



Eni Brake Fluid DOT 4

Safety Data Sheet

According to Regulation (EU) No. 830/2015
Revision date: 25/05/2021 Supersedes: 20/07/2017 Version: 5.0

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

1.1. Product identifier

Product form : Mixture
Trade name : Eni Brake Fluid DOT 4
Product code : 1655
Type of product : Lubricants
Formula : 2505-2021
Product group : Trade product

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

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use, Consumer use
Industrial/Professional use spec : Used in closed systems
Wide dispersive use
Use of the substance/mixture : Brake fluid
Hydraulic fluid

Do not use the product for any purposes that have not been advised by the manufacturer.
Function or use category : Hydraulic fluids and additives

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

ENI S.p.A.
P.le E. Mattei 1 - 00144 Rome Italy
Phone: (+39) 06 59821
www.eni.com

Contact:
Refining & Marketing

Competent person responsible for the Safety Data Sheet (Reg. EC nr. 1907/2006): SDSInfo@eni.com

1.4. Emergency telephone number

Emergency number : CNIT +39 0382 24444 (24h) (IT + EN)

Poison centre (UK):
National Poisons Information Service Edinburgh (24h)
(+44) 844 892 0111
0870 600 6266 (UK only)
(Source: UN-WHO)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]

Not classified

Adverse physicochemical, human health and environmental effects

None to be reported, according to the present EU regulations. For specific information about the toxicological/ecotoxicological properties and classification of this product, see Sect. 11 and/or Sect. 12.

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2.2. Label elements

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

EUH-statements : EUH210 - Safety data sheet available on request.

2.3. Other hazards (not relevant for classification)

Other hazards not contributing to the classification : This product is combustible, but not classified as Flammable. The creation of flammable vapour mixtures takes place at temperatures which are higher than normal ambient levels. Vapours may form flammable and explosive mixture with air. In case of contact with eyes, this product may cause irritation. Prolonged and repeated skin contact may cause reddening, irritation and dermatitis. Any substance, in case of accidents involving pressurized circuits and the like, may be accidentally injected under the skin, even without external damage. In such a case, the victim should be brought to a hospital as soon as possible, to get specialized medical treatment. Do not wait for symptoms to develop.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Notes : Composition/ Information on ingredients:
Synthetic base stock (polyglycol)
Rust inhibitor

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]
2,2'-oxybisethanol	(CAS-No.) 111-46-6 (EC-No.) 203-872-2 (EC Index-No.) 603-140-00-6 (REACH-no) 01-2119457857-21	≥ 1 < 5	Acute Tox. 4 (Oral), H302
2-[2-(2-butoxyethoxy)ethoxy]ethanol	(CAS-No.) 143-22-6 (EC-No.) 205-592-6 (EC Index-No.) 603-183-00-0 (REACH-no) 01-2119475107-38	≥ 1 < 5	Eye Dam. 1, H318
1,1'-iminodipropan-2-ol	(CAS-No.) 110-97-4 (EC-No.) 203-820-9 (EC Index-No.) 603-083-00-7 (REACH-no) 01-2119475444-34	≥ 1 < 5	Eye Irrit. 2, H319
2,2'-(ethylenedioxy)diethanol (see note [*])	(CAS-No.) 112-27-6 (EC-No.) 203-953-2 (EC Index-No.) N/A (REACH-no) 01-2119438366-35	≥ 1 < 5	Not classified

Specific concentration limits:

Name	Product identifier	Specific concentration limits
2-[2-(2-butoxyethoxy)ethoxy]ethanol	(CAS-No.) 143-22-6 (EC-No.) 205-592-6 (EC Index-No.) 603-183-00-0 (REACH-no) 01-2119475107-38	(20 ≤ C < 30) Eye Irrit. 2, H319 (30 ≤ C ≤ 100) Eye Dam. 1, H318

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Notes : Note [*]:
substance with national workplace exposure limit(s)

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : In case of symptoms arising from inhalation of product fumes, mists or vapour : Remove to fresh air, keep the casualty warm and at rest. If casualty is unconscious and not breathing: ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical advice. If the casualty is breathing: Place in the recovery position. Administer oxygen if necessary. Get medical advice/ attention.

