

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 05.11.2018

Version 9.9

SECTION 1. Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Catalogue No.	803129
Product name	Diethylene glycol monobutyl ether for synthesis
REACH Registration Number	01-2119475104-44-xxxx
CAS-No.	112-34-5

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).
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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****Classification (REGULATION (EC) No 1272/2008)**

Eye irritation, Category 2, H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

Warning

Hazard statements

H319 Causes serious eye irritation.

Precautionary statements

Response

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Reduced labelling (≤ 125 ml)

Hazard pictograms



Signal word

Warning

Contains: 2-(2-butoxyethoxy)ethanol

Index-No. 603-096-00-8

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

The Safety Data Sheets for catalogue items are available at www.merckgroup.com

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Formula $\text{HOCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{O}(\text{CH}_2)_3\text{CH}_3$ $\text{C}_8\text{H}_{18}\text{O}_3$ (Hill)
Index-No. 603-096-00-8
EC-No. 203-961-6
Molar mass 162,23 g/mol

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical name (Concentration)

CAS-No.	Registration number	Classification
112-34-5	01-2119475104-44-xxxx	2-(2-butoxyethoxy)ethanol (<= 100 %) Eye irritation, Category 2, H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

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. Call in ophthalmologist. Remove contact lenses.

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

Shortness of breath, Dizziness, Diarrhoea, Nausea, CNS disorders
irritant effects

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

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SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Foam, Dry powder, Water

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. Avoid substance contact. Ensure adequate ventilation. 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

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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. Chemisorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Hygiene measures

Change contaminated clothing. Wash hands after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

No aluminium, tin, or zinc containers.

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

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:	natural latex
Glove thickness:	0,60 mm
Break through time:	> 480 min

splash contact:

Glove material:	polychloroprene
Glove thickness:	0,65 mm
Break through time:	> 240 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 706 Lapren® (full contact), KCL 720 Camapren® (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

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properly documented.

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	clear colourless
Odour	very faint characteristic
Odour Threshold	No information available.
pH	at 20 °C neutral
Melting point	< -68 °C at 1.013 hPa
Boiling point/boiling range	224 - 234 °C at 1.013 hPa
Flash point	105 °C at 1.013 hPa Method: DIN 51758
Evaporation rate	No information available.

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Flammability (solid, gas)	No information available.
Lower explosion limit	0,7 %(V)
Upper explosion limit	5,9 %(V)
Vapour pressure	< 1 hPa at 20 °C
Relative vapour density	5,58 (Air = 1.0)
Density	0,95 g/cm ³ at 20 °C
Relative density	No information available.
Water solubility	at 25 °C completely miscible
Partition coefficient: n-octanol/water	log Pow: 1 (20 °C) OECD Test Guideline 117 Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	6,49 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

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9.2 Other data

Ignition temperature	210 °C at 1.013 hPa Method: DIN 51794
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Viscosity, kinematic	6,1 mm ² /s at 20 °C
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SECTION 10. Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.
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

Risk of explosion with:
Oxidizing agents, Aluminium

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

Aluminium, Light metals

10.6 Hazardous decomposition products

Peroxides

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SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 Rat: 5.660 mg/kg

(RTECS)

Symptoms: Nausea, Diarrhoea

Acute inhalation toxicity

LC50 Rat: > 0,097 mg/l; 4 h ; dust/mist

OECD Test Guideline 403

(highest concentration to be prepared)

Symptoms: Possible damages:, mucosal irritations

Acute dermal toxicity

LD50 Rabbit: 2.764 mg/kg

OECD Test Guideline 402

Skin irritation

Rabbit

Result: Mild skin irritation

OECD Test Guideline 404

Causes mild skin irritation.

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation

Rabbit

Result: Eye irritation

(ECHA)

Causes serious eye irritation.

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Sensitisation

Maximisation Test Guinea pig
Result: negative
Method: OECD Test Guideline 406

Germ cell mutagenicity

Genotoxicity in vivo

In vivo micronucleus test
Mouse
male and female
Oral
Bone marrow
Result: negative
Method: OECD Test Guideline 475

Genotoxicity in vitro

Ames test
Escherichia coli/Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

Mutagenicity (mammal cell test): chromosome aberration.

Chinese hamster ovary cells
Result: negative
Method: OECD Test Guideline 473

In vitro mammalian cell gene mutation test
Chinese hamster ovary cells
Result: negative
Method: OECD Test Guideline 476

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

Chronic intoxication:

Systemic effects:

CNS disorders, Dizziness

Damage to:

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

static test LC50 *Lepomis macrochirus* (Bluegill sunfish): 1.300 mg/l; 96 h

OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

static test EC50 *Daphnia magna* (Water flea): > 100 mg/l; 48 h

OECD Test Guideline 202

Toxicity to algae

static test ErC50 *Desmodesmus subspicatus* (green algae): > 100 mg/l; 96 h

OECD Test Guideline 201

12.2 Persistence and degradability

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Biodegradability

85 %; 28 d; aerobic

OECD Test Guideline 301C

Readily biodegradable

Theoretical oxygen demand (ThOD)

2.170 mg/g

(IUCLID)

Ratio BOD/ThBOD

BOD5 11 %

(IUCLID)

Ratio COD/ThBOD

96 %

(IUCLID)

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 1 (20 °C)

OECD Test Guideline 117

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.

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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)

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

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

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

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 $\geq 0.1\%$ (w/w).

National legislation

Storage class 10 - 13

15.2 Chemical safety assessment

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

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H319 Causes serious eye irritation.

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word

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Contains: 2-(2-butoxyethoxy)ethanol

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.