DIETHYL ETHER

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Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name:	Diethyl Ether
Substance name:	Ethoxyethane
CAS Number:	60-29-7
EC Number:	200-467-2
UK Registration Number:	UK-01-1207273397-0-0003
Chemical Formula:	$C_4H_{10}O$
Synonyms:	Ether; ether, anhydrous; Diethyl ether; 1,1'Oxybisethane;ethyl oxide; diethyl oxide; Ethyl ether anhydrous

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use:	It is commonly used as a solvent, starting fluid & laboratory use.
Recommended restrictions:	For industrial use

1.3 Details of the supplier of the safety data sheet

Company name:	East Harbour Group Ltd 20 Clough Road, Severalls Industrial Park Colchester, Essex, CO4 9QS United Kingdom
Telephone:	+44 (0) 333 242 0100
Email:	info@eastharbourgroup.com

1.4 Emergency telephone number

Emergency telephone:	0800 246 1274

Section 2: Hazardous identification

2.1 Classification of the substance or mixture

Flammable liquids (Category 1), H224
Acute toxicity, Oral (Category 4), H302
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

Classification according to EU Directives 67/548/EEC or 1999/45/EC

F+	Extremely flammable	R12
		R19
Xn	Harmful	R22
		R66
		R67

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2.2 Label elements
Pictogram

Signal word: Danger
Hazard Statements:
H224: Extremely flammable liquid and vapour.
H302: Harmful if swallowed.
H336: May cause drowsiness or dizziness.

Precautionary Statements:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241: Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor/.../if you feel unwell.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330: Rinse mouth.
P370+P378: In case of fire: Use suitable extinguish media to extinguish.
P403+P235: Store in a well-ventilated place. Keep cool.
P405: Store locked up.
P501: Dispose of contents/container in accordance with local/regional/national/international regulation

Additional Labelling Requirements
EUH019: May form explosive peroxides.
EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other Hazards:
Not known.

Section 3: Composition/information on ingredients

Constituent	CAS No.	EC No.	Typical concentration	Concentration range	Remarks
Diethyl Ether	60-29-7	200-467-2	99.5%	99.0% - 99.99%	None

Section 4: First aid measures

4.1 Description of first aid measures

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General measures:
Consult a physician. Show this safety data sheet to the doctor in attendance.
Eye contact:
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin contact:
Wash off with soap and plenty of water. Consult a physician.
Inhalation:
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Ingestion:
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
- Cough, chest pain, Difficulty in breathing, Dizziness, Drowsiness, Contact with eyes can cause:, Redness, Provokes tears., Blurred vision, Prolonged or repeated exposure to skin causes defatting and dermatitis.,
- To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

4.3 Indication of any immediate medical attention and special treatment needed
- Advice to physician: Symptomatic treatment. In the case of irritation of the respiratory tract, initiate inhalative cortisone therapy (e.g. Auxiloson, Thomae).

Section 5: Fire-fighting measures

5.1 Fire Fighting Media and Instructions:
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media: High volume water jet

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
- Wear self-contained breathing apparatus for firefighting if necessary.
- Use water spray to cool unopened containers.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency Personnel:
Avoid contact with eyes and skin by use of protective equipment. Do not eat, drink, and smoke at working place. Always wash hands after handling. Wash contaminated clothing before re-using. Take care of proper disposal product.
Advice for emergency responders:

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Use personal protective equipment.
Avoid breathing vapors, mist or gas.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapours accumulating to form explosive concentrations.
Vapours can accumulate in low areas.

6.2 Environmental precautions
- Prevent further leakage or spillage if safe to do so. Do not let product enter drains

6.3. Methods and material for containment and cleaning up
- Contain spillage and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

Section 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling: Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, moisture.
Advice on hygiene : Do not ingest.
Advice on protection against fire and explosion: Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material

7.2 Conditions for safe storage, including any incompatibilities
Store in a segregated and approved area.
Keep container tightly closed and sealed until ready for use.
Avoid all possible sources of ignition (spark or flame).
Hygroscopic keep container tightly closed.
Keep container in a dry, well-ventilated place.

