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Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

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

1.1. Product identifier

Trade name/designation:

RAVENOL DOT 4 LV

Article No.:

1350605

UFI:

9PTC-7WU1-T5S2-RGQ7

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

Use of the substance/mixture:

brake fluids

1.3. Details of the supplier of the safety data sheet

Supplier (manufacturer/importer/only representative/downstream user/distributor):

Ravensberger Schmierstoffvertrieb GmbH

Produktsicherheit
Jöllenbecker Str. 2
33824 Werther
Germany

Telephone: +49 5203 9719 0

Telefax: +49 5203 9719 40

E-mail: kontakt@ravenol.de

Website: www.ravenol.de

E-mail (competent person): sdb@ravenol.de

1.4. Emergency telephone number

24 hr. emergency phone number, 24h: +49 700 24 112 112 (Contract ID: RAV) / +1 872 5888271 (Contract ID: RAV)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Hazard classes and hazard categories	Hazard statements	Classification procedure
Reproductive toxicity (Repr. 2)	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.	Calculation method.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms:



GHS08

Health hazard

Signal word: Warning

Hazard components for labelling:

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate

Hazard statements for health hazards	
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.



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Supplemental hazard information: none**Precautionary statements**

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.

Precautionary statements Prevention

P201	Obtain special instructions before use.
P280	Wear protective gloves and eye/face protection.

Precautionary statements Response

P308 + P313	IF exposed or concerned: Get medical advice/attention.
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Precautionary statements Storage

P405	Store locked up.
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Precautionary statements Disposal

P501	Dispose of contents/container to an appropriate recycling or disposal facility.
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* **2.3. Other hazards****Other adverse effects:**

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

SECTION 3: Composition/information on ingredients* **3.2. Mixtures****Hazardous ingredients / Hazardous impurities / Stabilisers:**

Product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Concentration
CAS No.: 30989-05-0 EC No.: 250-418-4 REACH No.: 01-2119462824-33-XXXX	tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate Repr. 2 (H361fd) ⚠ Warning	80 - < 95 weight-%
CAS No.: 143-22-6 EC No.: 205-592-6 Index No.: 603-183-00-0 REACH No.: 01-2119531322-53	2-(2-(2-butoxyethoxy)ethoxy)ethanol Eye Dam. 1 (H318) ⚠ Danger Specific concentration limit (SCL) Eye Dam. 1; H318: C ≥ 30% Eye Irrit. 2; H319: 20% ≤ C < 30%	10 - < 15 weight-%
CAS No.: 1559-34-8 EC No.: 216-322-1	3,6,9,12-tetraoxahexadecan-1-ol Eye Irrit. 2 (H319) ⚠ Warning	1 - < 3 weight-%
CAS No.: 111-77-3 EC No.: 203-906-6 Index No.: 603-107-00-6 REACH No.: 01-2119475100-52	2-(2-methoxyethoxy)ethanol Repr. 1B (H360D) ⚠ Danger Specific concentration limit (SCL) Repr. 1B; H360D: C ≥ 3%	0 - < 1 weight-%
CAS No.: 112-34-5 EC No.: 203-961-6 Index No.: 603-096-00-8 REACH No.: 01-2119475104-44	2-(2-butoxyethoxy)ethanol Eye Irrit. 2 (H319) ⚠ Warning	0 - < 1 weight-%

Full text of H- and EUH-phrases: see section 16.

SECTION 4: First aid measures**4.1. Description of first aid measures****General information:**

First aider: Pay attention to self-protection! Take off immediately all contaminated clothing.

Following inhalation:

In case of respiratory tract irritation, consult a physician. Provide fresh air.

In case of skin contact:

After contact with skin, wash immediately with plenty of water and soap.

Generally the product does not irritate the skin. Frequently or prolonged contact with skin may cause dermal irritation.



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After eye contact:

Rinse immediately carefully and thoroughly with eye-bath or water.

Following ingestion:

Seek medical advice immediately.

Self-protection of the first aider:

First aider: Pay attention to self-protection!

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

Suspected of damaging the unborn child.

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:**Carbon dioxide (CO₂), Extinguishing powder, Water spray jet.