First-aid measures after skin contact : Take off contaminated clothing and shoes. Wash thoroughly with soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact : Rinse eyes thoroughly for at least 15 minutes. Keep eyelids well apart. Remove contact lenses, if present and easy to do so. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.

First-aid measures after ingestion : If the person is fully conscious, make him/her drink plenty of water. Never give an unconscious person anything to drink. Do not induce vomiting.

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

Symptoms/effects after inhalation : Inhalation may cause irritation (cough, short breathing, difficulty in breathing).

Symptoms/effects after skin contact : Prolonged and repeated skin contact may cause reddening, irritation and dermatitis, due to a defatting effect.

Symptoms/effects after eye contact : Contact with eyes may cause temporary reddening and irritation.

Symptoms/effects after ingestion : Accidental ingestion of small quantities of the product may cause nausea, discomfort and gastric disturbances. If any, nausea and diarrhoea might occur.

Symptoms/effects upon intravenous administration : No information available.

Chronic symptoms : None to be reported, according to the present classification criteria.

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

Treat symptomatically. Obtain medical attention. Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry powder. Carbon dioxide. Water spray. Other extinguishing gases (according to regulations).

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable. This product is combustible, but not classified as Flammable. The creation of flammable vapour mixtures takes place at temperatures which are higher than normal ambient levels.

Explosion hazard : Heat may build pressure in tank and containers, rupturing closed vessels, spreading fire and increasing risk of burns and injuries.

Hazardous decomposition products in case of fire : Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide, NOx (harmful/toxic gases). Oxygenated compounds (aldehydes, etc.).

5.3. Advice for firefighters

Firefighting instructions : Stop or contain leak at the source, if safe to do so. Move undamaged containers from immediate hazard area if it can be done safely. Spilled product which is not burning should be covered with sand or foam. Use water sprays to cool containers and surfaces exposed to the flames. If the fire cannot be controlled, evacuate area.

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- Special protective equipment for firefighters : Personal protection equipment for firefighters (see also sect. 8). In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. EN 137. EN 469. EN 659. Do not attempt to take action without suitable protective equipment.
- Other information : In case of fire, do not discharge residual product, waste materials and runoff water: collect separately and use a proper treatment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Stop or contain leak at the source, if safe to do so. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Avoid direct contact with released material.

6.1.1. For non-emergency personnel

- Protective equipment : See Section 8.
- Emergency procedures : Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

6.1.2. For emergency responders

- Protective equipment : Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material. If necessary heat resistant and insulated. Work gloves (preferably gauntlets) providing adequate chemical resistance. Gloves made of PVA are not water-resistant, and are not suitable for emergency use. Antistatic non-skid safety shoes or boots, chemical resistant, if necessary heat resistant and insulated. Work helmet. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection: A half or full-face respirator with combined dust/organic vapour filter(s), or a Self-Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.
- Emergency procedures : Notify local authorities according to relevant regulations.

6.2. Environmental precautions

Prevent product from entering sewers, rivers or other bodies of water. In case of contamination of environment compartments (soil, subsoil, surface or underground waters), remove contaminated soil when possible, and in any case treat all involved compartments in accordance with local regulations.

