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 5.1

Article No.:
1350602

UFI:
X62G-MFU8-92AF-NACS

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)*	H361d: 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; 2-(2-methoxyethoxy)ethanol; 2-(2-(2-butoxyethoxy)ethoxy)ethanol

Hazard statements for health hazards	
H361d	Suspected of damaging the unborn child.

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	
P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves and eye/face protection.

Precautionary statements Response	
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/Emergency telephone number.

Precautionary statements Storage	
P405	Store locked up.

Precautionary statements Disposal	
P501	Dispose of contents/container to an appropriate recycling or disposal facility.

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 (H361d) Warning	40 – < 80 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%	5 – < 10 weight-%
CAS No.: 9004-77-7 EC No.: 500-012-0 REACH No.: 01-2118475115-41	**Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy-** Eye Dam. 1 (H318) Danger **Specific concentration limit (SCL)** Eye Dam. 1; H318: C ≥ 30% Eye Irrit. 2; H319: 20% ≤ C < 30%	5 – < 10 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. 2 (H361d***) Warning	1 – < 3 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.

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 (NOx) 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

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/m³) 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/m³) 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/m³) ② 20 ppm (100 mg/m³) ⑤ (může pronikat pokožkou) D

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/m³) 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/m³) 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/m³) ⑤ (kan absorberas genom huden) iho
NPEL (SK)	**2-(2-methoxyethoxy)ethanol** CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m³) 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/m³) 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/m³) 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/m³) 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/m³) 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/m³ ⑤ R+T
HR	**2-(2-methoxyethoxy)ethanol** CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m³) 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/m³) ② 20 ppm (100 mg/m³) 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/m³) 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/m³) ⑤ (e de asteptat asimilarea prin piele) P,R2
ES	**2-(2-methoxyethoxy)ethanol** CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m³) ⑤ (puede ser absorbido a través dérmica) vía dérmica, VLI, r
IOELV (EU)	**2-(2-methoxyethoxy)ethanol** CAS No.: 111-77-3 EC No.: 203-906-6	① 10 ppm (50.1 mg/m³) 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/m³) 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/m³) 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/m³) ⑤ (efnið getur auðveldlega borist inn í líkamann gegnum húð) H

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
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/m³) ⑤ (αναμένετε απορρόφηση από το δέρμα)
NL	**2-(2-methoxyethoxy)ethanol** CAS No.: 111-77-3 EC No.: 203-906-6	① 45 mg/m³ 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/m³) 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/m³) 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/m³ ⑤ (może przenikać przez skórę do organizmu) skóra

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 Metoksioctena kiselina ② urin ③ kraj izloženosti, odnosno kraj smjene

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/m³	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/m³	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/m³	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

Substance name	DNEL value	① DNEL type ② Exposure route
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	195 mg/m³	① DNEL worker ② Long-term – inhalation, systemic effects
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	117 mg/m³	① DNEL Consumer ② Long-term – inhalation, systemic effects
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	208 mg/kg bw/day	① DNEL worker ② Long-term - dermal, systemic effects
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	125 mg/kg bw/day	① DNEL Consumer ② Long-term - dermal, systemic effects
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	12.5 mg/kg bw/day	① DNEL Consumer ② Long-term - oral, systemic effects
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6	50.1 mg/m³	① DNEL worker ② Long-term – inhalation, 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

Substance name	PNEC Value	① PNEC type
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	4.5 mg/L	① PNEC aquatic, freshwater
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	310 µg/L	① PNEC aquatic, marine water
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	500 mg/L	① PNEC sewage treatment plant
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	6.6 mg/kg bw/day	① PNEC sediment, freshwater
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	0.66 mg/kg bw/day	① PNEC sediment, marine water
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

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: ≥ 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:** light yellow

Odour: characteristic

Safety relevant basis data

Parameter	Value	at °C	① Method ② Remark
pH	7 – < 10.5		
Melting point	*not determined*		
Freezing point	*not determined*		
Initial boiling point and boiling range	*not determined*		
Decomposition temperature	*not determined*		
Flash point	120 – < 210 °C		
Evaporation rate	*not determined*		
Auto-ignition temperature	*not determined*		
Upper/lower flammability or explosive limits	*not determined*		
Vapour pressure	*not determined*		
Vapour density	*not determined*		
Density	1,052 kg/m³	20 °C	
Relative density	*not determined*		
Bulk density	*not applicable*		
Water solubility	miscible		
Partition coefficient: n-octanol/water	< 2	20 °C	
Dynamic viscosity	*not determined*		
Kinematic viscosity	10 mm²/s	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.
May cause strong formation of hydrogen by contact with amphoteric metals (e.g. aluminia, lead, zinc) - danger of explosion.

