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Safety data sheet according to Regulation (EC) No 1907/2006, Annex II
Revision date / version: 01.11.2021 / 0005
Replacing version dated / version: 23.07.2019 / 0004
Valid from: 01.11.2021
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Kuehlerfrostschutz KFS 13

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

1.1 Product identifier

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

Relevant identified uses of the substance or mixture:

Anti-freeze
Refrigerant
Corrosion protection

Uses advised against:

No information available at present.

1.3 Details of the supplier of the safety data sheet

LIQUI MOLY GmbH
Jerg-Wieland-Str. 4
89081 Ulm-Lehr
Tel.: (+49) 0731-1420-0
Fax: (+49) 0731-1420-88

Qualified person's e-mail address: info@chemical-check.de, k.schnurbusch@chemical-check.de Please DO NOT use for requesting Safety Data Sheets.

1.4 Emergency telephone number

Emergency information services / official advisory body:

Telephone number of the company in case of emergencies:

+49 (0) 700 / 24 112 112 (LMR)
+1 872 5888271 (LMR)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) 1272/2008 (CLP)

| Hazard class | Hazard category | Hazard statement |
|--------------|-----------------|--|
| Repr. | 2 | H361d-Suspected of damaging the unborn child. |
| STOT RE | 2 | H373-May cause damage to organs through prolonged or repeated exposure if swallowed (kidneys). |

2.2 Label elements

Labeling according to Regulation (EC) 1272/2008 (CLP)

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Warning

H361d-Suspected of damaging the unborn child. H373-May cause damage to organs through prolonged or repeated exposure if swallowed (kidneys).

P101-If medical advice is needed, have product container or label at hand. P102-Keep out of reach of children.
 P201-Obtain special instructions before use. P260-Do not breathe vapours or spray. P280-Wear protective gloves / protective clothing / eye protection / face protection.
 P308+P313-IF exposed or concerned: Get medical advice / attention.
 P405-Store locked up.
 P501-Dispose of contents / container to an approved waste disposal facility.

Ethanediol
 Sodium-2-ethylhexanoate

2.3 Other hazards

The mixture does not contain any vPvB substance (vPvB = very persistent, very bioaccumulative) or is not included under XIII of the regulation (EC) 1907/2006 (< 0,1 %).

The mixture does not contain any PBT substance (PBT = persistent, bioaccumulative, toxic) or is not included under XIII of the regulation (EC) 1907/2006 (< 0,1 %).

The mixture does not contain any substance with endocrine disrupting properties (< 0,1 %).

SECTION 3: Composition/information on ingredients

3.1 Substances

n.a.

3.2 Mixtures

| Ethanediol | Substance for which an EU exposure limit value applies. |
|--|---|
| Registration number (REACH) | 01-2119456816-28-XXXX |
| Index | 603-027-00-1 |
| EINECS, ELINCS, NLP, REACH-IT List-No. | 203-473-3 |
| CAS | 107-21-1 |
| content % | 34-<80 |
| Classification according to Regulation (EC) 1272/2008 (CLP), M-factors | Acute Tox. 4, H302 STOT RE 2, H373 (kidneys) (oral) |

| Sodium-2-ethylhexanoate | |
|--|----------------|
| Registration number (REACH) | --- |
| Index | --- |
| EINECS, ELINCS, NLP, REACH-IT List-No. | 243-283-8 |
| CAS | 19766-89-3 |
| content % | 3-<5 |
| Classification according to Regulation (EC) 1272/2008 (CLP), M-factors | Repr. 2, H361d |

For the text of the H-phrases and classification codes (GHS/CLP), see Section 16.

The substances named in this section are given with their actual, appropriate classification!

For substances that are listed in appendix VI, table 3.1 of the regulation (EC) no. 1272/2008 (CLP regulation) this means that all notes that may be given here for the named classification have been taken into account.

SECTION 4: First aid measures

4.1 Description of first aid measures

First-aiders should ensure they are protected!
Never pour anything into the mouth of an unconscious person!

Inhalation

Remove person from danger area.
Supply person with fresh air and consult doctor according to symptoms.

Skin contact

Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin (flare), consult a doctor.