6.3. Methods and material for containment and cleaning up

- For containment : Contain spilled liquid with sand, earth or other suitable absorbents. Recover free liquid in suitable containers. Clean contaminated area. Dispose of according to local regulations. Large spillages may be cautiously covered with foam, if available, to limit fire risk. When inside buildings or confined spaces, ensure adequate ventilation. In case of contamination of environment compartments (soil, subsoil, surface or underground waters), remove contaminated soil when possible, and in any case treat all involved compartments in accordance with local regulations.
- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. This material and its container must be disposed of in a safe way, and according to local legislation.
- Other information : Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air/water temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. Local regulations may also prescribe or limit actions to be taken.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : This material is combustible, but will not ignite readily. Provide adequate ventilation. Use adequate personal protective equipment as needed. Due to the extremely slippery nature of this material, more care than usual must be exercised in material handling practices to keep off all walking surfaces. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Avoid release to the environment. Emptied containers can contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been drained and cleaned. Before entering storage tanks and commencing any operation in a confined area (e.g. tunnels), carry out an adequate clean-up, and check the atmosphere for oxygen content and flammability.
- Hygiene measures : Ensure that proper housekeeping measures are in place. Keep away from food and beverages. Avoid contact with skin and eyes. Do not breathe fume/ mist/ vapours. Do not ingest. Do not smoke. Do not clean hands with dirty or oil-soaked rags. Do not re-use clothes, if they are still contaminated. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets. Take off immediately all contaminated clothing and wash it before reuse. Separate working clothes from town clothes. Launder separately. Contaminated work clothing should not be allowed out of the workplace. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in dry, well ventilated area. Keep away from open flames, hot surfaces and sources of ignition. Do not smoke.
- Incompatible products : Keep away from: strong oxidants.
- Storage area : Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.
- Packages and containers: : If the product is supplied in containers: Keep containers tightly closed and properly labelled. Keep only in the original container or in a suitable container for this kind of product.
- Packaging materials : For containers, or container linings use materials specifically approved for use with this product. Compatibility should be checked with the manufacturer. Keep only in the original container.

7.3. Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

2,2'-(ethylenedioxy)diethanol (112-27-6)	
Germany - Occupational Exposure Limits (TRGS 900)	
AGW (OEL TWA) [1]	1000 mg/m ³ (Inhalable fraction)
Limitation of exposure peaks (mg/m ³)	2000 mg/m ³ (Inhalable fraction)
Romania - Occupational Exposure Limits	
OEL TWA	700 mg/m ³
OEL TWA (ppm)	114 ppm
OEL STEL (mg/m ³)	1000 mg/m ³
OEL STEL (ppm)	163 ppm

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2,2'-(ethylenedioxy)diethanol (112-27-6)

Switzerland - Occupational Exposure Limits

MAK (OEL TWA) [1]	1000 mg/m ³
VLE [mg/m ³]	2000 mg/m ³

2,2'-oxybisethanol (111-46-6)

Austria - Occupational Exposure Limits

MAK (OEL TWA)	44 mg/m ³
MAK [ppm]	10 ppm
MAK (OEL STEL)	176 mg/m ³
MAK Short time value [ppm]	40 ppm

Denmark - Occupational Exposure Limits

OEL TWA [1]	22 mg/m ³
OEL TWA [2]	5 ppm
OEL STEL	11 mg/m ³
Grænseværdi (kortvarig) (ppm)	2,5 ppm

Germany - Occupational Exposure Limits (TRGS 900)

AGW (OEL TWA) [1]	10 mg/m ³
AGW (OEL TWA) [2]	44 ppm
Limitation of exposure peaks (mg/m ³)	40 mg/m ³
Limitation of exposure peaks (ppm)	176 ppm

Ireland - Occupational Exposure Limits

OEL TWA [1]	100 mg/m ³
OEL TWA [2]	23 ppm

Latvia - Occupational Exposure Limits

OEL TWA	10 mg/m ³
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Sweden - Occupational Exposure Limits

NGV (OEL TWA)	45 mg/m ³
Nivågränsvärde (NVG) (ppm)	10 ppm
KTV (OEL STEL)	90 mg/m ³
KTV (OEL STEL) [ppm]	20 ppm

United Kingdom - Occupational Exposure Limits

WEL TWA (OEL TWA) [1]	101 mg/m ³
WEL TWA (OEL TWA) [2]	23 ppm

Switzerland - Occupational Exposure Limits

MAK (OEL TWA) [1]	44 mg/m ³
MAK (OEL TWA) [2]	10 ppm
VLE [mg/m ³]	176 mg/m ³
VLE [ppm]	40 ppm

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8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods	Monitoring procedures should be chosen according to the indications set by national authorities or labour contracts. Refer to relevant legislation and in any case to the good practice of industrial hygiene.

