

# CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

## SAFETY DATA SHEET

### ETHYL ETHER

#### 1. IDENTIFICATION

Product identifier: ETHYL ETHER

Product Code Number: 9001

Company Identification:

Corco Chemical Corporation  
299 Cedar Lane  
Fairless Hills, PA 19030  
Phone: 215-295-5006  
Fax: 215-295-0781

24 Hour Emergency Telephone  
Number:

CHEMTREC (U.S.): 1-800-424-9300  
CHEMTREC (Outside U.S. 1-703-527-3887

Trade Name:

ETHYL ETHER

Synonyms:

Diethyl Ether; 1, 1'Oxybisethane;  
Ethyl Oxide; Diethyl Oxide

Chemical Formula:

(C<sub>2</sub>H<sub>5</sub>)<sub>2</sub>O

Product Use: Process chemical, Laboratory and scientific research and development.

#### 2. HAZARD(S) IDENTIFICATION

Physical hazards:

Flammable liquid

Category 1

Health hazards:

Skin irritation

Category 3

Eye irritation

Category 2A

Specific target organ toxicity  
single exposure

Category 3

Acute toxicity, Oral

Category 4

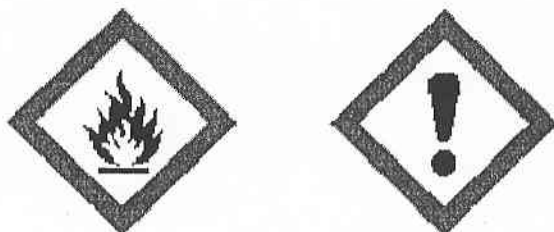
Acute toxicity, Inhalation

Category 5

OSHA Hazards: Flammable liquid, Target Organ Effect, Irritant, Harmful by ingestion.

Target Organs: Central nervous system, Kidney, Liver, Gastrointestinal tract, Skeletal muscle.

Label elements:



Signal word: **Danger**

**Hazard Statements:** Extremely flammable liquid and vapor. Heating may cause a fire or explosion. May be harmful if swallowed and enters airways. Causes eye irritation. May cause drowsiness or dizziness.

**Precautionary Statements:** Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Take precautionary measures against static discharge. Wear protective gloves/protective clothing/eye protection/face protection. If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water /shower. IF IN EYES; Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Emergency Overview:** Causes irritation to skin and eyes. Breathing vapors may cause dizziness and drowsiness. Aspiration hazard. May be harmful if swallowed. Extremely flammable liquid and vapor. Vapor may cause flash fire. Static electrical hazard. May form explosive peroxides. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. Air and light sensitive. Hygroscopic. Target Organs: Central nervous system, respiratory system, skin, and eyes.

### 3. Composition/information on ingredients

<u>Ingredient</u>	<u>CAS No.</u>	<u>EC Number</u>	<u>Percent</u>	<u>Hazardous</u>
Ethyl Ether	60-29-7	200-467-2	>99%	Yes
BHT	128-37-0	204-881-4	<0.1%	No

## 4. First-aid measures

**Inhalation:** Get medical aid immediately. Remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. **DO NOT** give mouth-to-mouth resuscitation. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Ingestion:** Aspiration hazard. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover irritated skin with an emollient or anti-bacterial cream. Soap and cold water may be used. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:** Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Notes to Physician:** Persons with kidney disease, chronic respiratory disease, liver disease, or skin disease may be at increased risk from exposure to this product. Alcoholic beverage consumption may enhance the toxic effects of this product. Treat symptomatically and supportively.

## 5. Fire-fighting measures

**Flammability:** Extremely flammable liquid and vapor Category 1

**Auto-ignition Temperature:** 180-190° C.

**Flash Point:** -45° C (-49° F)

**Flammable Limits:** Lower Limit – 1.9 vol %,  
Upper Limit – 36 vol %

**Products of Combustion:** Will decompose into highly toxic and irritating gases (Peroxides, carbon monoxide, and carbon dioxide) under fire conditions.

**Specific Fire Hazards:** As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Material will readily ignite at room temperature. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Will be easily ignited by heat, sparks, or flame. May re-ignite after spark is extinguished. Vapors can spread along the

ground and collect in low or confined areas. Water may be ineffective. Liquid floats on water and may travel to a source of ignition and spread fire.