In case of major fire and large quantities: Water spray jet, alcohol resistant foam

Unsuitable extinguishing media:

Full water jet

5.2. Special hazards arising from the substance or mixture

In case of fire may be liberated: Gases/vapours, toxic

Hazardous combustion products:Nitrogen oxides (NO_x) Carbon monoxide Carbon dioxide (CO₂)**5.3. Advice for firefighters**

In case of fire: Wear self-contained breathing apparatus. Wear eye/face protection.

5.4. Additional information

Co-ordinate fire-fighting measures to the fire surroundings. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****6.1.1. For non-emergency personnel****Personal precautions:**

Special danger of slipping by leaking/spilling product.

Protective equipment:

Wear personal protection equipment (refer to section 8).

Emergency procedures:

Remove persons to safety.

6.1.2. For emergency responders**Personal protection equipment:**

Wear personal protection equipment (refer to section 8).

6.2. Environmental precautions

Avoid release to the environment.

Clear spills immediately.

Do not allow to enter into surface water or drains.

6.3. Methods and material for containment and cleaning up**For containment:**

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

For cleaning up:

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

Other information:

Treat the recovered material as prescribed in the section on waste disposal.

6.4. Reference to other sections

Safe handling: see section 7

Disposal: see section 13

Personal protection equipment: see section 8



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6.5. Additional information

Clear spills immediately.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Protective measures

Advices on safe handling:

Provide adequate ventilation.

To follow: Advices on general occupational hygiene.

When using do not eat, drink or smoke.

Wash hands thoroughly after handling.

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

Fire prevent measures:

No special fire protection measures are necessary.

Measures to prevent aerosol and dust generation:

Use only in well-ventilated areas.

Environmental precautions:

See section 8.

Advices on general occupational hygiene

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

Wash hands before breaks and after work.

When using do not eat, drink, smoke, sniff.

Remove contaminated, saturated clothing.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:

Keep/Store only in original container. Keep container tightly closed. Protect from moisture.

Requirements for storage rooms and vessels:

No special measures are necessary.

Hints on storage assembly:

not required

Storage class (TRGS 510, Germany): 10 - Combustible liquids that cannot be assigned to any of the above storage classes

Further information on storage conditions:

Keep container tightly closed.

7.3. Specific end use(s)

Recommendation:

Observe technical data sheet.

SECTION 8: Exposure controls/personal protection

* 8.1. Control parameters

8.1.1. Occupational exposure limit values

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
TRGS 900 (DE)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ⑤ (Aerosol und Dampf, kann über die Haut aufgenommen werden) EU, Y, H, 11
BE	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ peut être absorbé par la peau, 2-Méthoxyéthoxy D
CZ from 1 Mar 2020	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ② 20 ppm (100 mg/m ³) ⑤ (může pronikat pokožkou) D



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Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
NO	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ⑤ (kan absorberes gjennom huden forplantningsevne, verdsetting) HRE
IE	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (may be absorbed through the skin) Sk, IOELV
HTP (FI)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ⑤ (voivat imeytyä ihon läpi) iho
NPEL (SK)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (rátajte so vstrebávaním cez pokožku) K
MAK (AT)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (kann über die Haut aufgenommen werden) d, H
LT	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (tikėtinas įsisavinimas per odą, pavojingas reprodukcijai) R O
SE from 1 Jun 2016	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ⑤ (kan absorberas genom huden)
VRI (FR) from 3 May 2021	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (peut être absorbé par la peau)
HU from 7 Feb 2020	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 50.1 mg/m ³ ⑤ R+T
HR	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (mora se uzeti u obzir prodiranje kroz kožu) koža
DK from 13 Feb 2021	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ② 20 ppm (100 mg/m ³) ⑤ (kan optages gennem huden) EH
LV	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (var absorbet caur adu) Āda
RO from 21 Aug 2018	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (e de asteptat asimilarea prin piele) P,R2
ES from 1 Mar 2023	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (puede ser absorbido a través dérmica) TR1B, vía dérmica, VLI, VLB, r
IOELV (EU)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (may be absorbed through the skin)
WEL (GB)	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (may be absorbed through the skin)
SI	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (računati je treba z možnostjo prodiranja skozi kožo) K, Y, EU2
IS	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (efnið getur auðveldlega borist inn í líkamann gegnum húð) H



