



Safety Data Sheet

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Section 1 - Identification

1.1 Product Identifier

Product Name : Diethyl ether

CAS-No : 60-29-7

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

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : 9920 Pacific Heights Blvd
Suit 150
San Diego
California -92121

1.4 Emergency Telephone number

Emergency phone : +1 (858) 245-0283

Section 2: Hazard Identification

2.1 Classification of the substance or the mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids	Category 1	H224:Extremely flammable liquid and vapour.
Acute toxicity	Category 4	H302:Harmful if swallowed.
Specific target organ toxicity -single exposure	Category 3	H336:May cause drowsiness or dizziness.
Long-term (chronic) aquatic hazard	Category 3	H412:Harmful to aquatic life with long lasting effects.

2.2 Label elements

Label according Regulation (EC) 1272/2008

Hazard Pictogram



Signal Word:
DANGER

Hazard statements

- | | |
|------|--|
| H224 | Extremely flammable liquid and vapour. |
| H302 | Harmful if swallowed. |
| H336 | May cause drowsiness or dizziness. |
| H412 | Harmful to aquatic life with long lasting effects. |

Supplemental Hazard Statements

- | | |
|--------|---|
| EUH019 | May form explosive peroxides. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

Precautionary statements

Prevention:

- | | |
|------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/eye protection/ face protection. |

Response:

- | | |
|-----------|---|
| P301+P312 | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. |
|-----------|---|

Storage:

- | | |
|-----------|--|
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |
|-----------|--|

Reduced Labelling (<= 125 ml)

Hazard Pictogram



Signal Word:
DANGER

Hazard Statements

- | | |
|------|--|
| H224 | Extremely flammable liquid and vapour. |
| H412 | Harmful to aquatic life with long lasting effects. |

Precautionary Statements

- | | |
|-----------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

Supplemental Hazard information (EU)

- | | |
|--------|---|
| EUH019 | May form explosive peroxides. |
| EU066 | Repeated exposure may cause skin dryness or cracking. |

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Section 3: Composition/information on ingredients

3.1 Substance

Substance name : Ether
EC-No. : 200-467-2
Index-No. : 603-022-00-4

Section 4: First aid measures

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.
Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section

2.2) and/or in section 11.

4.3 Indications of any immediate medical attention and special treatment needed

No data available

Section 5: Firefighting measures

5.1 Extinguishing Media

Suitable extinguishing media : Carbon dioxide (CO₂)

Foam

Dry powder

Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazard arising from the substance or mixture

Specific hazards during fire fighting : Combustible.

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

Hazardous combustion products : Carbon oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.

Further information : Remove container from danger zone and cool with

water.

Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Advice for non-emergency personnel:
Do not breathe vapours, aerosols.
Avoid substance contact.
Ensure adequate ventilation.
Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environment precautions

Environmental precautions : Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal considerations see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	: Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
Advice on protection against fire and explosion	: Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.
Hygiene measures	: Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.
Temperature class	: T4
For precautions see section 2.2.	

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions	: Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.
Storage class (TRGS 510)	: 3, Flammable liquids
Further information on storage stability	: Light sensitive. Heat sensitive. Air sensitive. Test for peroxide formation periodically and before distillation.
Recommended storage temperature	: Recommended storage temperature see product label.
Packaging material	: Suitable material: Mild Steel Drum

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls – Personal protection

8.1 Control parameters

Occupational Exposure Limits

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
Ether	Fresh water	2 mg/l
	Marine water	0,2 mg/l
	Fresh water sediment	9,14 mg/kg
	Marine sediment	0,914 mg/kg
	Soil	0,66 mg/kg

8.2 Exposure Controls

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Safety glasses

Hand protection
Material : Viton®
Break through time : 30 min
Glove thickness : 0,7 mm
Protective index : Splash contact
Manufacturer : Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Material : Latex gloves
Break through time : 120 min
Glove thickness : 0,6 mm
Protective index : Splash contact
Manufacturer : Lapren® (KCL 706 / Aldrich Z677558, Size M)
Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Skin and body protection : Flame retardant antistatic protective clothing.
Respiratory protection : required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter : Filter type AX
type:

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.
These measures have to be properly documented.