**Specific Explosion Hazards:** May form explosive peroxides. Vapors may form explosive mixture with air. Containers may explode in the heat of a fire.

**Fire Fighting Media:** Use water spray to cool fire-exposed containers. For small fires, use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam. Water may be ineffective. For large fires, use water spray, fog, or alcohol-resistant foam. Do not use solid streams of water. Cool containers with flooding quantities of water until well after fire is out.

**National Fire Protective Association:** Health - 1, Flammability - 4, Reactivity - 1  
**NOTE:** NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

## **6. Accidental release measures**

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking tools and equipment. A vapor suppressing foam may be used. Always use proper personal protective equipment as described in section 8.

**Environmental precautions:** Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.

## **7. Handling and storage**

**Precautions:** Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion-proof equipment. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Take precautions against static discharge. Keep container tightly closed and away from heat, spark, and flame. Handle under an inert atmosphere. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. If peroxide formation is suspected, do not open or move. Use with adequate ventilation. Avoid breathing vapor or mist.

**Storage:** Keep in a flammables area away from heat, sparks, flame, and all sources of ignition. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light under an inert atmosphere. Keep away from oxidizing agents. 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, containers should only be opened remotely by professionals. Store at room temperature or below. Do not exceed 86° F. Do not open unless contents have been at 72° F or below for at least 24 hours. Ethyl ether may form explosive peroxides on long standing or after exposure to light or air. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources. Store between 55 –80°F for product stability. Do not store with strong oxidizing agents. Avoid sunlight.

## **8. Exposure controls/personal protection**

**Engineering Controls:** Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Personal Protection:** Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. Chemical-resistant nitrile gloves should be used during routine handling. Disposable nitrile gloves may be recommended for intermittent use. PVC, Neoprene, Viton, Butyl, or natural rubber gloves are not recommended. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

### **Exposure Limits:**

**ACGIH – 400 ppm TWA; 500 ppm STEL**

**NIOSH – 1900 ppm IDLH**

**OSHA Final PELs – 400 ppm TWA, 1200 mg/m<sup>3</sup> TWA**

**OSHA Vacated PELs - 400 ppm TWA, 1200 mg/m<sup>3</sup> TWA**

**Other Recommendations:** Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

## 9. Physical and chemical properties

Physical State and Appearance:	Clear liquid, APHAS – 10 max.
Odor:	Sweetish, aromatic odor
Odor Threshold:	8.9 ppm
Molecular Formula:	(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O
Molecular Weight:	74.12
Auto-ignition Temperature:	180-190° C
Flash Point:	-45° C (-49° F)
Flammable Limits:	Lower Limit – 1.9 vol % Upper Limit – 36 vol %
pH:	Not available
Boiling Point:	34.6 ° C @ 760 mm Hg
Freezing/Melting Point:	-116.3° C
Decomposition Temperature:	Not available
Specific Gravity:	<0.7079 g/ml
Vapor Density (Air=1):	2.55
Vapor Pressure:	442 mm Hg @ 20° C.
Evaporation Rate (Butyl Acetate = 1):	37.5
Viscosity:	0.2448 cp @ 20° C
Solubility:	Slightly soluble
Conductivity: Nonconductive; Conductivity = 30 pS/m; Dielectric Constant = 4.6; Relaxation Time Constant = 1.4 seconds	

## 10. Stability and reactivity

**Stability:** Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation.

**Conditions to Avoid:** Light, ignition sources, exposure to air, electrical sparks, exposure to flame, heat. **Incompatibility With Various Substances:** Strong oxidizing agents, strong acids.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, peroxides.

**Hazardous Polymerization:** Will not occur.

## 11. Toxicological information

**Acute Toxicity - Ethyl Ether:**

**Skin Skin – rabbit – 14.2 g/kg**

Eyes Not Available  
Respiratory LC50 Inhalation – mouse – 30 min – 31000 ppm  
Ingestion LD50 Oral – rat – 1215 mg/kg

**Acute Toxicity - BHT:**

Skin Skin – rabbit – Irritating to skin – 24 hours  
Eyes Not Available  
Respiratory Not Available  
Ingestion LD50 Oral – rat – 890 mg/kg

**Carcinogenicity:**

IARC No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Signs & Symptoms of Exposure:**