Eye contact

Remove contact lenses.
Wash thoroughly for several minutes using copious water. Seek medical help if necessary.

Ingestion

Rinse the mouth thoroughly with water.
Give copious water to drink - consult doctor immediately.
In case of vomiting, keep head low so that the stomach content does not reach the lungs.

4.2 Most important symptoms and effects, both acute and delayed

If applicable delayed symptoms and effects can be found in section 11 and the absorption route in section 4.1.
In certain cases, the symptoms of poisoning may only appear after an extended period / after several hours.

Irritation of the eyes

Drying of the skin.

Cramps

drowsiness

Nausea

Vomiting

lower abdominal pain

oedema of the lungs

liver and kidney damage

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water jet spray / alcohol resistant foam / CO₂ / dry extinguisher.

Unsuitable extinguishing media

High volume water jet

5.2 Special hazards arising from the substance or mixture

In case of fire the following can develop:

Oxides of carbon

Toxic gases

5.3 Advice for firefighters

For personal protective equipment see Section 8.

In case of fire and/or explosion do not breathe fumes.

Protective respirator with independent air supply.

According to size of fire

Full protection, if necessary.

Dispose of contaminated extinction water according to official regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

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In case of spillage or accidental release, wear personal protective equipment as specified in section 8 to prevent contamination.
 Ensure sufficient ventilation, remove sources of ignition.
 Avoid dust formation with solid or powder products.
 Leave the danger zone if possible, use existing emergency plans if necessary.
 Keep unprotected persons away.
 Ensure sufficient supply of air.
 Avoid contact with eyes or skin.
 If applicable, caution - risk of slipping.

6.1.2 For emergency responders

See section 8 for suitable protective equipment and material specifications.

6.2 Environmental precautions

If leakage occurs, dam up.
 Resolve leaks if this possible without risk.
 Prevent surface and ground-water infiltration, as well as ground penetration.
 Prevent from entering drainage system.
 If accidental entry into drainage system occurs, inform responsible authorities.

6.3 Methods and material for containment and cleaning up

Installation of barriers, covering sewers.
 Soak up with absorbent material (e.g. universal binding agent, sand, diatomaceous earth, sawdust) and dispose of according to Section 13.
 Fill the absorbed material into lockable containers.
 Flush residue using copious water.

6.4 Reference to other sections

For personal protective equipment see Section 8 and for disposal instructions see Section 13.

SECTION 7: Handling and storage

In addition to information given in this section, relevant information can also be found in section 8 and 6.1.

7.1 Precautions for safe handling

7.1.1 General recommendations

Ensure good ventilation.
 Avoid aerosol formation.
 Avoid contact with eyes or skin.
 Pregnant women should avoid contact with this product.
 Eating, drinking, smoking, as well as food-storage, is prohibited in work-room.
 Observe directions on label and instructions for use.
 Use working methods according to operating instructions.

7.1.2 Notes on general hygiene measures at the workplace

General hygiene measures for the handling of chemicals are applicable.
 Wash hands before breaks and at end of work.
 Keep away from food, drink and animal feedingstuffs.
 Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

7.2 Conditions for safe storage, including any incompatibilities

Keep out of access to unauthorised individuals.
 Not to be stored in gangways or stair wells.
 Store product closed and only in original packing.
 Store in a well ventilated place.
 Store in a dry place.

7.3 Specific end use(s)

No information available at present.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

| (GB) Chemical Name | Ethanediol | Content %:34- <80 |
|---|--|----------------------|
| WEL-TWA: 10 mg/m ³ (particulate), 52 mg/m ³ (vapour) (WEL), 20 ppm (52 mg/m ³) (EU) | WEL-STEL: 104 mg/m ³ (vapour) (WEL), 40 ppm (104 mg/m ³) (EU) | --- |
| Monitoring procedures: | - Draeger - Ethylene Glycol 10 (5) (81 01 351) | |

GB

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- Compur - KITA-232 SA (502 342)
- Compur - KITA-232 SB (550 267)
- NIOSH 5500 (ETHYLENE GLYCOL) - 1993
- NIOSH 5523 (GLYCOLS) - 1996
- OSHA PV2024 (Ethylene glycol) - 1999 - EU project BC/CEN/ENTR/000/2002-16 card 11-2 (2004)

