Brake Fluid DOT 4

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Date of issue: 01/12/2015 Revision date: 05/10/2018 Supersedes: 01/12/2015 Version: 1.1

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

1.1. Product identifier

Product form : Mixture

Name : Brake Fluid DOT 4

Product code : 535

Article number : 53500

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

1.2.1. Relevant identified uses

Industrial/Professional use spec : Professional use.

Function or use category : Brake fluids

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

BARDAHL NL - OCD NEDERLAND BV
Maxwellstraat 41
3316 GP Dordrecht - Nederland
T 0031 78 651 2322 - F 0031 78 617 4848
rjjonker@bardahl.nl - www.bardahl.nl

1.4. Emergency telephone number

Emergency number : +31 (0) 6 2908 2010
During office hours: 8.30 t/m 17:00 h

Country	Official advisory body	Address	Emergency number	Comment
	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	0870 243 2241	
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA Belfast	0344 892 0111	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]Mixtures/Substances: SDS EU 2015: According to Regulation (EU) 2015/830 (REACH Annex II)

Acute toxicity (oral), Category 4	H302
Serious eye damage/eye irritation, Category 2	H319
Specific target organ toxicity — Repeated exposure, Category 2	H373

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS07 GHS08

Signal word (CLP) : Warning

Hazardous ingredients : 2,2' -oxybisethanol; diethylene glycol

Hazard statements (CLP) : H302 - Harmful if swallowed.
H319 - Causes serious eye irritation.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements (CLP) : P501 - Dispose of contents/container in accordance with local regulations.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P103 - Read label before use.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.
P260 - Do not breathe vapours.

2.3. Other hazards

PBT: not relevant – no registration required

vPvB: not relevant – no registration required

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
2,2' -oxybisethanol; diethylene glycol	(CAS-No.) 111-46-6 (EC-No.) 203-872-2 (EC Index-No.) 603-140-00-6 (REACH-no) 01-2119457857-21	25 - 50	Acute Tox. 4 (Oral), H302 STOT RE 2, H373
2-[2-(2-butoxyethoxy)ethoxy]ethanol; TEGBE; triethylene glycol monobutylether; butoxytriethylene glycol	(CAS-No.) 143-22-6 (EC-No.) 205-592-6 (EC Index-No.) 603-183-00-0 (REACH-no) 01-2119475107-38	25 - 30	Eye Dam. 1, H318
1,1'-iminodipropan-2-ol; di-isopropanolamine	(CAS-No.) 110-97-4 (EC-No.) 203-820-9 (EC Index-No.) 603-083-00-7 (REACH-no) 01-2119475444-34	2.5 - 10	Eye Irrit. 2, H319
Boric acid substance listed as REACH Candidate	(CAS-No.) 10043-35-3 (EC-No.) 233-139-2	2.5 - 5.5	Repr. 1B, H360FD
2-(2-methoxyethoxy)ethanol; diethylene glycol monomethyl ether	(CAS-No.) 111-77-3 (EC-No.) 203-906-6 (EC Index-No.) 603-107-00-6 (REACH-no) 01-2119475100-52	2.5 - 3	Repr. 2, H361d
2-(2-butoxyethoxy)ethanol; diethylene glycol monobutyl ether	(CAS-No.) 112-34-5 (EC-No.) 203-961-6 (EC Index-No.) 603-096-00-8 (REACH-no) 01-2119457857-21	0.1 - 1	Eye Irrit. 2, H319

Specific concentration limits:

Name	Product identifier	Specific concentration limits
2-[2-(2-butoxyethoxy)ethoxy]ethanol; TEGBE; triethylene glycol monobutylether; butoxytriethylene glycol	(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 (C >= 30) Eye Dam. 1, H318

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Take off immediately all contaminated clothing. In any case of doubt or if symptoms can be observed, get medical attention. Never give anything by mouth to an unconscious person. Symptoms may be delayed.

First-aid measures after inhalation : Assure fresh air breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash skin thoroughly with mild soap and water. Remove contaminated clothing immediately.

First-aid measures after eye contact : Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical advice.

First-aid measures after ingestion : Do NOT induce vomiting. Rinse mouth. Drink plenty of water. Obtain emergency medical attention.

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

No additional information available

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

Treat symptomatically. Call a POISON CENTER/doctor.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. Powder. Alcohol resistant foam. Water haze.

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

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Carbon monoxide. Nitrogen oxides.

5.3. Advice for firefighters

Protection during firefighting : Wear suitable protective clothing. Wear a self contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Wear proper protective equipment. See Heading 8.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (for example sand, sawdust, a universal binder, silica gel).