Eyes: Causes eye irritation  
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.  
Vapors may cause drowsiness and dizziness.  
Skin: Harmful if absorbed through skin. Causes skin irritation.  
Ingestion: Harmful if swallowed  
Chronic Toxicity: Not Available  
Teratogenicity: Not Available  
Mutagenicity: Not Available  
Embryotoxicity: Not Available  
Reproductive Effects: No information found.  
Mutagenicity: DNA repair: Escherichia coli = 35,670 ug/well/16H;  
DNA inhibition; mouse embryo = 2850 mg/L; Mutation Test Systems – not  
otherwise specified: Hamster, fibroblast = 1 pph  
Neurotoxicity: No information found

## 12. Ecological information

**Ecotoxicity:**

Fish: Fathead minnow: LC50 = 2600 mg/L, 96H, flow-through bioassay;  
Fish: Bluegill/sunfish: LC50 = <10,000 mg/L, 96H, static bioassay;  
Bacteria: Phytobacterium phosphoreum: EC50 = 5625 mg/L, 15M, Microtox test;  
If ethyl ether is released to soil, it will be subject to volatilization. It will be expected to exhibit high mobility in soil, and therefore, can be expected to leach into groundwater. If ethyl ether is released to water, it will not be expected to

significantly adsorb to sediment or suspended particulate matter, bioconcentrate in aquatic organisms, or hydrolyze.

**Environmental:** Ethyl ether will not significantly photooxidize via reaction with photochemically produced hydroxyl radicals in water. Ethyl ether in surface water will be subject to rapid volatilization with estimated half lives of 3.1 hr and 1.5 days. It will not be expected to hydrolyze in water or soil. If ethyl ether is released to the atmosphere, it will be expected to exist almost entirely in the vapor phase. It will be susceptible to photooxidation via vapor phase reaction with photochemically produced hydroxyl radicals with a half-life of 29 hours.

**Persistence and Degradability:** Not Available  
**Bioaccumulative Potential:** Not Available  
**Mobility in Soil:** Not Available  
**PBT and vPvB Assessment:** Not Available

**Other Adverse Effects:** Not Available

### **13. Disposal considerations**

**Waste Residues:** Absorb on non-combustible material and hold for disposal through a licensed contractor. Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

**Product Containers:** Empty containers will retain residues which may be flammable. Do not cut, weld or expose to heat or flames. Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is a "U" listed waste (U117 – ignitable waste).

### **14. Transportation Information**

**UN Number:** UN1155  
**UN Proper Shipping Name:** Diethyl Ether  
**Hazard Class:** 3  
**Packing Group:** I



DOT / IMDG / IATA



Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)  
Transport Hazard Class(es): 3  
Maritime Transport IMDG/GGVSea Transport Hazard Class(es): 3  
Marine Pollutant: No  
Air Transport ICAO-TI and IATA-DGR Transport Hazard Class(es): 3  
Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code

## 15. Regulatory information

### US Federal Regulations:

SCA: CAS# 60-29-7 is listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 60-29-7

Not listed

Chemical Test Rules: CAS# 60-29-7

Not listed

Section 12b: CAS# 60-29-7 is not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 60-29-7 – 100 lb final RQ; 45.4 kg final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 60-29-7 – immediate, fire, sudden release of pressure, reactive

Section 313: Ethyl Ether (CAS# 60-29-7) is not subject to SARA Title III reporting requirements.

Clean Air Act: CAS# 60-29-7 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 60-29-7 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

### US State Regulations:

CAS# 60-29-7 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

**Canada:**

**DSL/NDSL:** CAS# 60-29-7 is listed on Canada's DSL list.

**WHMIS:** This product has a WHMIS classification of B2. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

**Ingredient Disclosure List:** CAS# 60-29-7 is listed on Canada's Ingredient Disclosure list.

**DSCL (EEC):**

**Hazard Symbols:** Xn; F+

**Risk Phrases:** Extremely Flammable; May form explosive peroxides, Harmful if swallowed, Repeated exposure can cause skin dryness or cracking; Vapors may cause drowsiness and dizziness.

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

**WGK (Water Danger/protection):** CAS# 60-29-7: 1

## **16. Other information**

**Disclaimer -** The information in the sheet was written based on the best knowledge and experience currently available. 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.

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