

According to Regulation (EC) No 1907/2006

According to Regulation (EC) No 2020/878

Diethyl ether

Version number: 2
Issued: 2024-04-30
Replaces SDS: 2021-05-12



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

1.1. Product identifier

Trade name

Diethyl ether

CAS number

60-29-7

EC number

200-467-2

Synonyms

Ethoxyethane

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

Relevant identified uses

Research and development. Laboratory Chemicals. Manufacture of substances.

Not suitable for use in

Not suitable for human consumption or veterinary purposes.

1.3. Details of the supplier of the safety data sheet

Supplier

Molekula Group

Address

Molekula Ltd, Lingfield Way, Darlington,
DL1 4XX Darlington
United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

Contact person

Kevin Banks

Email

+44 (0) 7769276927

1.4. Emergency telephone number

Poison center/Additional emergency number

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classification

Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis

Acute toxicity, oral, hazard category 4

Flammable liquids, hazard category 1

Hazard statements

H224, H302, H336

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Warning

Hazard statements

H224 Extremely flammable liquid and vapour.

H302 Harmful if swallowed.

H336 May cause drowsiness or dizziness.

Supplemental hazard statements

EUH019 May form explosive peroxides.

EUH066 Repeated exposure may cause skin dryness or cracking.

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Precautionary statements

P202 Do not handle until all safety precautions have been read and understood.
 P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P242 Use non-sparking tools.
 P243 Take action to prevent static discharges.
 P262 Do not get in eyes, on skin, or on clothing.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 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.
 P308 + P313 IF exposed or concerned: Get medical advice/attention.
 P362 + P364 Take off contaminated clothing and wash it before reuse.
 P391 Collect spillage.
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 P501 Dispose of contents/container to local regulations.

2.3. Other hazards

No data available

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrase M factor acute M factor chronic	Note
diethyl ether; ether	60-29-7 200-467-2 01-2119535785-29 603-022-00-4	100%	Flam. Liq. 1, Acute Tox. 4 - oral, STOT SE 3 - narcosis	H224, H302, H336, EUH019, EUH066 - -	-

Molecular weight

74.12

Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

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SECTION 4: First aid measures

4.1. Description of first aid measures

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

Skin contact

IF ON SKIN: Wash with plenty of soap and water. Continue to rinse for at least 15 minutes. Get medical advice/attention if you feel unwell.

Eye contact

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

Ingestion

Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

Information for doctors

No data available.

4.2. Most important symptoms and effects, both acute and delayed

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

Inhalation

Single exposure may cause the following adverse effects: Upper respiratory irritation. Difficulty in breathing.

Skin contact

Single exposure may cause the following adverse effects: Severe skin irritation.

Eye contact

May cause temporary eye irritation.

Ingestion

Single exposure may cause the following adverse effects: Severe abdominal pain. Nausea, vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. No special treatment requirement.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use alcohol resistant foam, carbon dioxide or dry powder to extinguish.

Unsuitable extinguishing media

No specific fire fighting procedure given.

5.2. Special hazards arising from the substance or mixture

Specific hazards: FLAMMABLE.

Containers can burst violently when heated, due to excess pressure build-up.

Vapours may form explosive mixture with air at room temperature.

Vapours are heavier than air and may travel along the floor and in the bottom of containers.

Carbon monoxide (CO). Carbon dioxide (CO₂).

Combustible.

Pay attention to flashback.

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

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Prevent skin contact by maintaining a safe distance and by wearing suitable protective equipment/ clothing. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapours and spray mist and contact with skin and eyes. For personal protection, see section 8. Provide adequate ventilation. Remove sources of ignition. Beware of the explosion danger. Take action to prevent static discharges.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Risk of explosion.

6.3. Methods and material for containment and cleaning up

Collect with absorbent, non-combustible material into suitable containers. Remove sources of ignition. Beware of the explosion danger. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

For precautions see section 2.2. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Work under hood. Take action to prevent static discharges. Use spark-proof tools and explosion-proof equipment. Wear protective clothing, gloves, eye and face protection. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

General hygiene

Observe good chemical hygiene practices. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Store at room temperature. Store in a dry place. Store in a closed container.