7.3 Specific end use(s):
As a fuel, Laboratory uses, Anaesthetic use, Medical use, Recreational use.

Section 8: Exposure controls/personal protection

8.1 Control parameters
Exposure limits values: Not available.

8.2 Exposure controls /
8.2.1 Appropriate engineering controls:

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

8.2.2 Individual protection measures:

Respiratory Protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Eye protection:

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection:

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8.2.3 Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

• Appearance :	Colourless liquid
• Odour :	Sweetish. Pungent. Ethereal
• Odour threshold :	0.83 ppm
• pH :	Between 6 to 7

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• Melting point/Freezing point :	-116.3 °C
• Initial boiling point & boiling range:	34.6°C
• Flash point :	-45 °C
• Evaporation rate :	10 (Method: Compared to Butyl acetate.)
• Flammability :	Highly flammable
• Upper/lower flammability or explosive limits :	lower :1.9 vol%, upper :36 vol%
• Vapour pressure :	442 mm Hg@20 °C
• Vapour density :	2.56(Air=1)
• Relative density :	0.713 g/cm3 at 20 °C
• Solubility(ies) :	Soluble in water, miscible with alcohol(95%)
• Partition coefficient: n-octanol/water :	Not available
• Auto-ignition temperature :	180 – 190 °C
• Decomposition temperature :	Temperature range 697.2–760.5 K
• Viscosity :	0.2448 cp @ 20 °C
• Explosive properties :	1.9-48.0%
• Oxidizing properties :	Reacts with Grignard reagent forming Grignard reagent etherate.

9.2 Other information : None

Section 10: Stability and Reactivity

10.1 Reactivity
No data available.

10.2 Chemical Stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
In the presence of light and atmospheric oxygen, the product very quickly tends to form peroxides. The product may decompose explosively if it is concentrated or heated (e.g. distillation).

10.4 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials
Oxidizing agents, Strong acids

10.6 Hazardous decomposition products
Carbon dioxide and carbon monoxide may form when heated to decomposition. Distils without decomposition at atmospheric pressure.

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Section 11: Toxicological Information

11.1 Toxicological effects:

Toxicity	Acute oral toxicity	Acute inhalation toxicity
Species	Rat (Sprague-Dawley)	Mice
Effect level	LD50 – 1600 mg/kg bw (male/female)	LC50 (90 min) - 60000 ppm (male) & 65800 ppm (female)

11.2 Irritation/Corrosion
Eye: Not irritating
Skin: Not irritating

11.3 Sensitisation
Skin: Not expected to be sensitising

11.4 CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Carcinogenicity: Not classified as carcinogen.
Mutagenic effects : Not classified as a mutagen.
Reprotoxic effects: Not found to be reprotoxic.

11.5 Other toxic effects on humans:
Inhalation: No data available.
Eyes: No data available.
Ingestion: No data available.
Chronic toxicity: No data available.

11.6 Specific target organ toxicity :
Single exposure:
Substance diethyl ether shows STOT SE 3 hazardous effect.
Route of exposure**:** Oral and Inhalation
Affected organs: n.a.
Repeated exposure: No experimental or epidemiological sufficient evidence for specific target organ toxicity.

11.7Aspiration hazard : No data available

Section 12: Ecological Information

12.1 Toxicity
Ecotoxicity effects

Toxicity	Short term toxicity to fish	Short term toxicity to aquatic invertebrates	Long term toxicity to aquatic invertebrates	Toxicity to aquatic algae and cyanobacteria	Toxicity to microorganisms

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Species	Menidia beryllina	Daphnia magna	Daphnia magna	Desmodesmus subspicatus	Activated sludge of a predominantly domestic sewage
Duration	96hr	24hr	21d	72hr	3h
Effect level	LC50-> 10000mg/l	EC 50 - 165 mg/L	NOEC - 100 mg/L	EC 50 - >100 mg/L	EC 50 - 21 000 mg/L

12.2 Persistence and degradability:
No data available

12.3 Bioaccumulative potential:
No data available

12.4 Mobility in soil:
No data available

12.5 Results of PBT and vPvB assessment:
The substance is not PBT / vPvB

12.6 Other adverse effects:
None known

Section 13: Disposal considerations

Disposal of product:
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Disposal of packaging:
Dispose of as unused product.