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GR from 1 Oct 2016	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (αναμένετε απορρόφηση από το δέρμα)
NL	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 45 mg/m ³ ⑤ (kan door de huid in het lichaam worden opgenomen) H
NL from 1 Jan 2023	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 9 ppm (45 mg/m ³) ⑤ (kan door de huid in het lichaam worden opgenomen) H
TR	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (cilt yoluyla alınabilir) Deri
BG	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m ³) ⑤ (трябва да се очаква абсорбиране през кожата)
PL	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 50 mg/m ³ ⑤ (może przenikać przez skórę do organizmu) skóra
DFG (DE) from 1 Jul 2023	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50 mg/m ³) ② 80 ppm (400 mg/m ³) ⑤ (Aerosol und Dampf, kann über die Haut aufgenommen werden) H
BE	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
CZ from 1 Mar 2020	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10.36 ppm (70 mg/m ³) ② 14.8 ppm (100 mg/m ³) ⑤ I
NO	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (68 mg/m ³) ⑤ E
IE from 17 Jan 2020	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³) ⑤ IOELV
HTP (FI)	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (68 mg/m ³)
DK from 28 Jun 2022	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (68 mg/m ³) ② 15 ppm (101 mg/m ³) ⑤ E
LT from 21 Aug 2018	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³) ⑤
SE from 1 Jun 2016	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (68 mg/m ³) ② 15 ppm (101 mg/m ³)
NPEL (SK) from 23 Nov 2011	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
WEL (GB)	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
VRI (FR) from 3 May 2021	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)



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Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
MAK (AT) from 11 Sept 2007	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	② 15 ppm (101.2 mg/m ³) ⑤ (max. 4x15 min./Schicht)
TRGS 900 (DE) from 1 Mar 2011	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67 mg/m ³) ② 15 ppm (100.5 mg/m ³) ⑤ (Aerosol und Dampf) EU, DFG, Y, 11
HU	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 67.5 mg/m ³ ② 101.2 mg/m ³ ⑤ T
BG from 6 Jan 2012	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
HR	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
EE	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ⑤ (2-(2-butoksüetoksü)etanool)
ES	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³) ⑤ VLI, r
LV	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
RO from 21 Aug 2018	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
IOELV (EU)	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
SI from 4 Dec 2018	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³) ⑤ Y, EU2
IS	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
CH from 1 Jan 2022	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67 mg/m ³) ② 15 ppm (101 mg/m ³) ⑤ (Dampf und Aerosol) SSC; Tox: Niere Blut Leber
MAK (AT) from 11 Sept 2007	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³)
GR from 1 Oct 2016	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
NL from 1 Jan 2023	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 7.4 ppm (50 mg/m ³) ② 14.8 ppm (100 mg/m ³) ⑤ (kan door de huid in het lichaam worden opgenomen) H
ACGIH (US) from 1 Jan 2013	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ⑤ (inhalable fraction and vapor)
KR from 20 Mar 2018	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm



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TR	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 10 ppm (67.5 mg/m ³) ② 15 ppm (101.2 mg/m ³)
PL	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	① 67 mg/m ³ ② 100 mg/m ³
RU	2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	③ 10 mg/m ³

8.1.2. Biological limit values

Limit value type (country of origin)	Substance name	Limit value	① Parameter ② Test material ③ Time of sampling: ④ Remark
BIO (HR) from 12 Oct 2018	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	15 mg/g kreatinin	① Metoksioktana kiselina ② urin ③ kraj izloženosti, odnosno kraj smjene
BAT (DE) from 1 Jul 2023	2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	15 mg/g Creatinin	① Methoxyessigsäure ② Urin ③ Schichtende am Ende der Arbeitswoche nach mindestens 2 Wochen Exposition

8.1.3. DNEL-/PNEC-values

Substance name	DNEL value	① DNEL type ② Exposure route
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	29.1 mg/m ³	① DNEL worker ② Long-term - inhalation, systemic effects
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	7.2 mg/m ³	① DNEL Consumer ② Long-term - inhalation, systemic effects
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	8.3 mg/kg bw/day	① DNEL worker ② Long-term - dermal, systemic effects
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	4.1 mg/kg bw/day	① DNEL Consumer ② Long-term - dermal, systemic effects
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	195 mg/m ³	① DNEL worker ② Long-term - inhalation, systemic effects
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	50 mg/kg bw/day	① DNEL worker ② Long-term - dermal, systemic effects
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	50.1 mg/m ³	① DNEL worker ② Long-term - inhalation, systemic effects