Environmental exposure controls

Advice : Do not let product enter drains.Risk of explosion.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : liquid (20 °C, 1.013 hPa)
Color : colourless
Odor : sweet, ether-like
Melting point/range : -116 °C
Method: lit.
Boiling point/boiling range : 34,6 °C
Method: lit.
Flammability (solid,gas) : Not data available
Upper explosion limit /
Upper flammability limit : Upper explosion limit
36 %(V)
Lower explosion limit /
Lower flammability limit : Lower explosion limit
1,7 %(V)
Flash point : 40 °C

Autoignition temperature	: 180 °C
Auto-flammability	
Decomposition temperature	: Not data available
pH	: Not data available
Viscosity	: 0,195 mPa.s (40 °C)
Viscosity, dynamic	
Viscosity, kinematic	: Not data available
Flow time	: Not data available
Solubility(ies) Water solubility	: 65 g/l (20 °C)
	pH: 7
	completely soluble
Partition coefficient: n-octanol/water	: log Pow: 1,1
	Bioaccumulation is not expected.
Vapor pressure	: 189 hPa (0 °C)
	389 hPa (10 °C)
	563 hPa (20 °C)
	863 hPa (30 °C)
	1.228 hPa (40 °C)
	2.311 hPa (60 °C)
Relative density	: No data available
Density	: 0,706 g/mL (25 °C)
	Method: lit.
Relative vapour density	: 2,56
	(Air = 1.0)

9.2 Other information

Explosives	: Not classified as explosive.
Oxidizing properties	: none
Burning rate	: No data available

Self-ignition	: 175 °C ca. 1.013,25 hPa
Evaporation rate	: No data available
Molecular weight	: 74,12 g/mol

Section 10: Stability and reactivity

10.1 Reactivity

Formation of peroxides possible.
Vapours may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .
Contains the following stabiliser(s):
butyl hydroxytoluene (BHT)(≤ 11 %)

10.3 Possibility of hazardous reactions

Hazardous reactions	: Risk of ignition or formation of inflammable gases or vapours with: chromyl chloride Peroxides Risk of explosion with: azides halogens halogen-halogen compounds nonmetallic oxyhalides Strong oxidizing agents chromium(VI) oxide halogen oxides peroxi compounds perchloric acid perchlorates Nitric acid
---------------------	---

nitrating acid
Oxygen
Ozone
turpentine oils and/or turpentine substitutes
nitrates
metallic chlorides
salts of oxyhalogenic acids
nitrogen oxides
nonmetallic oxides
chromosulfuric acid
chlorates
hydrogen peroxide
permanganic acid
sulfuric acid
with
Nitric acid
sulfur
Risk of explosion during distillation.
Exothermic reaction with:

acid halides

10.4 Conditions to avoid

Conditions to avoid	: Light. Heat Air Warming. Moisture.
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10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

Peroxides
In the event of fire: see section 5

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute toxicity estimate Oral - 1.224 mg/kg

(Calculation method)

LD50 Oral - Rat - 1.211 mg/kg (Diethyl ether)

Remarks: (RTECS)

Symptoms: Risk of aspiration upon vomiting., Aspiration may cause pulmonary oedema and pneumonitis.

Acute toxicity estimate Oral - 1.211 mg/kg (Diethyl ether)

(ATE value derived from LD50/LC50 value)

LC50 Inhalation - Mouse - 4 h - 97,5 mg/l - vapour

(Diethyl ether)

Remarks: (RTECS)

Symptoms: mucosal irritations

LD50 Dermal - Rabbit - male - > 20.000 mg/kg (Diethyl ether)

(OECD Test Guideline 402)

Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit (Diethyl ether)

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: Dermatitis

Serious eye damage/eye irritation

Eyes - Rabbit (Diethyl ether)

Result: No eye irritation

(OECD Test Guideline 405)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse (Diethyl ether)

Result: negative

(OECD Test Guideline 429)

Germ cell mutagenicity

Test Type: Mouse

Test system: Embryo

Remarks: DNA inhibition

Test Type: Micronucleus test

(Diethyl ether)

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487

Result: negative

Test Type: In vitro mammalian cell gene mutation test

(Diethyl ether)

Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Ames test

(Diethyl ether)

Test system: Escherichia coli/Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

(Diethyl ether)

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: Intraperitoneal

Method: OECD Test Guideline 474

Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Oral - May cause drowsiness or dizziness. - Central nervous system (Diethyl ether)

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - No observed adverse effect level - 500 mg/kg - Lowest observed adverse effect level - 2.000 mg/kg

Remarks: (ECHA)

(Diethyl ether)

RTECS: KI5775000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Inhalation may provoke the following symptoms: (Diethyl ether)

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. (Diethyl ether)

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Diethyl ether)

Narcotic!

