

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 22.07.2018

Version 6.2

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

1.1 Product identifier

Catalogue No. 803127

Product name Diethylene glycol monoethyl ether for synthesis

REACH Registration Number 01-2119475105-42-XXXX 01-2119475105-42-XXXX

CAS-No. 111-90-0

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

Identified uses Chemical for synthesis

For additional information on uses please refer to the Merck Chemicals portal (www.merckgroup.com).

1.3 Details of the supplier of the safety data sheet

Company Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0

Responsible Department LS-QHC * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number Please contact the regional company representation in your country.

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

This substance is not classified as dangerous according to European Union legislation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

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None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	HOCH ₂ CH ₂ OCH ₂ CH ₂ OC ₂ H ₅	C ₆ H ₁₄ O ₃ (Hill)
EC-No.	203-919-7	
Molar mass	134,17 g/mol	

Remarks	No disclosure requirement according to Regulation (EC) No. 1907/2006
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3.2 Mixture

Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air.

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

After eye contact: rinse out with plenty of water. Remove contact lenses.

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

4.2 Most important symptoms and effects, both acute and delayed

irritant effects, Cough, Shortness of breath, Dizziness, narcosis, Diarrhoea, Nausea, Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

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Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

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

5.3 Advice for firefighters

Special protective equipment for firefighters

In the event of fire, wear self-contained breathing apparatus.

Further information

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

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and 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

Indications about waste treatment see section 13.

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SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Hygiene measures

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed.

Recommended storage temperature see product label.

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

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Derived No Effect Level (DNEL)

Worker DNEL, longterm	Systemic effects	inhalation	37 mg/m ³
Worker DNEL, longterm	Local effects	inhalation	18 mg/m ³
Worker DNEL, longterm	Systemic effects	dermal	50 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	18,3 mg/m ³
Consumer DNEL, longterm	Local effects	inhalation	9 mg/m ³
Consumer DNEL, longterm	Systemic effects	dermal	25 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	oral	25 mg/kg Body weight

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,74 mg/l
PNEC Fresh water sediment	2,74 mg/kg
PNEC Marine water	0,074 mg/l
PNEC Marine sediment	0,274 mg/kg
PNEC Aquatic intermittent release	10 mg/l
PNEC Sewage treatment plant	500 mg/l
PNEC Soil	0,15 mg/kg
PNEC oral	444 mg/kg

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

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Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,4 mm
Break through time:	> 120 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 730 Camatril® -Velours (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

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 EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment

protective clothing

Respiratory protection

required when vapours/aerosols are generated.

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

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.

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Environmental exposure controls

Do not let product enter drains.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	liquid
Colour	colourless
Odour	weak
Odour Threshold	No information available.
pH	No information available.
Melting point	-78 °C
Boiling point/boiling range	202 °C at 1.013 hPa
Flash point	94 °C Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1,8 %(V)
Upper explosion limit	12,2 %(V)

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Vapour pressure	0,13 hPa at 20 °C
Relative vapour density	4,62
Density	0,99 g/cm ³ at 20 °C
Relative density	No information available.
Water solubility	at 20 °C soluble
Partition coefficient: n-octanol/water	log Pow: -0,54 (experimental) (Lit.) Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	3,85 mPa.s at 25 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

9.2 Other data

Ignition temperature	204 °C
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SECTION 10. Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.

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A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability

Reacts with air to form peroxides.

10.3 Possibility of hazardous reactions

Exothermic reaction with:

Strong oxidizing agents

Generates dangerous gases or fumes in contact with:

Aluminium, Possible formation of:., Hydrogen

Violent reactions possible with:

metals, Acid chlorides, Acid anhydrides, acids

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

Aluminium, artificial and/or natural resins, Copper

10.6 Hazardous decomposition products

Peroxides

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 Rat: 5.900 - 6.100 mg/kg

(IUCLID)

LD50 Rat: 5.900 - 6.100 mg/kg

(IUCLID)

Symptoms: Nausea, Vomiting

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Acute inhalation toxicity

Symptoms: slight mucosal irritations, Cough, Shortness of breath

Acute dermal toxicity

LD50 Rabbit: 8.476 mg/kg

(IUCLID)

Skin irritation

Rabbit

Result: No irritation

(IUCLID)

Eye irritation

Rabbit

Result: slight irritation

(IUCLID)

Sensitisation

Sensitisation test: Guinea pig

Result: negative

(Lit.)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

(National Toxicology Program)

Carcinogenicity

This information is not available.

Reproductive toxicity

This information is not available.

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Teratogenicity

This information is not available.

Specific target organ toxicity - single exposure

This information is not available.

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

11.2 Further information

After absorption of large quantities:

Dizziness, Diarrhoea, narcosis, haemolysis

Damage to:

Lungs, Liver, Kidney

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

LC50 *S.gairdnerii*: 13.400 mg/l; 96 h

(IUCLID)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna* (Water flea): 3.940 - 4.670 mg/l; 48 h

(IUCLID)

Toxicity to bacteria

EC10 *Pseudomonas putida*: 4.000 mg/l; 16 h

(IUCLID)

12.2 Persistence and degradability

Biodegradability

90 %; 28 d

OECD Test Guideline 301E

Readily biodegradable

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12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -0,54

(experimental)

(Lit.) Bioaccumulation is not expected.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Sea transport (IMDG)

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14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard	SEVESO III
Legislation	Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
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Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated
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Substances of very high concern (SVHC)	This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).
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National legislation

Storage class	10 - 13
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15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

Training advice

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Provide adequate information, instruction and training for operators.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.