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Eni Brake Fluid DOT 4	
DNEL/DMEL (additional information)	
Additional information	Not applicable
PNEC (additional information)	
Additional information	Not applicable

2-[2-(2-butoxyethoxy)ethoxy]ethanol (143-22-6)

DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	400 mg/kg bodyweight/day
Acute - systemic effects, inhalation	96 mg/m ³
Acute - local effects, dermal	8,35 mg/cm ²
Acute - local effects, inhalation	96 mg/m ³
Long-term - systemic effects, dermal	208 mg/kg bodyweight/day
Long-term - local effects, dermal	5,65 mg/cm ²
Long-term - systemic effects, inhalation	195 mg/m ³
Long-term - local effects, inhalation	30,5 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	200 mg/kg bodyweight
Acute - systemic effects, inhalation	48 mg/m ³
Acute - systemic effects, oral	103,4 mg/kg bodyweight
Acute - local effects, dermal	4,173 mg/cm ²
Acute - local effects, inhalation	48 mg/m ³
Long-term - systemic effects, oral	12,5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	12 mg/m ³
Long-term - systemic effects, dermal	125 mg/kg bodyweight/day
Long-term - local effects, dermal	2,823 mg/cm ²
Long-term - local effects, inhalation	15,252 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	10 mg/l
PNEC aqua (marine water)	1 mg/l
PNEC aqua (intermittent, freshwater)	100 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	36,5 mg/kg dwt
PNEC sediment (marine water)	3,65 mg/kg dwt

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PNEC (Soil)	
PNEC soil	1,53 mg/kg dwt
PNEC (Oral)	
PNEC oral (secondary poisoning)	90 mg/kg food
PNEC (STP)	
PNEC sewage treatment plant	200 mg/l

2,2'-(ethylenedioxy)diethanol (112-27-6)	
DNEL/DMEL (additional information)	
Additional information	Not derived - Not classified as hazardous for health
PNEC (additional information)	
Additional information	Not derived - Not classified as hazardous for environment

2,2'-oxybisethanol (111-46-6)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	106 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	44 mg/m ³
Long-term - local effects, inhalation	60 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	12 mg/m ³
Long-term - systemic effects, dermal	21 mg/kg bodyweight/day
Long-term - local effects, inhalation	12 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	10 mg/l
PNEC aqua (marine water)	1 mg/l
PNEC aqua (intermittent, freshwater)	10 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	20,9 mg/kg dwt
PNEC sediment (marine water)	2,09 mg/kg dwt
PNEC (Soil)	
PNEC soil	1,53 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	199,5 mg/l

1,1'-iminodipropan-2-ol (110-97-4)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	6,4 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	1,3 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	3,9 mg/m ³
Long-term - systemic effects, dermal	6,3 mg/kg bodyweight/day

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PNEC (Water)	
PNEC aqua (freshwater)	0,278 mg/l
PNEC aqua (marine water)	0,028 mg/l
PNEC aqua (intermittent, freshwater)	2,777 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	2,33 mg/kg dwt
PNEC sediment (marine water)	0,233 mg/kg dwt
PNEC (Soil)	
PNEC soil	0,303 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	15000 mg/l

Note : The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short-term exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station. Measure concentrations regularly, and at the time of any change occurring in conditions likely to have consequences on workers exposure.

8.2.2. Personal protection equipment

Personal protective equipment (for industrial or professional use):

Gloves. Protective clothing. Safety glasses. Safety shoes or boots.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Chemical goggles or safety glasses. EN 166

8.2.2.2. Skin protection

Skin and body protection:

Long-sleeved overalls. If necessary, refer to the EN 340 and related standards, for definition of characteristics and performance according to the risk rating of the area.

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Hand protection:

Chemical resistant gloves (according to European standard NF EN 374 or equivalent). Adequate materials: nitrile (NBR) or neoprene with a protection index ≥ 5 (permeation time ≥ 240 mins). Butyl rubber. Use gloves respecting all the conditions and within the limits set by the manufacturer. Replace gloves immediately in case of cuts, holes or other signs of damages or degradation. If necessary, refer to the EN 374 standard.