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Substance name	DNEL value	① DNEL type ② Exposure route
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	67.5 mg/m ³	① DNEL worker ② Long-term - inhalation, systemic effects
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	67.5 mg/m ³	① DNEL worker ② Long-term - inhalation, local effects
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	101.2 mg/m ³	① DNEL worker ② Acute - inhalation, local effects
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	20 mg/kg bw/ day	① DNEL worker ② Long-term - dermal, systemic effects

Substance name	PNEC Value	① PNEC type
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	211.2 µg/L	① PNEC aquatic, freshwater
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	21.12 µg/L	① PNEC aquatic, marine water
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	100 mg/L	① PNEC sewage treatment plant
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	0.76 mg/kg bw/day	① PNEC sediment, freshwater
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	0.076 mg/kg bw/day	① PNEC sediment, marine water
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	2 mg/L	① PNEC aquatic, freshwater
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	0.25 mg/L	① PNEC aquatic, marine water
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	200 mg/L	① PNEC sewage treatment plant
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	7.7 mg/kg bw/ day	① PNEC sediment, freshwater
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	12 mg/L	① PNEC aquatic, freshwater
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	44.4 mg/kg	① PNEC sediment, freshwater
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	1 mg/L	① PNEC aquatic, freshwater
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	0.1 mg/L	① PNEC aquatic, marine water



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Substance name	PNEC Value	① PNEC type
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	200 mg/L	① PNEC sewage treatment plant
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	4 mg/kg bw/ day	① PNEC sediment, freshwater
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	0.4 mg/kg bw/ day	① PNEC sediment, marine water

8.2. Exposure controls

8.2.1. Appropriate engineering controls

See section 7. No additional measures necessary.

8.2.2. Personal protection equipment



Eye/face protection:

During transfer: Eye glasses with side protection
 Wear eye/face protection. EN 166

Skin protection:

Hand protection
 Suitable material: NBR (Nitrile rubber), PVC (polyvinyl chloride), CR (polychloroprene, chloroprene rubber)
 Thickness of the glove material: $\geq 0,4$ mm
 Breakthrough time: 480 min
 Breakthrough times and swelling properties of the material must be taken into consideration.
 The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
 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.
 Tested protective gloves must be worn: EN ISO 374
 Suitable protective clothing: Protective clothing

Respiratory protection:

Usually no personal respirative protection necessary.
 Avoid breathing dust/fume/gas/mist/vapours/spray.
 Provide adequate ventilation.

Other protection measures:

Do not put any product-impregnated cleaning rags into your trouser pockets.
 Wear personal protection equipment (refer to section 8).
 Wash hands before breaks and after work.

8.2.3. Environmental exposure controls

See section 7. No additional measures necessary.

SECTION 9: Physical and chemical properties

* 9.1. Information on basic physical and chemical properties

Appearance

Physical state: Liquid

Colour: amber

Odour: characteristic

Safety relevant basis data

Parameter	Value	at °C	① Method ② Remark
pH	7 - 10.5		
Melting point	< -50 °C		
Freezing point	No data available		
Initial boiling point and boiling range	> 260 °C		
Flash point	> 120 °C		
Evaporation rate	No data available		



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Parameter	Value	at °C	① Method ② Remark
Auto-ignition temperature	No data available		
Upper/lower flammability or explosive limits	No data available		
Vapour pressure	No data available		
Vapour density	No data available		
Density	1,020 - 1,070 kg/m ³	20 °C	
Bulk density	not applicable		
Water solubility	completely miscible		
Partition coefficient: n-octanol/water	1.5	20 °C	
Dynamic viscosity	No data available		
Kinematic viscosity	5 - < 10 cSt	20 °C	

9.2. Other information

Not applicable

SECTION 10: Stability and reactivity**10.1. Reactivity**

No known hazardous reactions.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

*** 10.3. Possibility of hazardous reactions**

Peroxide formation possible with air oxygen.

10.4. Conditions to avoid

No special measures are necessary.

To avoid thermal decomposition do not overheat.