7.3. Specific end use(s)

No specific usage precautions noted.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

TWA: 100ppm. 308mg/m³. Europe Directive: 2000/39/EC

STEL: 200ppm. 616mg/m³. Europe Directive: 2000/39/EC

TWA: 100ppm. 310mg/m³. UK. EH40. WEL = Workplace Exposure Limit.

STEL: 200ppm. 620mg/m³. UK. EH40. WEL = Workplace Exposure Limit.

DNEL/DMEL

Product/Substance name (CAS No./EC No.)	Type	Exposure	Value	Population	Effects
diethyl ether; ether (60-29-7/200-467-2)	DNEL	Acute (short term) Inhalation	616 mg/m ³	Workers	Systemic
diethyl ether; ether (60-29-7/200-467-2)	DNEL	Chronic (long term) Inhalation	308 mg/m ³	Workers	Systemic
diethyl ether; ether (60-29-7/200-467-2)	DNEL	Chronic (long term) Inhalation	54.5 mg/m ³	Consumers	Systemic

PNEC/PEC

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Product/Substance name (CAS No./EC No.)	Type	Environmental compartment	Value
diethyl ether; ether (60-29-7/200-467-2)	PNEC	Freshwater	2 mg/l
diethyl ether; ether (60-29-7/200-467-2)	PNEC	Marine water	0.2 mg/l
diethyl ether; ether (60-29-7/200-467-2)	PNEC	Sediment (freshwater)	9.14 mg/kg
diethyl ether; ether (60-29-7/200-467-2)	PNEC	Sediment (marine water)	0.914 mg/kg
diethyl ether; ether (60-29-7/200-467-2)	PNEC	Soil	0.66 mg/kg

8.2. Exposure controls

Personal Protective Equipment Symbols



Eye / face protection

Wear eye protection.

Hand protection

Wear protective gloves. Splash Contact Recommended gloves: Viton rubber (fluor rubber).

Glove Thickness: 0.7mm

Breakthrough time: 30 minutes

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals.

Wash contaminated skin thoroughly after handling.

Other skin protection

Wash skin thoroughly after handling.

Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

Environmental exposure controls

Avoid discharge into drains.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Colour

Colourless.

Odour

Aromatic.

Melting point / freezing point

-116 °C

Boiling point or initial boiling point and boiling range

34.6 °C

Flammability

The product is extremely flammable.

Lower and upper explosion limit

1.7 - 48 %

Flash point

-40 °C

Auto-ignition temperature

No data available

Decomposition temperature

No data available

pH

No data available

Kinematic viscosity

No data available

Solubility

No data available

Partition coefficient n-octanol/water

No data available

Vapour pressure

No data available

Density and/or relative density

0.71 g/cm³

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Relative vapour density

No data available

Explosive properties

Not classified as explosive.

Particle characteristics

No data available

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Formation of peroxides possible.

Vapours may form explosive mixture with air at room temperature.

10.2. Chemical stability

Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

There are no known conditions that are likely to result in a hazardous situation.

10.4. Conditions to avoid

Avoid heat. Light. Air. Moisture.

10.5. Incompatible materials

oxidising agents Rubber. Strong acids. various plastics

10.6. Hazardous decomposition products

See section 5.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product / Sub- stance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Duration of exposure	Test animals
diethyl ether; ether 60-29-7 / 200-467-2	LD50	1211 mg/kg	Oral	-	Rat
diethyl ether; ether 60-29-7 / 200-467-2	LC50	97.5 mg/l	Inhalation.	4 hours	Mouse

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Product / Sub- stance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Duration of expos- ure	Test animals
diethyl ether; ether 60-29-7 / 200-467-2	LD50	>20000 mg/kg	Dermal	-	Rabbit

Skin corrosion/irritation

Product / Substance name CAS / EC no.	Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	No skin irritation.	4 hours	Rabbit