8.2.2.3. Respiratory protection

Respiratory protection:

Not necessary with sufficient ventilation. Independently from other possible actions (technical modifications, operating procedures, and other means to limit the exposure of workers), personal protection equipment can be used according to necessity. In case of inadequate ventilation wear respiratory protection (EN 136/140/145). Combined gas/dust mask with filter type: EN 14387. High gas/vapour concentration: gas mask with filter type A

8.2.2.4. Thermal hazards

Thermal hazard protection:

None in normal use conditions.

8.2.3. Environmental exposure controls

Environmental exposure controls:

Do not discharge the product into the environment. Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Consumer exposure controls:

No special requirements necessary, if handled at room temperature.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid, bright & clear.
Colour	: Pale yellow.
Odour	: Glycol.
Odour threshold	: Lack of data (on mixture / components of the mixture) - Data not available
pH	: 7 – 11,5 (SAE J1703)
Relative evaporation rate (butylacetate=1)	: Negligible.
Melting point	: Not applicable
Freezing point	: < -70 °C (ASTM D1177)
Boiling point	: 260 °C (ASTM D1160)
Flash point	: > 125 °C (ASTM D 93)
Auto-ignition temperature	: Lack of data (on mixture / components of the mixture) - Data not available
Decomposition temperature	: Lack of data (on mixture / components of the mixture) - Data not available
Flammability (solid, gas)	: Not applicable
Vapour pressure	: < 0,13 kPa (20°C)
Relative vapour density at 20 °C	: Lack of data (on mixture / components of the mixture) - Data not available
Relative density	: Lack of data (on mixture / components of the mixture) - Data not available
Density	: 1060 kg/m ³ (20 °C) (ASTM D1122)
Solubility	: soluble in water.
Log Pow	: Not applicable for mixtures
Log Kow	: Not applicable for mixtures
Viscosity, kinematic	: > 2 mm ² /s (100 °C)
Viscosity, dynamic	: Lack of data (on mixture / components of the mixture) - Data not available
Explosive properties	: None (according to composition).
Oxidising properties	: None (according to composition).
Explosive limits	: Lack of data (on mixture / components of the mixture) - Data not available
Lower explosive limit (LEL)	: 1,5 vol %

9.2. Other information

Additional information : No data available

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SECTION 10: Stability and reactivity

10.1. Reactivity

This mixture does not offer any further hazard for reactivity, except what is reported in the following paragraphs.

10.2. Chemical stability

Stable product, according to its intrinsic properties (in normal conditions of storage and handling).

10.3. Possibility of hazardous reactions

None (in normal conditions of storage and handling).

10.4. Conditions to avoid

Overheating.

10.5. Incompatible materials

Strong oxidants.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition may produce : Toxic fumes.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition) The ethylene glycol present in this formulation may cause intoxication, central nervous system depression (incoordination, dizziness), respiratory failure, liver and kidney damage. The effects may be delayed. The toxic (fatal) dose for pure ethylene glycol has been estimated 1.4 ml/kg wt (about 100 ml for an adult person).

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ATE (oral)	5050,5 mg/kg bodyweight
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2-[2-(2-butoxyethoxy)ethoxy]ethanol (143-22-6)

LD50 oral rat	5000 – 11300 mg/kg bodyweight
LD50 dermal rabbit	3540 mg/kg bodyweight
LC50 Inhalation - Rat	2,4 mg/l/4h (16h)

2,2'-(ethylenedioxy)diethanol (112-27-6)

LD50 oral rat	16 ml/kg
LD50 dermal rabbit	16 ml/kg
LC50 Inhalation - Rat	5,2 mg/l/4h

2,2'-oxybisethanol (111-46-6)

LD50 oral rat	12565 mg/kg bodyweight
LD50 dermal rabbit	11890 mg/kg bodyweight

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1,1'-iminodipropan-2-ol (110-97-4)