BMGV: ---

Other information: Sk (particulate, vapour)

| Chemical Name | Glycerine | Content %: |
|----------------------------|------------------------|------------|
| WEL-TWA: 10 mg/m3 (mist) | WEL-STEL: --- | --- |
| Monitoring procedures: --- | | |
| BMGV: --- | Other information: --- | |

Ethanediol

| Area of application | Exposure route / Environmental compartment | Effect on health | Descriptor | Value | Unit | Note |
|---------------------|--|-----------------------------|------------|-------|------------------|------|
| | Environment - freshwater | | PNEC | 10 | mg/l | |
| | Environment - marine | | PNEC | 1 | mg/l | |
| | Environment - sediment | | PNEC | 20,9 | mg/kg | |
| | Environment - soil | | PNEC | 1,53 | mg/kg | |
| | Environment - sewage treatment plant | | PNEC | 199,5 | mg/l | |
| | Environment - water, sporadic (intermittent) release | | PNEC | 10 | mg/l | |
| | Environment - sediment, freshwater | | PNEC | 37 | mg/kg dry weight | |
| | Environment - sediment, marine | | PNEC | 3,7 | mg/kg dry weight | |
| Consumer | Human - inhalation | Long term, local effects | DNEL | 7 | mg/m3 | |
| Consumer | Human - dermal | Long term, systemic effects | DNEL | 53 | mg/kg | |
| Workers / employees | Human - inhalation | Long term, local effects | DNEL | 35 | mg/m3 | |
| Workers / employees | Human - dermal | Long term, systemic effects | DNEL | 106 | mg/kg bw/d | |

Glycerine

| Area of application | Exposure route / Environmental compartment | Effect on health | Descriptor | Value | Unit | Note |
|---------------------|--|-----------------------------|------------|-------|--------------|------|
| | Environment - freshwater | | PNEC | 0,885 | mg/l | |
| | Environment - marine | | PNEC | 0,088 | mg/l | |
| | Environment - sewage treatment plant | | PNEC | 1000 | mg/l | |
| | Environment - sediment, freshwater | | PNEC | 3,3 | mg/kg dw | |
| | Environment - sediment, marine | | PNEC | 0,33 | mg/kg dw | |
| | Environment - soil | | PNEC | 0,141 | mg/kg dw | |
| | Environment - water, sporadic (intermittent) release | | PNEC | 8,85 | mg/l | |
| Consumer | Human - inhalation | Long term, local effects | DNEL | 33 | mg/m3 | |
| Consumer | Human - oral | Long term, systemic effects | DNEL | 229 | mg/kg bw/day | |
| Workers / employees | Human - inhalation | Long term, local effects | DNEL | 56 | mg/m3 | |

GB WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period) EH40. AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany).
 (8) = Inhalable fraction (Directive 2017/164/EU, Directive 2004/37/CE). (9) = Respirable fraction (Directive 2017/164/EU, Directive 2004/37/CE).
 (11) = Inhalable fraction (Directive 2004/37/CE). (12) = Inhalable fraction. Respirable fraction in those Member States that implement, on the

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date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0,002 mg Cd/g creatinine in urine (Directive 2004/37/CE). | WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period). (8) = Inhalable fraction (2017/164/EU, 2017/2398/EU). (9) = Respirable fraction (2017/164/EU, 2017/2398/EU). (10) = Short-term exposure limit value in relation to a reference period of 1 minute (2017/164/EU). | BMGV = Biological monitoring guidance value EH40. BGW = "Biologischer Grenzwert" (biological limit value, Germany) | Other information: Sen = Capable of causing occupational asthma. Sk = Can be absorbed through skin. Carc = Capable of causing cancer and/or heritable genetic damage.
** = The exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.
(13) = The substance can cause sensitisation of the skin and of the respiratory tract (Directive 2004/37/CE), (14) = The substance can cause sensitisation of the skin (Directive 2004/37/CE).