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 products

Hazardous combustion products: Carbon dioxide, Carbon monoxide, Nitrogen oxides (NOx)

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
LD_{50} oral: >2,000 mg/kg (Rat)
LD_{50} dermal: >2,000 mg/kg (Rat)

2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6
LD_{50} oral: 5,170 mg/kg (Rat)
LD_{50} dermal: 3,540 mg/kg (Rabbit)
LC_{50} Acute inhalation toxicity (vapour): >2.4 mg/L 16 h (rat) Inhalation hazard test according to the method described by Smyth H.F. et al.: Am. Ind. Hyg. Ass. J. 23, 95-107, (1962).
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0
LD_{50} oral: 2,001 – 2,630 mg/kg (Rat)
LD_{50} dermal: 3,540 mg/kg (Rabbit)
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
LD_{50} oral: 7,128 – 8,188 mg/kg (Rat)
LD_{50} dermal: 9,404 mg/kg (Rabbit)

Acute oral toxicity:
Based on available data, the classification criteria are not met.

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:
No irritant effect.
Frequently or prolonged contact with skin may cause dermal irritation.

Serious eye damage/irritation:
No irritant effect.

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
No indications of human germ cell mutagenicity exist.

Carcinogenicity:
No indication of human carcinogenicity.

Reproductive toxicity:
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:
Observe risk of aspiration if vomiting occurs.
For viscosity data, see section 9.

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.

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
LC_{50}: 222.2 – <1,010 mg/L 4 d (fish)
EC_{50}: 211.2 – <960 mg/L 2 d (crustaceans)
EC_{50}: 224.4 – <1,020 mg/L 3 d (Algae/water plant)

2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6
LC_{50}: 2,200 – 4,600 mg/L 4 d (fish, Leuciscus idus) German industrial standard test guideline DIN 38 412, part L15.
LC_{50}: 2,400 mg/L 2 d (fish, Pimephales promelas) as described in Standard Methods for the Examination of Water and Wastewater, 13th edition, 1971.
LC_{50}: 2,210 mg/L 2 d (crustaceans, Daphnia magna) test procedures recommended by US EPA and ASTM
EC_{50}: 780 mg/L 3 d (Algae/water plant, Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)) OECD Guideline 201 (Alga, Growth Inhibition Test)
NOEC: >100 mg/L 21 d (crustaceans, Daphnia magna) OECD Guideline 211 (Daphnia magna Reproduction 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 3 d (Algae/water plant, Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)) OECD Guideline 201 (Alga, Growth Inhibition Test)
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0
LC_{50}: 1,800 mg/L 4 d (fish)
EC_{50}: 3,200 mg/L 2 d (crustaceans)
EC_{50}: 2,490 mg/L 3 d (Algae/water plant)
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
LC_{50}: 5,741 mg/L 4 d (fish)
EC_{50}: 1,192 mg/L 2 d (crustaceans)
EC_{50}: 1,000 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
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0
Biodegradation: Yes, rapidly
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
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
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6
Log K_{OW}: 1.22
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0
Log K_{OW}: < 3
2-(2-methoxyethoxy)ethanol CAS No.: 111-77-3 EC No.: 203-906-6
Log K_{OW}: < 3

Partition coefficient: n-octanol/water:
< 2 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
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.	
Poly(oxy-1,2-ethanediyl), ?-butyl-?-hydroxy- CAS No.: 9004-77-7 EC No.: 500-012-0	
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	
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.

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.

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):

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances [Seveso-III-Directive]: 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:

1 - schwach wassergefährdend

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.

SECTION 16: Other information

*

16.1. Indication of changes

1.3.	Details of the supplier of the safety data sheet
1.4.	Emergency telephone number
3.2.	Mixtures
9.1.	Information on basic physical and chemical properties
9.2.	Other information
11.2.	Information on other hazards
12.1.	Toxicity
12.2.	Persistence and degradability
12.3.	Bioaccumulative potential
12.6.	Endocrine disrupting properties
16.1.	Indication of changes
16.3.	Key literature references and sources for data
16.5.	Relevant R-, H- and EUH-phrases (Number and full text)

16.2. Abbreviations and acronyms

See overview table at www.euphrac.eu
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

67/548/EEC - Dangerous Substances Directive
1999/45/EEC - Dangerous Preparations Directive
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
2-(2-(2-butoxyethoxy)ethoxy)ethanol CAS No.: 143-22-6 EC No.: 205-592-6	LC_{50} Acute inhalation toxicity (vapour); 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 *(Repr. 2)*	H361d: Suspected of damaging the unborn child.	Calculation method.

* 16.5. Relevant R-, H- and EUH-phrases (Number and full text)

Hazard statements	
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H361d	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.