10.5. Incompatible materials

Materials to avoid: Oxidising agent, strong, Acid, concentrated, Alkali (lye), concentrated, Reducing agent, strong

10.6. Hazardous decomposition productsHazardous combustion products: Carbon dioxide, Carbon monoxide, Nitrogen oxides (NO_x)**SECTION 11: Toxicological information***** 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate	CAS No.: 30989-05-0	EC No.: 250-418-4
LD₅₀ oral:	>2,000 mg/kg (Rat)	
LD₅₀ dermal:	>2,000 mg/kg (Rat)	
2-(2-(2-butoxyethoxy)ethoxy)ethanol	CAS No.: 143-22-6	EC No.: 205-592-6
LD₅₀ oral:	5,170 mg/kg (Rat)	
LD₅₀ dermal:	3,540 mg/kg (Rabbit)	
3,6,9,12-tetraoxahexadecan-1-ol	CAS No.: 1559-34-8	EC No.: 216-322-1
LD₅₀ oral:	2,630 mg/kg (rat)	
LD₅₀ dermal:	3,540 mg/kg (rabbit)	
2-(2-methoxyethoxy)ethanol	CAS No.: 111-77-3	EC No.: 203-906-6
LD₅₀ oral:	7,128 - 8,188 mg/kg (Rat)	
LD₅₀ dermal:	9,404 mg/kg (Rabbit)	
2-(2-butoxyethoxy)ethanol	CAS No.: 112-34-5	EC No.: 203-961-6
LD₅₀ oral:	5,660 mg/kg (Rat)	
LD₅₀ dermal:	4,000 mg/kg (Rabbit)	

Acute oral toxicity:

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



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Acute dermal toxicity:

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

Acute inhalation toxicity:

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

Skin corrosion/irritation:

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

Serious eye damage/irritation:

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

Respiratory or skin sensitisation:

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

Germ cell mutagenicity:

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

Carcinogenicity:

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

Reproductive toxicity:

Suspected of damaging fertility. Suspected of damaging the unborn child.

STOT-single exposure:

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

STOT-repeated exposure:

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

Aspiration hazard:

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

Additional information:

No data available

* **11.2. Information on other hazards**

Endocrine disrupting properties:

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

Other information:

No data available

SECTION 12: Ecological information

* **12.1. Toxicity**

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4
LC₅₀ : 222.2 - <1,010 mg/L 4 d (fish)
LC₅₀ : >222.2 mg/L 2 d (fish, Oncorhynchus mykiss (previous name: Salmo gairdneri))
LC₅₀ : >222.2 mg/L 3 d (fish, Oncorhynchus mykiss (previous name: Salmo gairdneri))
LC₅₀ : >222.2 mg/L 4 d (fish, Oncorhynchus mykiss (previous name: Salmo gairdneri))
EC₅₀ : 211.2 - <960 mg/L 2 d (crustaceans)
EC₅₀ : 224.4 - <1,020 mg/L 3 d (Algae/water plant)
EC₅₀ : >224.4 mg/L 3 d (Algae/water plant, Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata))
EC₅₀ : >211.2 mg/L 2 d (crustaceans, Daphnia magna) OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
NOEC : 224.4 mg/L 3 d (Algae/water plant, Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata))
NOEC : <211.2 mg/L 1 d (crustaceans, Daphnia magna) OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
NOEC : <211.2 mg/L 2 d (crustaceans, Daphnia magna) OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6
LC₅₀ : 2,400 mg/L 2 d (fish, Pimephales promelas) as described in Standard Methods for the Examination of Water and Wastewater, 13th edition, 1971.
LC₅₀ : 2,200 - 4,600 mg/L 4 d (fish, Leuciscus idus) German industrial standard test guideline DIN 38 412, part L15.
LC₅₀ : 2,210 mg/L 2 d (crustaceans, Daphnia magna) test procedures recommended by US EPA and ASTM
EC₅₀ : 780 mg/L 3 d (Algae/water plant, Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)) OECD Guideline 201 (Alga, Growth Inhibition Test)
NOEC : 100 mg/L 3 d (Algae/water plant, Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)) OECD Guideline 201 (Alga, Growth Inhibition Test)
NOEC : 1,000 mg/L 4 d (fish, Leuciscus idus) German industrial standard test guideline DIN 38 412, part L15.
NOEC : >100 mg/L 21 d (crustaceans, Daphnia magna) OECD Guideline 211 (Daphnia magna Reproduction Test)