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure good ventilation. This can be achieved by local suction or general air extraction.
If this is insufficient to maintain the concentration under the WEL or AGW values, suitable breathing protection should be worn.
Applies only if maximum permissible exposure values are listed here.
Suitable assessment methods for reviewing the effectiveness of protection measures adopted include metrological and non-metrological investigative techniques.
These are specified by e.g. EN 14042.
EN 14042 "Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents".

8.2.2 Individual protection measures, such as personal protective equipment

General hygiene measures for the handling of chemicals are applicable.
Wash hands before breaks and at end of work.
Keep away from food, drink and animal feedingstuffs.
Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

Eye/face protection:
Tight fitting protective goggles (EN 166) with side protection, with danger of splashes.

Skin protection - Hand protection:
Chemical resistant protective gloves (EN ISO 374).
Recommended
Protective gloves made of butyl (EN ISO 374).
Protective Neoprene® / polychloroprene gloves (EN ISO 374).
Protective nitrile gloves (EN ISO 374).
Protective Viton® / fluoroelastomer gloves (EN ISO 374).
Minimum layer thickness in mm:
0,38
Permeation time (penetration time) in minutes:
480
Protective hand cream recommended.
The breakthrough times determined in accordance with EN 16523-1 were not obtained under practical conditions.
The recommended maximum wearing time is 50% of breakthrough time.

Skin protection - Other:
Protective working garments (e.g. safety shoes EN ISO 20345, long-sleeved protective working garments).

Respiratory protection:
If OES or MEL is exceeded.
Gas mask filter A (EN 14387), code colour brown
Observe wearing time limitations for respiratory protection equipment.

Thermal hazards:
Not applicable

Additional information on hand protection - No tests have been performed.
In the case of mixtures, the selection has been made according to the knowledge available and the information about the contents.
Selection of materials derived from glove manufacturer's indications.
Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account.
Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer.
In the case of mixtures, the resistance of glove materials cannot be predicted and must therefore be tested before use.

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The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

8.2.3 Environmental exposure controls

No information available at present.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|---|--|
| Physical state: | Liquid |
| Colour: | Red, Clear |
| Odour: | Slightly |
| Melting point/freezing point: | There is no information available on this parameter. |
| Boiling point or initial boiling point and boiling range: | >=170 °C |
| Flammability: | Flammable |
| Lower explosion limit: | There is no information available on this parameter. |
| Upper explosion limit: | There is no information available on this parameter. |
| Flash point: | ~122,0 °C (Pensky-Martens, closed cup) |
| Auto-ignition temperature: | There is no information available on this parameter. |
| Decomposition temperature: | There is no information available on this parameter. |
| pH: | 8,35 (33 %, 20°C) |
| Kinematic viscosity: | There is no information available on this parameter. |
| Solubility: | Mixable |
| Partition coefficient n-octanol/water (log value): | Does not apply to mixtures. |
| Vapour pressure: | There is no information available on this parameter. |
| Density and/or relative density: | 1,132 kg/l (20°C) |
| Relative vapour density: | There is no information available on this parameter. |
| Particle characteristics: | Does not apply to liquids. |

9.2 Other information

| | |
|--------------------|---------------------------|
| Explosives: | Product is not explosive. |
| Oxidising liquids: | No |

SECTION 10: Stability and reactivity

10.1 Reactivity

The product has not been tested.

10.2 Chemical stability

Stable with proper storage and handling.

10.3 Possibility of hazardous reactions

No dangerous reactions are known.

10.4 Conditions to avoid

Strong heat

10.5 Incompatible materials

Acids
 Oxidizing agents
 Nitrates
 Peroxides
 Chlorates

10.6 Hazardous decomposition products

No decomposition when used as directed.

SECTION 11: Toxicological information

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

Possibly more information on health effects, see Section 2.1 (classification).

