicable

**OSHA** - Occupational Safety and Health Administration 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) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

| Component | Hazardous Substances RQs | CERCLA Extremely Hazardous Substances RQs | SARA Reportable Quantity (RQ) |
|---|---|---|---|
| Ethyl ether | 100 lb | - | 100 lb<br>45.4 kg |

**California Proposition 65** This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

| 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:
**Legend** - STQs = Screening Threshold Quantities, APA = A placarded amount

| Component | DHS Chemical Facility Anti-Terrorism Standard |
|---|---|
| Ethyl ether | Release STQs - 10000lb |

**Other International Regulations**

**Mexico - Grade** Severe risk, Grade 4

**Authorisation/Restrictions according to EU REACH** Not applicable

| Component | CAS No | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|---|---|---|---|---|
| Ethyl ether | 60-29-7 | - | - | - |

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

| Component | CAS No | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|---|---|---|---|---|---|
| Ethyl ether | 60-29-7 | Listed | Not applicable | Not applicable | Not applicable |

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**
Not applicable

**Other International Regulations**

| Component | CAS No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|---|---|---|---|---|---|
| Ethyl ether | 60-29-7 | Not applicable | Not applicable | Not applicable | Annex I - Y40 Annex I - Y42 |

## 16. Other Information

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| | |
|---|---|
| **Creation Date** | 15-Apr-2009 |
| **Revision Date** | 16-Dec-2024 |
| **Print Date** | 16-Dec-2024 |
| **Revision Summary** | This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). |

**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