Section 14: Transport Information

Classified as dangerous in the meaning of transport regulations due to its composition.

Land transport (ADR/RID)
UN Number: 1155
Proper shipping name: DIETHYL ETHER
Transport hazard class: 3
Packing group: I

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Inland waterway transport (ADN (R))
UN Number: 1155
Proper shipping name: DIETHYL ETHER
Transport hazard class: 3
Packing group: I

Marine Transport (IMDG)
UN Number: 1155
Proper shipping name: DIETHYL ETHER
Transport hazard class: 3
Packing group: I
EmS number: F-E, S-D
Marine pollutant: No

Air transport ICAO / IATA
UN Number: 1155
Proper shipping name: DIETHYL ETHER
Transport hazard class: 3
Packing group: I

Addition transport information
Information reported for product/size: 190L for air, water,& land

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15: Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture :
No data available.
Inventory Status :
Listed in: US (TSCA), Europe (EINECS), New Zealand (NZIoC), Philippines (PICCS), Canada (DSL), China (IECSC), Australia (AICS).
HMIS (Hazardous Materials Identification System) classification:

Health	2
F i re	4
Physical Hazard	0
Personal Protection	H

2 = Temporary or minor injury may occur.
4 = Flammable gases, or very volatile flammable liquids with flash points below 73 °F, and boiling points below 100 F. Materials may ignite

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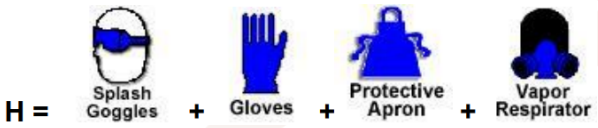
spontaneously with air. (Class IA).
0 = Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose , condense, or self-react. Non-explosives.



NFPA (National Fire Protection Association) classification:

Health	1
F i re	4
Reactivity	1

1 = Exposure would cause irritation with only minor residual injury (e.g. acetone, sodium bromate)
4 = Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily (e.g. acetylene, propane, liquid hydrogen). Includes pyrophoric substances. Flash point below room temperature at 22.8 °C (73 °F).
1 = Normally stable, but can become unstable at elevated temperatures and pressures (e.g. propene)

15.2 Chemical Safety Assessment:

A chemical safety assessment has been carried out for the substance or the mixture by the supplier (LR) - No

Section 16: Other Information

16.1 Technical Advice:

- Use data given in this Safety Data Sheet and make an inventory list of all chemicals used in the factory;
- Create a Register for Workplace Chemicals;
- Set priorities concerning the safety in the organization;
- Create emergency plans for the assessed hazards;
- Organize occupational health care and regular surveys as necessary;
- Organize contacts with authorities/laboratories to create a monitoring system for chemical hazards, and to reliably measure and/or estimate occupational exposures to chemicals when needed;
- Start collecting case studies of accidents and sickness records in the enterprise to create a basis for priority measures in the control of hazards;
- Involve workers in safety organizations, such as the system of Safety Representatives and Committees;
- Do regular inspection using checklists made for the particular chemicals and chemical processes in use;
- Mark and label all chemicals;

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• Keep at hand an inventory list of all chemicals handled in the place of work together with a collection of Chemical Safety Data Sheets for these chemicals;
• Train workers to read and understand the Chemical Safety Information, including the health hazards and routes of exposure; train them to handle dangerous chemicals and processes with respect;
• Plan, develop and choose the safe working procedures;
• Reduce the number of people coming into contact with dangerous chemicals;
• Reduce the length of time and/or frequency of exposure of workers to dangerous chemicals;
• Train workers to know and understand the emergency procedures;
• Equip and train workers to use personal protective equipment properly after everything possible has been done to eliminate hazards by means of other methods;

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.