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| Toxicity / effect | Endpoint | Value | Unit | Organism | Test method | Notes |
|----------------------------------|----------|-------|-------|----------|-------------|------------------|
| Acute toxicity, by oral route: | ATE | >2000 | mg/kg | | | calculated value |
| Acute toxicity, by dermal route: | | | | | | n.d.a. |
| Acute toxicity, by inhalation: | | | | | | n.d.a. |

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| | | | | | | |
|---|--|--|--|--|--|--------|
| Skin corrosion/irritation: | | | | | | n.d.a. |
| Serious eye damage/irritation: | | | | | | n.d.a. |
| Respiratory or skin sensitisation: | | | | | | n.d.a. |
| Germ cell mutagenicity: | | | | | | n.d.a. |
| Carcinogenicity: | | | | | | n.d.a. |
| Reproductive toxicity: | | | | | | n.d.a. |
| Specific target organ toxicity - single exposure (STOT-SE): | | | | | | n.d.a. |
| Specific target organ toxicity - repeated exposure (STOT-RE): | | | | | | n.d.a. |
| Aspiration hazard: | | | | | | n.d.a. |
| Symptoms: | | | | | | n.d.a. |

| Ethanediol | | | | | | |
|------------------------------------|----------|-------|------------|------------------------|--|--|
| Toxicity / effect | Endpoint | Value | Unit | Organism | Test method | Notes |
| Acute toxicity, by oral route: | LD50 | 1600 | mg/kg | Human being | | |
| Acute toxicity, by dermal route: | LD50 | 9530 | mg/kg | Rabbit | | |
| Acute toxicity, by dermal route: | LD50 | >3500 | mg/kg | Mouse | | |
| Skin corrosion/irritation: | | | | Rabbit | | Not irritant |
| Serious eye damage/irritation: | | | | Rabbit | | Not irritant |
| Respiratory or skin sensitisation: | | | | Human being | (Patch-Test) | Negative |
| Germ cell mutagenicity: | | | | Salmonella typhimurium | OECD 471 (Bacterial Reverse Mutation Test) | Negative |
| Germ cell mutagenicity: | | | | Rat | in vivo | Negative |
| Reproductive toxicity: | NOAEL | 1000 | mg/kg bw/d | Rat | | |
| Symptoms: | | | | | | ataxia, breathing difficulties, unconsciousness, cramps, fatigue |

| Sodium-2-ethylhexanoate | | | | | | |
|-------------------------|----------|-------|------|----------|-------------|---|
| Toxicity / effect | Endpoint | Value | Unit | Organism | Test method | Notes |
| Symptoms: | | | | | | gastrointestinal disturbances, mucous membrane irritation |

| Glycerine | | | | | | |
|---|----------|--------|---------|------------------------|--|-----------------|
| Toxicity / effect | Endpoint | Value | Unit | Organism | Test method | Notes |
| Acute toxicity, by oral route: | LD50 | >2000 | mg/kg | Rat | | |
| Acute toxicity, by dermal route: | LD50 | >10000 | mg/kg | Rabbit | | |
| Skin corrosion/irritation: | | | | Rabbit | IUCLID Chem. Data Sheet (ESIS) | Not irritant |
| Serious eye damage/irritation: | | | | Rabbit | OECD 405 (Acute Eye Irritation/Corrosion) | Not irritant |
| Respiratory or skin sensitisation: | | | | Guinea pig | | Not sensitising |
| Germ cell mutagenicity: | | | | Salmonella typhimurium | OECD 471 (Bacterial Reverse Mutation Test) | Negative |
| Reproductive toxicity: | NOAEL | 2000 | mg/kg/d | | | Negative |
| Specific target organ toxicity - repeated exposure (STOT-RE): | NOAEL | 3,91 | mg/l | Rat | | 14d |
| Aspiration hazard: | | | | | | Negative |

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| | | | | | | |
|-----------|--|--|--|--|--|---|
| Symptoms: | | | | | | abdominal pain, drowsiness, diarrhoea, vomiting, headaches, mucous membrane irritation, nausea |
|-----------|--|--|--|--|--|---|

11.2. Information on other hazards

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|----------------------------------|----------|-------|------|----------|-------------|---|
| Toxicity / effect | Endpoint | Value | Unit | Organism | Test method | Notes |
| Endocrine disrupting properties: | | | | | | Does not apply to mixtures. |
| Other information: | | | | | | No other relevant information available on adverse effects on health. |

SECTION 12: Ecological information

Possibly more information on environmental effects, see Section 2.1 (classification).