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3,6,9,12-tetraoxahexadecan-1-ol CAS No.: 1559-34-8 EC No.: 216-322-1
LC₅₀ : >1,800 mg/L 2 d (fish, Turbot (<i>Scophthalmus maximus</i>)) OECD Guideline 203 (Fish, Acute Toxicity Test)
LC₅₀ : >1,800 mg/L 3 d (fish, Turbot (<i>Scophthalmus maximus</i>)) OECD Guideline 203 (Fish, Acute Toxicity Test)
LC₅₀ : >1,800 mg/L 4 d (fish, Turbot (<i>Scophthalmus maximus</i>)) OECD Guideline 203 (Fish, Acute Toxicity Test)
EC₅₀ : 1,054 mg/L 2 d (Algae/water plant, <i>Scenedesmus capricornutum</i>) OECD Guideline 201 (Alga, Growth Inhibition Test)
EC₅₀ : 1,075 mg/L 3 d (Algae/water plant, <i>Scenedesmus capricornutum</i>) OECD Guideline 201 (Alga, Growth Inhibition Test)
EC₅₀ : >3,200 mg/L 2 d (crustaceans, <i>Daphnia magna</i>) OECD Guideline 202 (<i>Daphnia</i> sp. Acute Immobilisation Test)
NOEC : 1,800 mg/L 2 d (crustaceans, <i>Daphnia magna</i>) OECD Guideline 202 (<i>Daphnia</i> sp. Acute Immobilisation Test)
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
LC₅₀ : 5,741 mg/L 4 d (fish)
LC₅₀ : 5,741 mg/L 4 d (fish, <i>Pimephales promelas</i>) see below
EC₅₀ : 1,192 mg/L 2 d (crustaceans)
EC₅₀ : 1,000 mg/L 3 d (Algae/water plant)
EC₅₀ : >1,000 mg/L 4 d (Algae/water plant, <i>Raphidocelis subcapitata</i> (previous names: <i>Pseudokirchneriella subcapitata</i> , <i>Selenastrum capricornutum</i>)) OECD Guideline 201 (Alga, Growth Inhibition Test)
EC₅₀ : 1,192 mg/L 2 d (crustaceans, <i>Daphnia magna</i>)
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6
LC₅₀ : 1,300 mg/L 4 d (fish, <i>Lepomis macrochirus</i> (Bluegill))
LC₅₀ : 1,300 mg/L 4 d (fish, <i>Lepomis macrochirus</i>) OECD Guideline 203 (Fish, Acute Toxicity Test)
EC₅₀ : >100 mg/L 2 d (crustaceans, <i>Daphnia magna</i> (Big water flea))
EC₅₀ : 1,101 mg/L 3 d (Algae/water plant, <i>Raphidocelis subcapitata</i> (previous names: <i>Pseudokirchneriella subcapitata</i> , <i>Selenastrum capricornutum</i>)) OECD Guideline 201 (Alga, Growth Inhibition Test)
EC₅₀ : >100 mg/L 4 d (Algae/water plant, <i>Desmodesmus subspicatus</i> (previous name: <i>Scenedesmus subspicatus</i>)) OECD Guideline 201 (Alga, Growth Inhibition Test)
EC₅₀ : >100 mg/L 2 d (crustaceans, <i>Daphnia magna</i>) EU Method C.2 (Acute Toxicity for <i>Daphnia</i>)
NOEC : 1,000 mg/L (Algae/water plant, <i>Scenedesmus quadricauda</i>)
NOEC : >100 mg/L 4 d (Algae/water plant, <i>Desmodesmus subspicatus</i> (previous name: <i>Scenedesmus subspicatus</i>)) OECD Guideline 201 (Alga, Growth Inhibition Test)
NOEC : ≥100 mg/L 2 d (crustaceans, <i>Daphnia magna</i>) EU Method C.2 (Acute Toxicity for <i>Daphnia</i>)
ErC₅₀ : 1,101 mg/L 3 d (Algae/water plant)

Assessment/classification:

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

Additional ecotoxicological information:

Do not allow uncontrolled discharge of product into the environment.