LD50 oral rat	> 2000 mg/kg bodyweight
LD50 dermal rabbit	8000 mg/kg bodyweight

Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: 7 – 11,5 (SAE J1703)
Additional information	: (according to composition)
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: 7 – 11,5 (SAE J1703)
Additional information	: (according to composition) This product contains components with a Specific Concentration Limit (SCL).
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)

2-[2-(2-butoxyethoxy)ethoxy]ethanol (143-22-6)

LOAEL (oral, rat, 90 days)	1000 – 1200 mg/kg bodyweight/day
NOAEL (oral, rat, 90 days)	250 – 400 mg/kg bodyweight/day
NOAEL (dermal, rat/rabbit, 90 days)	1000 – 4000 mg/kg bodyweight/day
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	120 – 152,52 mg/l air

2,2'-(ethylenedioxy)diethanol (112-27-6)

LOAEC (inhalation, rat, dust/mist/fume, 90 days)	494 mg/l
NOAEC (inhalation, rat, vapour, 90 days)	1 mg/l/6h/day

1,1'-iminodipropan-2-ol (110-97-4)

NOAEL (oral, rat, 90 days)	100 – 500 mg/kg bodyweight/day
NOAEL (dermal, rat/rabbit, 90 days)	100 – 750

Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)

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Viscosity, kinematic	> 2 mm ² /s (100 °C)
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Potential adverse human health effects and symptoms	: Contact with eyes may cause temporary reddening and irritation, Prolonged and repeated skin contact may cause reddening, irritation and dermatitis, due to a defatting effect, Inhalation of vapours may cause respiratory irritation, Ingestion may cause nausea, vomiting and diarrhea, Avoid all eye and skin contact and do not breathe vapour and mist
Other information	: None

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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment. An uncontrolled release to the environment may nevertheless produce a contamination of different environmental compartments (air, soil, underground, surface water bodies, aquifers). Handle according to general working hygiene practices to avoid pollution and release into the environment.
Ecology - water	: This product is soluble in water.
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	: Not classified (Based on available data, the classification criteria are not met)

2-[2-(2-butoxyethoxy)ethoxy]ethanol (143-22-6)

LC50 fish 1	2 – 15 g/l
EC50 Daphnia 1	500 – 3141 mg/l
EC50 72h - Algae [1]	500 – 3211 mg/l
NOEC chronic fish	411 mg/l (30d)
NOEC chronic crustacea	314 mg/l (30d)
NOEC chronic algae	204,5 mg/l (30d)

2,2'-(ethylenedioxy)diethanol (112-27-6)

LC50 fish 1	10000 mg/l
EC50 Daphnia 1	10000 mg/l
EC50 96h - Algae [1]	20518 mg/l
NOEC chronic crustacea	1 g/l (23d)

2,2'-oxybisethanol (111-46-6)

LC50 fish 1	> 1000 mg/l
EC50 Daphnia 1	> 10000 mg/l (24h)

1,1'-iminodipropan-2-ol (110-97-4)

LC50 fish 1	1,466 g/l
EC50 Daphnia 1	277,7 mg/l
EC50 72h - Algae [1]	399 mg/l

12.2. Persistence and degradability

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Persistence and degradability	The most significant constituents of the product should be considered as "readily biodegradable".
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12.3. Bioaccumulative potential

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Log Pow	Not applicable for mixtures
Log Kow	Not applicable for mixtures
Bioaccumulative potential	Bioaccumulation unlikely.

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2,2'-oxybisethanol (111-46-6)

Log Pow	-1,98
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12.4. Mobility in soil

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Ecology - soil	No data available.
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12.5. Results of PBT and vPvB assessment

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This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Results of PBT-vPvB assessment	The components in this formulation do not meet the criteria for classification as PBT or vPvB. The product should be considered as "Not persistent" in the environment, according to the REACH Annex XIII criteria (point 1.1)
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12.6. Other adverse effects

Other adverse effects : None.
Additional information : No other effects known

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Do not dispose of the product, either new or used, by discharging into sewers, tunnels, lakes or water courses. Deliver to a qualified official collector.