| Kuehlerfrostschutz KFS 13 | | | | | | | |
|--|----------|------|-------|------|----------|-------------|--|
| Toxicity / effect | Endpoint | Time | Value | Unit | Organism | Test method | Notes |
| 12.1. Toxicity to fish: | | | | | | | n.d.a. |
| 12.1. Toxicity to daphnia: | | | | | | | n.d.a. |
| 12.1. Toxicity to algae: | | | | | | | n.d.a. |
| 12.2. Persistence and degradability: | | | | | | | n.d.a. |
| 12.3. Bioaccumulative potential: | | | | | | | n.d.a. |
| 12.4. Mobility in soil: | | | | | | | n.d.a. |
| 12.5. Results of PBT and vPvB assessment | | | | | | | n.d.a. |
| 12.6. Endocrine disrupting properties: | | | | | | | Does not apply to mixtures. |
| 12.7. Other adverse effects: | | | | | | | No information available on other adverse effects on the environment. |
| Other information: | | | | | | | DOC-elimination degree (complexing organic substance) \geq 80%/28d: No |

| Ethanediol | | | | | | | |
|-------------------------|----------|-------|--------|------|---------------------|--|-------|
| Toxicity / effect | Endpoint | Time | Value | Unit | Organism | Test method | Notes |
| Toxicity to bacteria: | EC20 | 30min | >1995 | mg/l | activated sludge | OECD 209 (Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)) | |
| 12.1. Toxicity to fish: | LC50 | 96h | >10000 | mg/l | Pimephales promelas | IUCLID Chem. Data Sheet (ESIS) | |

| | | | | | | | |
|--|-----------|-----|-----------|------|---------------------------------|--|-------------------------------------|
| 12.1. Toxicity to fish: | NOEC/NOEL | 7d | 15380 | mg/l | Pimephales promelas | U.S. EPA ECOTOX Database | |
| 12.1. Toxicity to daphnia: | EC50 | 48h | >100 | mg/l | Daphnia magna | OECD 202 (Daphnia sp. Acute Immobilisation Test) | |
| 12.1. Toxicity to daphnia: | NOEC/NOEL | | 8590 | mg/l | Daphnia magna | U.S. EPA ECOTOX Database | |
| 12.1. Toxicity to algae: | EC50 | 96h | 6500-7500 | mg/l | Pseudokirchneriella subcapitata | | |
| 12.2. Persistence and degradability: | | 28d | 56 | % | | OECD 301 C (Ready Biodegradability - Modified MITI Test (I)) | |
| 12.2. Persistence and degradability: | | 10d | 90-100 | % | | OECD 301 A (Ready Biodegradability - DOC Die-Away Test) | Readily biodegradable |
| 12.3. Bioaccumulative potential: | Log Pow | | -1,36 | | | | Not to be expected |
| 12.5. Results of PBT and vPvB assessment | | | | | | | No PBT substance, No vPvB substance |
| Toxicity to bacteria: | EC50 | 16h | >10000 | mg/l | Pseudomonas putida | IUCLID Chem. Data Sheet (ESIS) | |
| Other information: | BOD5 | | 0,78 | g/g | | | IUCLID |

| Glycerine | | | | | | | |
|--|----------|------|--------|------|--------------------|---|---|
| Toxicity / effect | Endpoint | Time | Value | Unit | Organism | Test method | Notes |
| 12.2. Persistence and degradability: | BOD5 | | 0,87 | g/g | | | |
| 12.2. Persistence and degradability: | COD | | 1,16 | g/g | | | |
| 12.1. Toxicity to fish: | LC50 | 96h | > 5000 | mg/l | Carassius auratus | | |
| 12.1. Toxicity to daphnia: | EC50 | 48h | >10000 | mg/l | Daphnia magna | | |
| 12.1. Toxicity to daphnia: | EC5 | 72h | 3200 | mg/l | | | Entosiphon sulcatum |
| 12.1. Toxicity to algae: | EC50 | | 2900 | mg/l | Chlorella vulgaris | | |
| 12.2. Persistence and degradability: | | 14d | 63 | % | | OECD 301 C (Ready Biodegradability - Modified MITI Test (I)) | |
| 12.2. Persistence and degradability: | BOD/COD | | >60 | % | | | |
| 12.2. Persistence and degradability: | BOD5/COD | | > 50 | % | | | |
| 12.2. Persistence and degradability: | DOC | | >70 | % | | | Readily biodegradable |
| 12.3. Bioaccumulative potential: | Log Pow | | -1,75 | | | OECD 107 (Partition Coefficient (n-octanol/water) - Shake Flask Method) | A notable biological accumulation potential is not to be expected (LogPow 1-3). |
| 12.5. Results of PBT and vPvB assessment | | | | | | | No PBT substance, No vPvB substance |