* **12.2. Persistence and degradability**

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4
Biodegradation: Yes, rapidly
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6
Biodegradation: Yes, rapidly
3,6,9,12-tetraoxahexadecan-1-ol CAS No.: 1559-34-8 EC No.: 216-322-1
Biodegradation: Yes, rapidly
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
Biodegradation: Yes, rapidly
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6
Biodegradation: Yes, rapidly

Biodegradation:

Readily biodegradable (according to OECD criteria).

* **12.3. Bioaccumulative potential**

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4
Log K_{ow} : < 3



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2-(2-(2-butoxyethoxy)ethoxy)ethanol	CAS No.: 143-22-6	EC No.: 205-592-6
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Log K_{OW}: 1.22

3,6,9,12-tetraoxahexadecan-1-ol	CAS No.: 1559-34-8	EC No.: 216-322-1
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Log K_{OW}: 1

2-(2-methoxyethoxy)ethanol	CAS No.: 111-77-3	EC No.: 203-906-6
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Log K_{OW}: < 3

2-(2-butoxyethoxy)ethanol	CAS No.: 112-34-5	EC No.: 203-961-6
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Log K_{OW}: 0.56**Partition coefficient: n-octanol/water:**

1.5 at °C: 20

Accumulation / Evaluation:No indication of bioaccumulation potential. Log K_{OW} < 2,0**12.4. Mobility in soil**

The product has not been tested.

*** 12.5. Results of PBT and vPvB assessment**

tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate	CAS No.: 30989-05-0	EC No.: 250-418-4
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Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

2-(2-(2-butoxyethoxy)ethoxy)ethanol	CAS No.: 143-22-6	EC No.: 205-592-6
--	-------------------	-------------------

Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

3,6,9,12-tetraoxahexadecan-1-ol	CAS No.: 1559-34-8	EC No.: 216-322-1
--	--------------------	-------------------

Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

2-(2-methoxyethoxy)ethanol	CAS No.: 111-77-3	EC No.: 203-906-6
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Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

2-(2-butoxyethoxy)ethanol	CAS No.: 112-34-5	EC No.: 203-961-6
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Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects

No information available.

SECTION 13: Disposal considerations*** 13.1. Waste treatment methods**

Dispose of waste according to applicable legislation.

13.1.1. Product/Packaging disposal**Waste codes/waste designations according to EWC/AVV****Waste code product**

16 01 13 *	brake fluids
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*: Evidence for disposal must be provided.

Directive 2008/98/EC (Waste Framework Directive)

HP 10	Toxic for reproduction
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Waste treatment options**Appropriate disposal / Product:**

Dispose of waste according to applicable legislation. Consult the appropriate local waste disposal expert about waste disposal.

Appropriate disposal / Package:

Non-contaminated packages may be recycled.

13.2. Additional information

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



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SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1. UN number or ID number			
No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.
14.2. UN proper shipping name			
No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.
14.3. Transport hazard class(es)			
not relevant	not relevant	not relevant	not relevant
14.4. Packing group			
not relevant	not relevant	not relevant	not relevant
14.5. Environmental hazards			
not relevant	not relevant	not relevant	not relevant
14.6. Special precautions for user			
not relevant	not relevant	not relevant	not relevant
14.7. Maritime transport in bulk according to IMO instruments			
Transport in bulk according to Annex II of Marpol and the IBC Code			

SECTION 15: Regulatory information

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

15.1.1. EU legislation

Other regulations (EU):

This product is not assigned to a hazard category.

15.1.2. National regulations

 **[DE] National regulations**

Restrictions of occupation

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

Störfallverordnung (12. BImSchV)

for substances contained in the product:

This product is not assigned to a hazard category.

Technische Anleitung zur Reinhaltung der Luft (TA-Luft)

Remark:

To follow: 5.2.5

Water hazard class

WGK:

3 - highly hazardous to water

Source:

Self-classification (mixture; calculation rule).

Technische Regeln für Gefahrstoffe

TRGS 510

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

Berufsgenossenschaftliche Vorschriften (DGUV-Vorschriften)

Berufsgenossenschaftliche Informationen (DGUV-Informationen) 868
 Berufsgenossenschaftliche Regeln (DGUV-Regeln) 189, 190, 192, 195

15.2. Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

* **15.3. Additional information**

Tactile warning according to EN/ISO 11683.