Product/Packaging disposal recommendations : European Waste Catalogue code(s) (Decision 2001/118/CE): 16 01 13* (brake fluids). This EWC code is only a general indication, and takes into account the original composition of the product and its intended use. The user has the responsibility of choosing the right EWC code, considering the actual use of the product, alterations and contaminations.

Additional information : Empty containers may contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been cleaned, and declared safe.

Ecology - waste materials : The product as it is does not contain halogenated substances.
EURAL code (EWC) : 16 01 13* - brake fluids

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated

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None.

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

IBC code : Not applicable.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

Reference code	Applicable on	Entry title or description
3(b)	2,2'-oxybisethanol ; 2-[2-(2-butoxyethoxy)ethoxy]ethanol	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10

No ingredients are included in the REACH Candidate list (> 0,1 % m/m).

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Other information, restriction and prohibition regulations

: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). (et sequens). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens). Directives 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE, 90/679/CEE, 93/88/CEE, 95/63/CE, 97/42/CE, 98/24/CE, 99/38/CE, 99/92/CE, 2001/45/CE, 2003/10/CE, 2003/18/CE (Health and safety on the workplace). Directive 2012/18/CE (Control of major-accident hazards involving dangerous substances). Directive 2004/42/CE (Limitation of emissions of Volatile Organic Compounds). Directive 98/24/EC (protection of the health and safety of workers from the risks related to chemical agents at work). Directive 92/85/CE (measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding). Substances Depleting the Ozone layer (1005/2009) - Annex I Substances (ODP). Regulation EU (649/2012) - Export and Import of hazardous chemicals (PIC). POP (2019/1021) - Persistent Organic Pollutants.

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15.1.2. National regulations

National adoption of EU Directives concerning health and safety on the workplace.

National adoption of EU Directives concerning control of major-accident hazards involving dangerous substances (2012/18/CE).

Relevant national laws on prevention of water pollution.

Relevant national laws on protection of the health of pregnant workers (National adoption of Dir. 92/85/EEC).

National adoption of Directive 2008/98/CE concerning disposal of used oils.

Germany

Employment restrictions	: Employment prohibitions for the protection of young people at work according to § 22 section 1(6) JArbSchG have to be observed. Employment prohibitions or restrictions on the protection of young people at work according to § 22 JArbSchG in the case of formation of hazardous substances have to be observed.
Water hazard class (WGK) (D)	: WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1)
WGK remark	: Classification is carried out on the basis of the Ordinance on facilities for handling substances that are hazardous to water (Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV)) of 18 April 2017 (BGBl 2017, Teil I, Nr. 22, Seite 905).
Hazardous Incident Ordinance (12. BImSchV)	: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)
National Rules and Recommendations	: TRGS 400: Hazard assessment for activities involving Hazardous Substances TRGS 401: Risks resulting from skin contact - identification, assessment, measures TRGS 402: Identification and Assessment of the Risks from Activities involving Hazardous Substances: Inhalation Exposure TRGS 500: Protective measures TRGS 510: Storage of hazardous substances in non-stationary containers TRGS 520: Construction and operation of collection points and temporary storage for small amounts of hazardous waste TRGS 526: Laboratories TRGS 555: Working instruction and information for workers TRGS 800: Fire protection measures TRGS 900: Occupational Exposure Limits
Storage class (LGK, TRGS 510)	: LGK 10 - Combustible liquids
VbF class (D)	: Not applicable.