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| | | | | | | | |
|-----------------------|-----|-----|---------|------|--------------------|--|--|
| Toxicity to bacteria: | EC5 | 16h | > 10000 | mg/l | Pseudomonas putida | | |
|-----------------------|-----|-----|---------|------|--------------------|--|--|

SECTION 13: Disposal considerations

13.1 Waste treatment methods

For the substance / mixture / residual amounts

EC disposal code no.:

The waste codes are recommendations based on the scheduled use of this product.

Owing to the user's specific conditions for use and disposal, other waste codes may be allocated under certain circumstances. (2014/955/EU)

16 01 14 antifreeze fluids containing hazardous substances

Recommendation:

Sewage disposal shall be discouraged.

Pay attention to local and national official regulations.

E.g. suitable incineration plant.

E.g. dispose at suitable refuse site.

For contaminated packing material

Pay attention to local and national official regulations.

Empty container completely.

Dispose of packaging that cannot be cleaned in the same manner as the substance.

Uncontaminated packaging can be recycled.

SECTION 14: Transport information

General statements

14.1. UN number or ID number: n.a.

Transport by road/by rail (ADR/RID)

14.2. UN proper shipping name:

14.3. Transport hazard class(es):

14.4. Packing group:

Classification code:

LQ:

14.5. Environmental hazards:

Tunnel restriction code:

Transport by sea (IMDG-code)

14.2. UN proper shipping name:

14.3. Transport hazard class(es):

14.4. Packing group:

Marine Pollutant:

14.5. Environmental hazards:

Transport by air (IATA)

14.2. UN proper shipping name:

14.3. Transport hazard class(es):

14.4. Packing group:

14.5. Environmental hazards:

14.6. Special precautions for user

Unless specified otherwise, general measures for safe transport must be followed.

14.7. Maritime transport in bulk according to IMO instruments

Non-dangerous material according to Transport Regulations.

SECTION 15: Regulatory information

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

Observe restrictions:

Comply with national regulations/laws governing maternity protection (national implementation of the Directive 92/85/EEC)!

Comply with national regulations/laws governing the protection of young people at work (national implementation of the Directive 94/33/EC)!

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Comply with trade association/occupational health regulations.

Directive 2010/75/EU (VOC): 3,94 %

15.2 Chemical safety assessment

A chemical safety assessment is not provided for mixtures.

SECTION 16: Other information

Revised sections: 1-16
 These details refer to the product as it is delivered.
 Employee instruction/training in handling hazardous materials is required.

Classification and processes used to derive the classification of the mixture in accordance with the ordinance (EG) 1272/2008 (CLP):

| Classification in accordance with regulation (EC) No. 1272/2008 (CLP) | Evaluation method used |
|---|--|
| Repr. 2, H361d | Classification according to calculation procedure. |
| STOT RE 2, H373 | Classification according to calculation procedure. |

The following phrases represent the posted Hazard Class and Risk Category Code (GHS/CLP) of the product and the constituents (specified in Section 2 and 3).

H361d Suspected of damaging the unborn child.
 H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
 H302 Harmful if swallowed.

Repr. — Reproductive toxicity
 STOT RE — Specific target organ toxicity - repeated exposure
 Acute Tox. — Acute toxicity - oral

Key literature references and sources for data:

Regulation (EC) No 1907/2006 (REACH) and Regulation (EC) No 1272/2008 (CLP) as amended.
 Guidelines for the preparation of safety data sheets as amended (ECHA).
 Guidelines on labelling and packaging according to the Regulation (EG) Nr. 1272/2008 (CLP) as amended (ECHA).
 Safety data sheets for the constituent substances.
 ECHA Homepage - Information about chemicals.
 GESTIS Substance Database (Germany).
 German Environment Agency "Rigoletto" information site on substances that are hazardous to water (Germany).
 EU Occupation Exposure Limits Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164, (EU) 2019/1831, each as amended.
 National Lists of Occupational Exposure Limits for each country as amended.
 Regulations on the transport of hazardous goods by road, rail, sea and air (ADR, RID, IMDG, IATA) as amended.