(Diethyl ether)

After absorption:

(Diethyl ether)

Salivation
ataxia (impaired locomotor coordination)
inebriation
Unconsciousness
Coma
(Diethyl ether)
Other dangerous properties can not be excluded.
(Diethyl ether)
Handle in accordance with good industrial hygiene and safety practice.
(Diethyl ether)
Liver - Ingestion may provoke the following symptoms; Irregularities - Based on Human Evidence (Diethyl ether)

Section 12: Ecological information

12.1 Toxicity

Components:

Diethyl ether:

Toxicity to fish	: LC50 (Lepomis macrochirus (Bluegill sunfish)): > 10.000 mg/l Exposure time: 96 h Remarks: (IUCLID)
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 1.380 mg/l Exposure time: 48 h Remarks: (IUCLID)
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes NOEC (Desmodesmus subspicatus (green algae)): 100 mg/l

	End point: Growth inhibition Exposure time: 72 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes
Toxicity to microorganisms	: EC50 (activated sludge): 21.000 mg/l Exposure time: 3 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 209 GLP: yes
	NOEC (activated sludge): 42 mg/l Exposure time: 3 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 209 GLP: yes
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC: > 100 mg/l End point: reproduction rate Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: semi-static test Analytical monitoring: yes Method: OECD Test Guideline 211 GLP: yes
butyl hydroxytoluene (BHT):	
Toxicity to fish	: LC50 (Danio rerio (zebra fish)): > 0,57 mg/l End point: mortality Exposure time: 96 h Test Type: semi-static test Analytical monitoring: yes Method: Directive 67/548/EEC, Annex V, C.1. GLP: yes
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 0,48 mg/l End point: Immobilization Exposure time: 48 h

	Test Type: static test
	Analytical monitoring: yes
	Method: OECD Test Guideline 202
	GLP: yes
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): > 0,4 mg/l
	Exposure time: 72 h
	Test Type: static test
	Analytical monitoring: yes
	Method: Regulation (EC) No. 440/2008, Annex, C.3
	GLP: yes
Toxicity to microorganisms	: EC50 (activated sludge): > 10.000 mg/l
	Exposure time: 3 h
	Test Type: static test
	Method: OECD Test Guideline 209
	GLP: yes
Toxicity to fish (Chronic toxicity)	: NOEC: 0,053 mg/l
	Exposure time: 30 d
	Species: Oryzias latipes
	Method: OECD Test Guideline 210
	GLP: yes
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: EC50: 0,096 mg/l
	End point: reproduction rate
	Exposure time: 21 d
	Species: Daphnia magna (Water flea)
	Method: OECD Test Guideline 211
	GLP: yes
Ecotoxicology Assessment	
Acute aquatic toxicity	: no acute aquatic toxicity
Chronic aquatic toxicity	: Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Components:

Diethyl ether:

Biodegradability : Remarks: Not readily biodegradable.

12.3 Bioaccumulated potential

Components:

Diethyl ether:

Bioaccumulation : Remarks: No bioaccumulation is to be expected (log Pow $\leq$ 4).

Partition coefficient: n-octanol/water : log Pow: 1,1
Remarks: Bioaccumulation is not expected.

butyl hydroxytoluene (BHT):

Partition coefficient: n-octanol/water : log Pow: 5,1
GLP: yes
Remarks: Potential bioaccumulation (ECHA)

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment:-This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:

Diethyl ether:

Assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

butyl hydroxytoluene (BHT):

Assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Endocrine disrupting properties

Product:

Assessment:-The substance/mixture does not contain components considered to have

endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Components:

butyl hydroxytoluene (BHT):

Additional ecological information: Discharge into the environment must be avoided.

Section 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Section 14: Transportation information

14.1 UN Number or ID number

ADR	UN 1155
IMDG	UN 1155
IATA	UN 1155

14.2 UN proper shipping name

ADR	DIETHYL ETHER
ADR/RID	DIETHYL ETHER
ADR/RID	DIETHYL ETHER

14.3 Transport hazard class(es)

Class

ADR 3

IMDG 3

IATA 3

Subsidiary risks

ADR -

IMDG -

IATA -

14.4 Packaging group

ADR

Packing group I

Classification Code F1

Hazard Identification Number 33

Labels 3

Tunnel restriction code (D/E)

IMDG

Packing group I

Labels 3

EmS Code F-E, S-D

IATA (Cargo)

Packing instruction (cargo aircraft) 361

Packing group I

Labels Class 3 - Flammable liquids

IATA_P (Passenger)

Packing instruction (passenger aircraft) 351

Packing group I

Labels Class 3 - Flammable liquids

14.5 Environmental hazards

ADR

Environmentally hazardous no

IMDG

Marine pollutant no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

Section 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:
Number on list 3

Number on list 40
This substance/mixture shall not be used in aerosol dispensers intended for supply to the general public for entertainment and decorative purposes.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : Not applicable

Regulation (EU) No 2024/590 on substances that deplete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

REACH - List of substances subject to authorisation : Not applicable

(Annex XIV)

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

Section 16: Other information

Full text of H-Statements

H336	May cause drowsiness or dizziness.
EUH019	May form explosive peroxides.
EUH066	Repeated exposure may cause skin dryness or cracking.
H336	May cause drowsiness or dizziness.

Further information

The information and recommendations in this SDS are to the best of our knowledge, information and belief accurate at the time of publication. Although utmost care is been taken in composition of this text, Highpuris LLC cannot be held responsible for any damage resulting from any possible error in this publication.