Netherlands

Saneringsinspanningen	: C - Minimize discharge
SZW-lijst van kankerverwekkende stoffen	: None of the components are listed
SZW-lijst van mutagene stoffen	: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding	: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid	: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling	: None of the components are listed

15.2. Chemical safety assessment

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

No chemical safety assessment has been carried out

A chemical safety assessment has been carried out for the following components of this mixture:

2,2'-oxybisethanol
2-[2-(2-butoxyethoxy)ethoxy]ethanol
1,1'-iminodipropan-2-ol
2,2'-(ethylenedioxy)diethanol

SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Notes
1.1	Formula	Modified	
1.1	Trade name	Modified	

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1.1	Name	Modified	
1.2	Main use category	Modified	
2.1	Adverse physicochemical, human health and environmental effects	Modified	
2.1	Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]	Removed	
2.2	EUH-statements	Added	
2.3	Other hazards not contributing to the classification	Added	
3	Composition/information on ingredients	Modified	
3.2	Comments	Added	
3.2	Notes	Added	
4.1	First-aid measures after eye contact	Modified	
4.1	First-aid measures after skin contact	Modified	
4.1	First-aid measures after inhalation	Modified	
4.1	First-aid measures after ingestion	Modified	
4.2	Symptoms/effects after skin contact	Modified	
4.2	Symptoms/effects after inhalation	Modified	
4.2	Symptoms/effects after eye contact	Modified	
5.2	Fire hazard	Modified	
5.2	Hazardous decomposition products in case of fire	Added	
5.3	Special protective equipment for firefighters	Modified	
5.3	Firefighting instructions	Modified	
6.1	Protective equipment	Modified	
7.1	Precautions for safe handling	Modified	
7.1	Hygiene measures	Modified	
8.1	Occupational Exposure Limit	Modified	
8.1	DNEL/DMEL and PNEC values	Added	
8.2	Eye protection	Modified	
8.2	Appropriate engineering controls	Modified	
8.2	Hand protection	Modified	
8.2	Respiratory protection	Modified	
9.1	Boiling point	Modified	
9.1	pH	Modified	
9.1	Flash point	Modified	
9.1	Flammability (solid, gas)	Added	

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9.1	Vapour pressure	Modified	
9.1	Freezing point	Modified	
9.1	Viscosity, dynamic	Added	
9.1	Relative vapour density at 20 °C	Added	
9.1	Relative density	Added	
9.1	Melting point	Added	
9.1	Explosive limits (vol %)	Added	
9.1	Decomposition temperature	Added	
9.1	Auto-ignition temperature	Added	
9.1	Odour threshold [ppm]	Added	
9.1	Lower explosive limit (LEL)	Modified	
9.1	Oxidising properties	Modified	
9.1	Explosive properties	Modified	
9.1	Viscosity, kinematic	Modified	
9.1	Density	Modified	
9.2	Additional information	Added	
11.1	ATE (oral)	Added	
11.1	Potential adverse human health effects and symptoms	Modified	
11.1	Reason for no classification	Added	
12.1	Reason for no classification	Added	
12.3	Bioaccumulative potential	Modified	
15.1	Storage class (LGK) (D)	Modified	
15.1	WGK remark	Modified	
15.1	Other information, restrictions and prohibition regulations	Added	
15.1	Employment restrictions	Added	
15.1	Other information, restriction and prohibition regulations	Added	
15.2	Chemical safety assessment	Modified	
16	Indication of changes	Added	

Abbreviations and acronyms:

	Complete text of the H phrases quoted in this Safety Data Sheet. These phrases are reported here for information only, and MAY NOT correspond to the classification of the product.
	N/A = not applicable
	N/D = not available
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
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

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DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Effective concentration for 50 percent of test population (median effective concentration)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Lethal concentration for 50 percent of test population (median lethal concentration)
LD50	Lethal dose for 50 percent of test population (median lethal dose)
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals, Regulation (EC) No 1907/2006
RID	Regulation concerning the International Carriage of Dangerous Goods by Railways
SDS	Safety Data Sheet
STP	Sewage treatment plant
vPvB	Very Persistent and Very Bioaccumulative

- Data sources : This Safety Data Sheet is based on the real characteristics of the components and their combination, taking into account the information provided by the suppliers.
- Training advice : Provide adequate training to professional operators for the use of PPEs, according to the information contained in this Safety Data Sheet.
- Other information : Do not use the product for any purposes that have not been advised by the manufacturer.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
EUH210	Safety data sheet available on request.

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.