Any abbreviations and acronyms used in this document:

acc., acc. to according, according to
 ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= European Agreement concerning the International Carriage of Dangerous Goods by Road)
 AOX Adsorbable organic halogen compounds
 approx. approximately
 Art., Art. no. Article number
 ASTM ASTM International (American Society for Testing and Materials)
 ATE Acute Toxicity Estimate
 BAM Bundesanstalt für Materialforschung und -prüfung (Federal Institute for Materials Research and Testing, Germany)
 BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (= Federal Institute for Occupational Health and Safety, Germany)
 BCF Bioconcentration factor
 BSEF The International Bromine Council
 bw body weight

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CAS Chemical Abstracts Service
 CLP Classification, Labelling and Packaging (REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures)
 CMR carcinogenic, mutagenic, reproductive toxic
 DMEL Derived Minimum Effect Level
 DNEL Derived No Effect Level
 DOC Dissolved organic carbon
 dw dry weight
 e.g. for example (abbreviation of Latin 'exempli gratia'), for instance
 EbCx, EyCx, EBLx (x = 10, 50) Effect Concentration/Level of x % on reduction of the biomass (algae, plants)
 EC European Community
 ECHA European Chemicals Agency
 ECx, ELx (x = 0, 3, 5, 10, 20, 50, 80, 100) Effect Concentration/Level for x % effect
 EEC European Economic Community
 EINECS European Inventory of Existing Commercial Chemical Substances
 ELINCS European List of Notified Chemical Substances
 EN European Norms
 EPA United States Environmental Protection Agency (United States of America)
 ErCx, EµCx, ErLx (x = 10, 50) Effect Concentration/Level of x % on inhibition of the growth rate (algae, plants)
 etc. et cetera
 EU European Union
 EVAL Ethylene-vinyl alcohol copolymer
 Fax. Fax number
 gen. general
 GHS Globally Harmonized System of Classification and Labelling of Chemicals
 GWP Global warming potential
 Koc Adsorption coefficient of organic carbon in the soil
 Kow octanol-water partition coefficient
 IARC International Agency for Research on Cancer
 IATA International Air Transport Association
 IBC (Code) International Bulk Chemical (Code)
 IMDG-code International Maritime Code for Dangerous Goods
 incl. including, inclusive
 IUCLID International Uniform Chemical Information Database
 IUPAC International Union for Pure Applied Chemistry
 LC50 Lethal Concentration to 50 % of a test population
 LD50 Lethal Dose to 50% of a test population (Median Lethal Dose)
 Log Koc Logarithm of adsorption coefficient of organic carbon in the soil
 Log Kow, Log Pow Logarithm of octanol-water partition coefficient
 LQ Limited Quantities
 MARPOL International Convention for the Prevention of Marine Pollution from Ships
 n.a. not applicable
 n.av. not available
 n.c. not checked
 n.d.a. no data available
 NIOSH National Institute for Occupational Safety and Health (USA)
 NLP No-longer-Polymer
 NOEC, NOEL No Observed Effect Concentration/Level
 OECD Organisation for Economic Co-operation and Development
 org. organic
 OSHA Occupational Safety and Health Administration (USA)
 PBT persistent, bioaccumulative and toxic
 PE Polyethylene
 PNEC Predicted No Effect Concentration
 ppm parts per million
 PVC Polyvinylchloride
 REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (REGULATION (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals)
 REACH-IT List-No. 9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT.
 RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regulation concerning the International Carriage of Dangerous Goods by Rail)
 SVHC Substances of Very High Concern
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TOC Total organic carbon
UN RTDG United Nations Recommendations on the Transport of Dangerous Goods
VOC Volatile organic compounds
vPvB very persistent and very bioaccumulative
wwt wet weight

The statements made here should describe the product with regard to the necessary safety precautions - they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge.

No responsibility.

These statements were made by:

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