# SAFETY DATA SHEET

**Creation Date** 15-Apr-2009  
**Revision Date** 28-Dec-2021  
**Revision Number** 5

## 1. Identification

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Diethyl ether</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat No. :</td>
<td>AC615080000, AC615080010, AC615080040, AC615080200, AC615085000</td>
</tr>
<tr>
<td>CAS No</td>
<td>60-29-7</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Ethyl ether; Ether</td>
</tr>
<tr>
<td>Recommended Use</td>
<td>Laboratory chemicals.</td>
</tr>
<tr>
<td>Uses advised against</td>
<td>Food, drug, pesticide or biocidal product use.</td>
</tr>
</tbody>
</table>

### Details of the supplier of the safety data sheet

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

- Acros Organics  
  One Reagent Lane  
  Fair Lawn, NJ 07410  

**Emergency Telephone Number**  
- For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11  
- Emergency Number US:001-201-796-7100 / Europe: +32 14 57 52 99  
- CHEMTREC Tel. No.US:001-800-424-9300 / Europe: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)

<table>
<thead>
<tr>
<th>Hazard Classifications</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>Category 1</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Category 4</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Target Organs - Respiratory system, Central nervous system (CNS)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Specific target organ toxicity - (repeated exposure)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Target Organs - Liver.</td>
<td>Category 1</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

### Label Elements

**Signal Word**  
Danger
Hazard Statements
Extremely flammable liquid and vapor
Harmful if swallowed
May cause respiratory irritation
May cause drowsiness or dizziness
May be harmful if swallowed and enters airways
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe 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
Response
Get medical attention/advice if you feel unwell
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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>60-29-7</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>
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. Get medical attention.

**Inhalation**
Remove 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. Get medical attention.

**Ingestion**
Do NOT induce vomiting. Call a physician or poison control center immediately.

**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**
CO₂, 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

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

**Explosion Limits**
Upper 36.0 vol %
Lower 1.9 vol %

**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**

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

6. Accidental release measures

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

**Environmental Precautions**
Should not be released into the environment. See Section 12 for additional Ecological Information.

**Methods for Containment and Clean**
Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary
7. Handling and storage

Handling
Wear personal protective equipment/face protection. Handle under an inert atmosphere. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Do not breathe mist/vapors/spray. Keep away from open flames, hot surfaces and sources of ignition. If peroxide formation is suspected, do not open or move container. Use only non-sparking tools. Use spark-proof tools and 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, sparks and flame. Keep container tightly closed in a dry and well-ventilated place.

Incompatible Materials.
Strong oxidizing agents.
Strong acids.

8. Exposure controls / personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>Mexico OEL (TWA)</th>
</tr>
</thead>
</table>
| Ethyl ether | TWA: 400 ppm  
STEL: 500 ppm  
(Vacated) TWA: 400 ppm  
Vacated STEL: 1200 mg/m³  
(Vacated) STEL: 500 ppm  
Vacated STEL: 1500 mg/m³  
TWA: 400 ppm  
STEL: 1200 mg/m³ | IDLH: 1900 ppm | TWA: 400 ppm  
STEL: 500 ppm |

Legend
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: 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.

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
- C₄H₁₀O

### Molecular Weight
- 74.12

### 10. Stability and reactivity

#### Reactive Hazard
- Yes

#### Stability

#### Conditions to Avoid

#### Incompatible Materials
- Strong oxidizing agents, Strong acids

#### Hazardous Decomposition Products
- Carbon monoxide (CO), Carbon dioxide (CO₂), peroxides

#### Hazardous Polymerization
- Hazardous polymerization does not occur.

#### Hazardous Reactions
- May form explosive peroxides.

### 11. Toxicological information

#### Acute Toxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>LD₅₀ Oral</th>
<th>LD₅₀ Dermal</th>
<th>LC₅₀ Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>1215 mg/kg (Rat)</td>
<td>20 mL/kg (Rabbit)</td>
<td>32000 ppm (Rat) 4 h</td>
</tr>
</tbody>
</table>

#### Toxicologically Synergistic Products
- No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure
- No information available

#### Irritation
- No information available

#### Sensitization
- No information available

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
</table>
Diethyl ether

<table>
<thead>
<tr>
<th>Mutagenic Effects</th>
<th>Mutagenic effects have occurred in experimental animals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive Effects</td>
<td>No information available.</td>
</tr>
<tr>
<td>Developmental Effects</td>
<td>No information available.</td>
</tr>
<tr>
<td>Teratogenicity</td>
<td>No information available.</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td>Respiratory system Central nervous system (CNS)</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>Liver</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>No information available</td>
</tr>
<tr>
<td>Symptoms / effects, both acute and delayed</td>
<td>Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting</td>
</tr>
<tr>
<td>Endocrine Disruptor Information</td>
<td>No information available</td>
</tr>
<tr>
<td>Other Adverse Effects</td>
<td>See actual entry in RTECS for complete information.</td>
</tr>
</tbody>
</table>

12. Ecological information

Ecotoxicity
Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>Not listed</td>
<td>LC50: &gt; 10000 mg/L, 96h static (Lepomis macrochirus)</td>
<td>EC50 = 5600 mg/L 15 min</td>
<td>EC50 = 165 mg/L/24h</td>
</tr>
</tbody>
</table>

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. |

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>0.82</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Component</th>
<th>RCRA - U Series Wastes</th>
<th>RCRA - P Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether - 60-29-7</td>
<td>U117</td>
<td>-</td>
</tr>
</tbody>
</table>

14. Transport information

DOT

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1155</td>
<td>Diethyl ether</td>
<td>3</td>
<td>I</td>
</tr>
</tbody>
</table>

TDG

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1155</td>
<td>Diethyl ether</td>
<td>3</td>
</tr>
</tbody>
</table>
15. Regulatory information

United States of America Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>TSCA</th>
<th>TSCA Inventory notification - Active-Inactive</th>
<th>TSCA - EPA Regulatory Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>60-29-7</td>
<td>X</td>
<td>ACTIVE</td>
<td>-</td>
</tr>
</tbody>
</table>

Legend:

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

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).

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>PICCS</th>
<th>ENCS</th>
<th>ISHL</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>60-29-7</td>
<td>X</td>
<td>-</td>
<td>200-467-2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-27690</td>
</tr>
</tbody>
</table>

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

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

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)

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>100 lb</td>
<td>-</td>
</tr>
</tbody>
</table>

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

U.S. State Right-to-Know Regulations
Diethyl ether

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Component</th>
<th>DHS Chemical Facility Anti-Terrorism Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>Release STQs - 10000lb</td>
</tr>
</tbody>
</table>

Other International Regulations
Mexico - Grade
Severe risk, Grade 4

Authorisation/Restrictions according to EU REACH

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>OECD HPV</th>
<th>Persistent Organic Pollutant</th>
<th>Ozone Depletion Potential</th>
<th>Restriction of Hazardous Substances (RoHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>60-29-7</td>
<td>Listed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl ether</td>
<td>60-29-7</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Annex I - Y40 Annex I - Y42</td>
</tr>
</tbody>
</table>

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date
15-Apr-2009

Revision Date
28-Dec-2021

Print Date
28-Dec-2021

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