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SECTION 16: Other information

* **16.1. Indication of changes**

1.1.	Product identifier
2.1.	Classification of the substance or mixture
2.2.	Label elements
2.3.	Other hazards
3.2.	Mixtures
8.1.	Control parameters
9.1.	Information on basic physical and chemical properties
10.3.	Possibility of hazardous reactions
11.1.	Information on hazard classes as defined in Regulation (EC) No 1272/2008
11.2.	Information on other hazards
12.1.	Toxicity
12.2.	Persistence and degradability
12.3.	Bioaccumulative potential
12.5.	Results of PBT and vPvB assessment
13.1.	Waste treatment methods
15.1.	Safety, health and environmental regulations/legislation specific for the substance or mixture
15.3.	Additional information
16.1.	Indication of changes
16.2.	Abbreviations and acronyms
16.3.	Key literature references and sources for data
16.4.	Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]
16.5.	List of relevant hazard statements and/or precautionary statements from sections 2 to 15

* **16.2. Abbreviations and acronyms**

ACGIH	American Conference of Governmental Industrial Hygienists
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ASTM	American Society for Testing and Materials
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
DIN	German Institute for Standardization / German Industrial Standard
DNEL	derived no-effect level
EC ₅₀	Effective Concentration 50%
EN	European Standard
ES	Exposure scenario
EWC	European Waste Catalogue
IBC	Intermediate Bulk Container
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Standards Organisation
KG	body weight
LC ₅₀	Lethal (fatal) Concentration 50%
LD ₅₀	Lethal (fatal) Dose 50%
MAK	Maximum concentration in the workplace air (CH)
NFPA	National Fire Protection Association
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Cooperation and Development
PBT	persistent and bioaccumulative and toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation and Authorization of Chemicals
RID	Dangerous goods regulations for transport by rail
SCL	Specific concentration limit
TRGS	Technische Regeln für Gefahrstoffe
UN	United Nations
See overview table at www.euphrac.eu	



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For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

* **16.3. Key literature references and sources for data**

EC 1907/2006 - REACH Regulation
 1272/2008 EC - Regulation on classification, labeling and packaging of substances and mixtures, and amending Directives 67/548/EEC and 1999/45/EC and Regulation (EC) No 1907/2006
 Regulation (EC) No 1907/2006 (REACH), Annex II
 European Chemicals Agency (ECHA), C & L classification and labeling inventory
 European Chemicals Agency (ECHA), ECHA CHEM Registered substances
 OECD The Global Portal to Information on Chemical Substances (ChemPortal)
 Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA): GESTIS substance database and International limit values for chemical substances
 Federal Environment Agency, Section IV 2.4: Documentation and Information Centre substances hazardous to water Rigoletto (catalog substances hazardous to water)

Substance name	Type	source of supply
3,6,9,12-tetraoxahexadecan-1-ol CAS No.: 1559-34-8 EC No.: 216-322-1	Classification of the substance or mixture; LD ₅₀ oral; LD ₅₀ dermal; LC ₅₀ ; EC ₅₀ ; NOEC	Source: European Chemicals Agency, http://echa.europa.eu/
tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate CAS No.: 30989-05-0 EC No.: 250-418-4	LC ₅₀ ; EC ₅₀ ; NOEC	Source: European Chemicals Agency, http://echa.europa.eu/
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	LC ₅₀ ; EC ₅₀ ; NOEC	Source: European Chemicals Agency, http://echa.europa.eu/
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	LC ₅₀ ; EC ₅₀	Source: European Chemicals Agency, http://echa.europa.eu/
2-(2-butoxyethoxy)ethanol CAS No.: 112-34-5 EC No.: 203-961-6	LC ₅₀ ; EC ₅₀ ; NOEC	Source: European Chemicals Agency, http://echa.europa.eu/

* **16.4. Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]**

Hazard classes and hazard categories	Hazard statements	Classification procedure
Reproductive toxicity (<i>Repr. 2</i>)	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child.	Calculation method.

* **16.5. List of relevant hazard statements and/or precautionary statements from sections 2 to 15**

Hazard statements	
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360D	May damage the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

16.6. Training advice

No data available

16.7. Additional information

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.

* Data changed compared with the previous version.