

# safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 453/2010/EU



## Diethylene glycol $\geq 99\%$ , for synthesis

article number: **0968**  
Version: **1.0 en**

date of compilation: 2015-06-11

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

### 1.1 Product identifier

|                                 |                          |
|---------------------------------|--------------------------|
| Identification of the substance | <b>Diethylene glycol</b> |
| Article number                  | 0968                     |
| Registration number (REACH)     | 01-2119457857-21-xxxx    |
| Index No                        | 603-140-00-6             |
| EC number                       | 203-872-2                |
| CAS number                      | 111-46-6                 |

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

|                          |                     |
|--------------------------|---------------------|
| Relevant identified uses | laboratory chemical |
|--------------------------|---------------------|

### 1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG  
Schoemperlenstr. 3-5  
D-76185 Karlsruhe  
Germany

**Telephone:** +49 (0) 721 - 56 06 0

**Telefax:** +49 (0) 721 - 56 06 149

**e-mail:** [sicherheit@carlroth.de](mailto:sicherheit@carlroth.de)

**Website:** [www.carlroth.de](http://www.carlroth.de)

Competent person responsible for the safety data sheet : Abteilung Arbeitssicherheit

**e-mail (competent person)** : [sicherheit@carlroth.de](mailto:sicherheit@carlroth.de)

### 1.4 Emergency telephone number

Emergency information service **Poison Centre Munich: +49/(0)89 19240**

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

| Classification acc. to GHS |                       |                           |                  |
|----------------------------|-----------------------|---------------------------|------------------|
| Section                    | Hazard class          | Hazard class and category | Hazard statement |
| 3.10                       | acute toxicity (oral) | (Acute Tox. 4)            | H302             |

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### 2.2 Label elements

#### Labelling according to Regulation (EC) No 1272/2008 (CLP)

##### Signal word

Warning

##### Pictograms



##### Hazard statements

H302 Harmful if swallowed.

##### Precautionary statements

##### **Precautionary statements - response**

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

Labelling of packages where the contents do not exceed 125 ml

Signal word: **Warning**

Symbol(s)



### 2.3 Other hazards

There is no additional information.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                             |   |
|-----------------------------|---|
| Name of substance           | Diethylene glycol                             |
| Index No                    | 603-140-00-6                                  |
| Registration number (REACH) | 01-2119457857-21-xxxx                         |
| EC number                   | 203-872-2                                     |
| CAS number                  | 111-46-6                                      |
| Molecular formula           | C <sub>4</sub> H <sub>10</sub> O <sub>3</sub> |
| Molar mass                  | 106.1 g/mol                                   |

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## SECTION 4: First aid measures

### 4.1 Description of first aid measures



#### General notes

Take off contaminated clothing.

#### Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following skin contact

In case of skin reactions, consult a physician.

#### Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following ingestion

Rinse mouth with water (only if the person is conscious). Call a doctor.

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

After ingestion: Malaise, Vomiting

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings  
water spray, foam, alcohol resistant foam, dry extinguishing powder, carbon dioxide (CO<sub>2</sub>)

#### Unsuitable extinguishing media

water jet

### 5.2 Special hazards arising from the substance or mixture

Combustible.

#### Hazardous combustion products

In case of fire may be liberated: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>)

### 5.3 Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

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## **Special protective equipment for firefighters**

Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles. Self-contained breathing apparatus (SCBA). Self-contained breathing apparatus (EN 133).

## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

#### **For non-emergency personnel**

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

### **6.2 Environmental precautions**

Keep away from drains, surface and ground water.

### **6.3 Methods and material for containment and cleaning up**

#### **Advices on how to contain a spill**

Covering of drains.

#### **Advices on how to clean up a spill**

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).

#### **Other information relating to spills and releases**

Place in appropriate containers for disposal. Ventilate affected area.

#### **Reference to other sections**

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

Provision of sufficient ventilation.

#### **Advice on general occupational hygiene**

Do not eat, drink and smoke in work areas. Wash hands before breaks and after work.

### **7.2 Conditions for safe storage, including any incompatibilities**

Keep container tightly closed.

#### **Incompatible substances or mixtures**

Observe hints for combined storage.

#### **Consideration of other advice**

Not required.

#### **• Ventilation requirements**

Use local and general ventilation.

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- **Specific designs for storage rooms or vessels**

Recommended storage temperature: 15 - 25 °C.

### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### National limit values

#### Occupational exposure limit values (Workplace Exposure Limits)

| Country | Name of agent     | CAS No   | Notation | Identifier | TWA [ppm] | TWA [mg/m <sup>3</sup> ] | STEL [ppm] | STEL [mg/m <sup>3</sup> ] | Source    |
|---------|-------------------|----------|----------|------------|-----------|--------------------------|------------|---------------------------|-----------|
| UK      | 2,2'-oxydiethanol | 111-46-6 |          | WEL        | 23        | 101                      |            |                           | EH40/2005 |

#### Notation

STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified

TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

#### Relevant DNELs/DMELs/PNECs and other threshold levels

- **human health values**

| Endpoint | Threshold level      | Protection goal, route of exposure | Used in           | Exposure time              |
|----------|----------------------|------------------------------------|-------------------|----------------------------|
| DNEL     | 60 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | chronic - local effects    |
| DNEL     | 106 mg/kg            | human, dermal                      | worker (industry) | chronic - systemic effects |
| DNEL     | 60 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | chronic - systemic effects |

- **environmental values**

| Endpoint | Threshold level          | Environmental compartment    | Exposure time                |
|----------|--------------------------|------------------------------|------------------------------|
| PNEC     | 1 mg/cm <sup>3</sup>     | marine water                 | continuous                   |
| PNEC     | 10 mg/cm <sup>3</sup>    | air                          | continuous                   |
| PNEC     | 20.9 mg/cm <sup>3</sup>  | freshwater sediment          | continuous                   |
| PNEC     | 10 mg/cm <sup>3</sup>    | freshwater                   | continuous                   |
| PNEC     | 199.5 mg/cm <sup>3</sup> | sewage treatment plant (STP) | continuous                   |
| PNEC     | 1.53 mg/cm <sup>3</sup>  | soil                         | continuous                   |
| PNEC     | 10 mg/l                  | freshwater                   | short-term (single instance) |
| PNEC     | 1 mg/l                   | marine water                 | short-term (single instance) |
| PNEC     | 199.5 mg/l               | sewage treatment plant (STP) | short-term (single instance) |
| PNEC     | 20.9 mg/kg               | freshwater sediment          | short-term (single instance) |
| PNEC     | 2.09 mg/kg               | marine sediment              | short-term (single instance) |
| PNEC     | 1.53 mg/kg               | soil                         | short-term (single instance) |

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| Endpoint | Threshold level | Environmental compartment | Exposure time |
|----------|-----------------|---------------------------|---------------|
| PNEC     | 10 mg/l         | water                     | continuous    |

### 8.2 Exposure controls

#### Individual protection measures (personal protective equipment)



##### Eye/face protection

Use safety goggle with side protection.

##### Skin protection

###### • hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

###### • type of material

NBR (Nitrile rubber)

###### • material thickness

>0,11 mm.

###### • breakthrough times of the glove material

>480 minutes (permeation: level 6)

###### • other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

##### Respiratory protection

Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).

##### Environmental exposure controls

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

|                 |                                   |
|-----------------|-----------------------------------|
| Physical state  | liquid (fluid)                    |
| Colour          | colourless                        |
| Odour           | this information is not available |
| Odour threshold | No data available                 |

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### Other physical and chemical parameters

pH (value) 6 - 8 in 200 g/l water at 20 °C

Melting point/freezing point -6.5 °C

Initial boiling point and boiling range 244.9 °C at 1,013 hPa

Flash point 138 °C at 1,013 hPa

Evaporation rate no data available

Flammability (solid, gas) not relevant (fluid)

### Explosive limits

• lower explosion limit (LEL) 0.7 vol% (1 g/m<sup>3</sup>)

• upper explosion limit (UEL) 22 vol% (972 g/m<sup>3</sup>)

Explosion limits of dust clouds not relevant

• lower explosion limit (LEL) 1 g/m<sup>3</sup>

• upper explosion limit (UEL) 972 g/m<sup>3</sup>

Vapour pressure 0.008 hPa at 25 °C

Density 1.12 g/cm<sup>3</sup>

Vapour density This information is not available.

Bulk density Not applicable

Relative density 3.66 air = 1

### Solubility(ies)

Water solubility 1,000 g/l at 20 °C

### Partition coefficient

n-octanol/water (log KOW) -1.98

Auto-ignition temperature 372 °C - ECHA

### Viscosity

• kinematic viscosity 33 mm<sup>2</sup>/s at 20 °C

• dynamic viscosity 42 mPa s at 20 °C

Explosive properties none

Oxidising properties none

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### 9.2 Other information

There is no additional information.

Refractive index 1.448

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

In case of warming: Vapours can form explosive mixtures with air

### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

### 10.3 Possibility of hazardous reactions

Exothermic reaction with: Strong oxidiser

### 10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

### 10.5 Incompatible materials

There is no additional information.

### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

| Exposure route | Endpoint | Value       | Species | Source |
|----------------|----------|-------------|---------|--------|
| dermal         | LD50     | 13300 mg/kg | rabbit  | ECHA   |

#### Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

#### Serious eye damage/eye irritation

Causes slight to moderate irritation.

#### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

#### Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant.

#### • Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).



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### • Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

### Symptoms related to the physical, chemical and toxicological characteristics

#### • If swallowed

nausea, vomiting

#### • If inhaled

data are not available

#### • If on skin

data are not available

### Other information

None.

## SECTION 12: Ecological information

### 12.1 Toxicity

acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

#### Aquatic toxicity (acute)

| Endpoint | Value       | Species | Source | Exposure time |
|----------|-------------|---------|--------|---------------|
| LC50     | 75,200 mg/l | fish    | ECHA   | 96 hours      |
| EC50     | 9,362 mg/l  | algae   | ECHA   | 96 hours      |

#### Aquatic toxicity (chronic)

| Endpoint | Value        | Species               | Source | Exposure time |
|----------|--------------|-----------------------|--------|---------------|
| EC50     | >10,000 mg/l | aquatic invertebrates | ECHA   | 24 h          |

### 12.2 Process of degradability

The substance is readily biodegradable.

Theoretical Oxygen Demand: 1.51 g/g

Theoretical Carbon Dioxide: 1.659 mg/mg

| Process        | Degradation rate | Time |
|----------------|------------------|------|
| biotic/abiotic | 91.8 %           | 28 d |

### 12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

n-octanol/water (log KOW)

-1.98

BCF

100 ECHA

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### 12.4 Mobility in soil

Data are not available.

### 12.5 Results of PBT and vPvB assessment

Data are not available.

### 12.6 Other adverse effects

Slightly hazardous to water.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulation.

#### Sewage disposal-relevant information

Do not empty into drains.

### 13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

### 13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

## SECTION 14: Transport information

- |      |   |  |
|------|---|--|
| 14.1 | UN number   | (not subject to transport regulations)                                       |
| 14.2 | UN proper shipping name   | not relevant   |
| 14.3 | Transport hazard class(es)  | not relevant   |
|      | Class   | -  |
| 14.4 | Packing group   | not relevant   |
| 14.5 | Environmental hazards   | none (non-environmentally hazardous acc. to the dangerous goods regulations) |
| 14.6 | <b>Special precautions for user</b>   |  |
|      | There is no additional information.   |  |
| 14.7 | <b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>       |  |
|      | The cargo is not intended to be carried in bulk.                                      |  |
| 14.8 | <b>Information for each of the UN Model Regulations</b>                               |  |
|      | • <b>Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)</b> |  |
|      | Not subject to ADR, RID and ADN.  |  |

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- **International Maritime Dangerous Goods Code (IMDG)**

Not subject to IMDG.

## SECTION 15: Regulatory information

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

#### Relevant provisions of the European Union (EU)

- **Restrictions according to REACH, Annex XVII**

None of the ingredients are listed.

- **List of substances subject to authorisation (REACH, Annex XIV)**

None of the ingredients are listed.

- **Limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (2004/42/EC, Deco-Paint Directive)**

VOC content 100 %

#### National inventories

Substance is listed in the following national inventories:

- EINECS/ELINCS/NLP (Europe)
- REACH (Europe)

### 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

### Abbreviations and acronyms

| Abbr.     | Descriptions of used abbreviations   |
|-----------|--|
| ADN       | Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)                      |
| ADR       | Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  |
| BCF       | BioConcentration Factor  |
| CAS       | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)   |
| CLP       | Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures   |
| CMR       | Carcinogenic, Mutagenic or toxic for Reproduction  |
| DMEL      | Derived Minimal Effect Level   |
| DNEL      | Derived No-Effect Level  |
| EH40/2005 | EH40/2005 Workplace exposure limits, Table 1: List of approved workplace exposure limits ( <a href="http://www.nationalarchives.gov.uk/doc/open-government-licence/">http://www.nationalarchives.gov.uk/doc/open-government-licence/</a> ) |
| EINECS    | European Inventory of Existing Commercial Chemical Substances  |
| ELINCS    | European List of Notified Chemical Substances  |
| GHS       | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations  |
| IMDG      | International Maritime Dangerous Goods Code  |
| index No  | the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008   |

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| Abbr.  | Descriptions of used abbreviations  |
|--------|---|
| MARPOL | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")   |
| NLP    | No-Longer Polymer   |
| PBT    | Persistent, Bioaccumulative and Toxic   |
| PNEC   | Predicted No-Effect Concentration   |
| ppm    | parts per million   |
| REACH  | Registration, Evaluation, Authorisation and Restriction of Chemicals  |
| RID    | Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail) |
| VOC    | Volatile Organic Compounds  |
| vPvB   | very Persistent and very Bioaccumulative  |

### Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 453/2010/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)

### List of relevant phrases (code and full text as stated in chapter 2 and 3)

| Code | Text                 |
|------|----------------------|
| H302 | harmful if swallowed |

### Disclaimer

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.