SAFETY DATA SHEET

Ethyl Ether

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: Diethyl ether; Ethyl oxide; Ether
Other means of identification: CAS No. 60-29-7
EINECS No. 200-467-2
Recommended use of the chemical and restrictions on use:

Supplier Details:

Pharmco Products, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

Pharmco Products, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

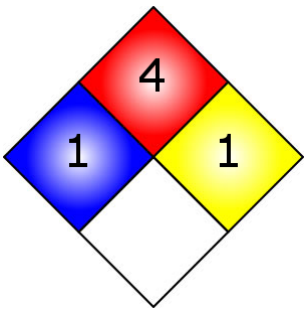
Emergency Contact: **CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)**

2. HAZARDS IDENTIFICATION

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

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

NFPA



GHS label elements, including precautionary statements

Signal Word:
DANGER!

Hazard statement(s)

H224	Extremely flammable liquid and vapour.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.

Precautionary statement(s)

P210	Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P233	Keep container tightly closed.
P405	Store locked up.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves and eye and face protection.
P240	Ground/bond container and receiving equipment.
P501	Dispose of contents and container to an approved waste disposal plant.
P241	Use explosion-proof electrical, ventilating, and lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/fumes/gas/mist/vapors.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303 + P361 + P353	IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P330	Rinse Mouth.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.

GHS Classification(s)
Acute toxicity, Oral (Category 4)

Flammable Liquids (Category 1)
Specific target organ toxicity - single exposure (Category 3)

Other hazards which do not result in classification:

Potential Health Effects:

Organ	Description
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.
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.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity: Ethyl Ether
Common name / Synonym: Diethyl ether; Ethyl oxide; Ether
CAS number: 60-29-7
EINECS number: 200-467-2
ICSC number: 0355
RTECS #: KI5775000
UN #: UN1155
EC #: 603-022-00-4

% Weight	Material	CAS
100	Ethyl Ether	60-29-7

4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

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5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Carbon oxides expected to be the primary hazardous combustion product.

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Flammable Properties

Classification

OSHA/NFPA Class IA Flammable Liquid.

Flash point

-45 °C (-49 °F) - closed cup

Autoignition temperature

180 °C (356 °F)

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Highly flammable liquid. Eliminate all sources of ignition. All equipment used when handling this product must be grounded. A vapor suppressing foam may be used to reduce vapors. Do not touch or walk through spilled material. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations. Use clean non-sparking tools to collect absorbed material.

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7. HANDLING AND STORAGE

Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

Conditions for safe storage, including any incompatibilites:

Keep container tightly closed in a cool, dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits

Component	Source	Type	Value	Note
Ethyl Ether	US (OSHA)	STEL	500 ppm, 1500 mg/m3	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants
Ethyl Ether	US (OSHA)	TWA	400 ppm, 1200 mg/m3	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants

Appropriate engineering controls:

General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance *(physical state, color, etc.)*	Liquid. Colorless, clear.
Freezing point	-116 °C (-177 °F)
Initial boiling point and boiling range	35 °C (94 °F)
Flash point	-45 °C (-49 °F) - closed cup
Upper / Lower flammability or explosive limits	1.9 %(V) / 36.0 %(V)
Vapor pressure	563 hPa (422 mmHg) at 20 °C (68 °F)
Vapor Density	2.56
Relative Density	0.71 g/cm3 at 20 °C (68 °F)
Auto-ignition temperature	180 °C (356 °F)
Formula (ETHYL ETHER)	C4H10O
Molecular Weight (ETHYL ETHER)	74.12 g/mol

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid (e.g., static discharge, shock or vibration)	Heat, flames, and sparks. Extreme temperatures and direct sunlight.
Incompatible materials	Strong acids, oxidizing agents
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

- Ethyl Ether 60-29-7

Product Summary:
Laboratory tests have shown mutagenic effects in animals. No data available for the reproductive or teratogenic effects of the product.

Acute Toxicity:

LC50 (Inhalation)	Mouse	31,000 ppm	30 minutes
LD50 (Dermal)	Rabbit	>14.2 g/kg	
LD50 (Oral)	Rat	1,215 mg/kg	

Irritation:

No data available
/

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Other Hazards

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	Harmful if ingested.
Inhalation	May be harmful if inhaled. Irritating to the respiratory tract. Vapors may cause drowsiness and dizziness.
Skin	Harmful if absorbed through skin. Irritating to skin.

12. ECOLOGICAL INFORMATION

- Ethyl Ether 60-29-7

Ecotoxicity (aquatic and terrestrial, where available):
Acute Fish Toxicity (ETHYL ETHER)
LC50 / 96 hours Fathead Minnow - 2,560 mg/L

Persistence and degradability:
No data available

Bioaccumulative potential:
No data available

13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the

disposal of any contaminated packaging:

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	UN1155
UN proper shipping name	Diethyl ether
Transport hazard class(es)	3
Packing group *(if applicable)*	I

Reportable Quantity

100 lbs

IMDG

UN-Number: UN1155 Class: 3 Packing Group: I
EMS-No: F-E, S-D
Proper shipping name: DIETHYL ETHER
Marine pollutant: No

IATA

UN-Number: UN1155 Class: 3 Packing Group: I
Proper shipping name: Diethyl ether

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards

Flammable liquid, Target Organ Effect, Irritant, Harmful by ingestion

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard
Chronic Health Hazard
Fire Hazard

CERCLA
Ethyl Ether CAS-No. 60-29-7, RQ: 100 lbs

Massachusetts Right To Know Components
Ethyl ether CAS-No. 60-29-7 Revision Date 2007-03-01

Pennsylvania Right To Know Components
Ethyl ether CAS-No. 60-29-7 Revision Date 2007-03-01

New Jersey Right To Know Components
Ethyl ether CAS-No. 60-29-7 Revision Date 2007-03-01

California Prop 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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16. OTHER INFORMATION:
INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

Disclaimer
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