Serious eye damage/irritation

Product / Substance name CAS / EC no.	Result	Species
diethyl ether; ether 60-29-7 / 200-467-2	No eye irritation.	Rabbit

Respiratory or skin sensitisation

Product / Substance name CAS / EC no.	Result	Species	Method / Guideline
diethyl ether; ether 60-29-7 / 200-467-2	Negative.	Mouse	Local Lymph Node Assay

Germ cell mutagenicity

Product / Sub- stance name CAS / EC no.	Result	Exposure route	Metabolic activa- tion / Exposure	Species	Method / Guideline
diethyl ether; ether 60-29-7 / 200-467-2	Negative.	-	with and without metabolic activation	Human lymphocytes	Micronucleus test
diethyl ether; ether 60-29-7 / 200-467-2	Negative.	-	with and without metabolic activation	Mouse lymphoma test	In vitro mammalian cell gene mutation test.
diethyl ether; ether 60-29-7 / 200-467-2	Negative.	-	with and without metabolic activation	Escherichia coli/Sal- monella typh- imurium	Ames test

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Product / Sub- stance name CAS / EC no.	Result	Exposure route	Metabolic activa- tion / Exposure	Species	Method / Guideline
diethyl ether; ether 60-29-7 / 200-467-2	Negative.	Intraperitoneal.	-	Mouse Red blood cells (erythrocytes)	Micronucleus test

STOT-single exposure

Product / Substance name CAS / EC no.	Exposure route	Target organs	Result
diethyl ether; ether 60-29-7 / 200-467-2	Oral	Central nervous system.	May cause drowsiness or dizziness.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

No data available

SECTION 12: Ecological information

12.1. Toxicity

Acute fish toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	LC50	>10,000 mg/l	96 hours	Lepomis macrochirus (Bluegill)

Acute algae toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	NOEC	100 mg/l	72 hours	Desmodesmus sub- spicatus (green algae)
diethyl ether; ether 60-29-7 / 200-467-2	ErC50	>100 mg/l	72 hours	Desmodesmus sub- spicatus (green algae)

Acute crustacean toxicity

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Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	EC50	1380 mg/l	48 hours	Daphnia magna

Micro-/macro organism toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	NOEC	42 mg/l	3 hours	Activated sludge.
diethyl ether; ether 60-29-7 / 200-467-2	EC50	21,000 mg/l	3 hours	Activated sludge.

Chronical toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
diethyl ether; ether 60-29-7 / 200-467-2	NOEC	>100 mg/l	21 days	Daphnia magna

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

No data available

12.6. Endocrine disrupting properties

This product does not contain any known or suspected endocrine disruptors.

12.7. Other adverse effects

No data available

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

14.1. UN number

1155

14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

DIETHYL ETHER (ETHYL ETHER)

IMDG proper shipping name

DIETHYL ETHER (ETHYL ETHER)

IATA proper shipping name

Diethyl ether

14.3. Transport hazard class(es)

Label

ADR/RID/ADN



3

IMDG



3

IATA



3

ADR / RID Class

3

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ADR / RID Classification code

F1

ADR / RID hazard identification number

33

IMDG Class

3

IATA Class

3

ADN Class

3

ADN Class Code

F1

14.4. Packing group

ADR / RID / ADN: I

IMDG: I

IATA: I

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Special precautions for user

Tunnel restriction code: D/E

Transport category: 1

IMDG EmS

F-E, S-D

14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC02

SECTION 15: Regulatory information

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

EU regulations

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

This material safety data sheet complies with the requirements of Regulation (EU) 2020/878.

National regulations

Directive: 2012/18/EU: P5a FLAMMABLE LIQUIDS

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15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Phrase meaning

STOT SE 3 - narcosis - Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis

Acute Tox. 4 - oral - Acute toxicity, oral, hazard category 4

Flam. Liq. 1 - Flammable liquids, hazard category 1

H224 Extremely flammable liquid and vapour.

H302 Harmful if swallowed.

H336 May cause drowsiness or dizziness.

EUH019 May form explosive peroxides.

EUH066 Repeated exposure may cause skin dryness or cracking.