6.4. Reference to other sections

See Headings 7 and 8. See Heading 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : No special measures required. Avoid aerosolbuilding.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in dry, cool, well-ventilated area. Keep container tightly closed. Store at room temperature. No contact with flammable substances.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

2,2' -oxybisethanol; diethylene glycol (111-46-6)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	106 mg/kg bodyweight/day
Long-term - local effects, inhalation	60 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects, dermal	53 mg/kg bodyweight/day
Long-term - local effects, inhalation	12 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	10 mg/l
PNEC aqua (marine water)	1 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

Boric acid (10043-35-3)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	392 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	8.3 mg/m³
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	0.98 mg/kg bodyweight
Long-term - systemic effects,oral	0.98 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	4.15 mg/m³
Long-term - systemic effects, dermal	196 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	2.9 mg/l
PNEC aqua (marine water)	2.9 mg/l
PNEC aqua (intermittent, marine water)	13.7 mg/l
PNEC (Soil)	
PNEC soil	5.7 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	10 mg/l

2-(2-methoxyethoxy)ethanol; diethylene glycol monomethyl ether (111-77-3)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0.53 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	50.1 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects,oral	1.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	25 mg/m³
Long-term - systemic effects, dermal	0.27 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	12 mg/l
PNEC aqua (marine water)	1.2 mg/l
PNEC aqua (intermittent, freshwater)	12 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	44.4 mg/kg dwt
PNEC sediment (marine water)	0.44 mg/kg dwt
PNEC (Soil)	
PNEC soil	2.44 mg/kg dwt
PNEC (Oral)	
PNEC oral (secondary poisoning)	0.09 mg/kg food
PNEC (STP)	
PNEC sewage treatment plant	10000 mg/l

8.2. Exposure controls

Personal protective equipment:

Protective goggles.

Hand protection:
Wear suitable gloves resistant to chemical penetration. Selection of the glove material on consideration of the penetration times, premeatiegraden and degradation. Wear suitable gloves tested to EN374. neoprene/butyl rubber. Penetration time of glove material: ≥ 480 min. Gloves material: Nitrile. Recommended thickness of the material: ≥ 0.45 mm. Refer to manufacturer's information.

Eye protection:
Use eye protection according to EN 166, designed to protect against liquid splashes.

Skin and body protection:
Wear suitable protective clothing. EN ISO 13688

Respiratory protection:
No special protection required where adequate ventilation is maintained.

Personal protective equipment symbol(s):

Other information:

The usual precautionary measures are to be adhered to when handling chemicals. Keep away from food, drink and animal feedingstuffs. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Remove contaminated clothing immediately. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: light yellow. Transparent.
Odour	: characteristic.
Odour threshold	: No data available
pH	: 7.5 - 10
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: < -50 °C
Freezing point	: No data available
Boiling point	: > 205 °C
Flash point	: > 90 °C (CC)
Auto-ignition temperature	: > 300 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.01 - 1.07 g/cm³
Solubility	: Soluble in water.
Log Pow	: No data available
Viscosity, kinematic	: 5 - 10 mm²/s
Viscosity, dynamic	: No data available
Explosive properties	: Product is not explosive.
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

Additional information : Material is hygroscopic

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

No decomposition if used according to specifications.

10.3. Possibility of hazardous reactions

No dangerous reactions known.

10.4. Conditions to avoid

Avoid aerosolbuilding.

10.5. Incompatible materials

Oxidizing agent.

10.6. Hazardous decomposition products

None under normal conditions.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Oral: Harmful if swallowed.

Acute toxicity (dermal) : Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Acute toxicity (inhalation) : Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

ATE CLP (oral)	1000 mg/kg bodyweight

2,2' -oxybisethanol; diethylene glycol (111-46-6)	
LD50 oral rat	> 10000 mg/kg
LD50 dermal rabbit	> 10000 mg/kg
LC50 inhalation rat (mg/l)	> 4.6 mg/l/4h

Boric acid (10043-35-3)	
LD50 oral rat	2660 mg/kg (OECD 401; EU Method B.1)
LD50 dermal rabbit	> 2000 (FIFRA (40 CFR 163))

2-(2-methoxyethoxy)ethanol; diethylene glycol monomethyl ether (111-77-3)	
LD50 oral rat	> 5000 mg/kg (OECD 401)
LD50 dermal rabbit	> 6500 mg/kg (OECD 402)
LC50 inhalation rat (mg/l)	1.2 mg/l/4h (OECDD 403)

2-(2-butoxyethoxy)ethanol; diethylene glycol monobutyl ether (112-34-5)	
LD50 oral rat	5660 mg/kg
LD50 dermal rabbit	4000 mg/kg
LC50 inhalation rat (mg/l)	> 29 mg/l/4h

Skin corrosion/irritation : Based on available data, the classification criteria are not met
pH: 7.5 - 10

Serious eye damage/irritation : Causes serious eye damage.
pH: 7.5 - 10

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

2,2' -oxybisethanol; diethylene glycol (111-46-6)	
NOAEL (chronic, oral, animal/male, 2 years)	100 mg/kg bodyweight (Rat)

Reproductive toxicity : Based on available data, the classification criteria are not met

STOT-single exposure : Based on available data, the classification criteria are not met

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

2-(2-methoxyethoxy)ethanol; diethylene glycol monomethyl ether (111-77-3)	
NOAEL (oral, rat, 90 days)	900 mg/kg bodyweight/day
NOAEL (dermal, rat/rabbit, 90 days)	40 mg/kg bodyweight/day

Aspiration hazard : Based on available data, the classification criteria are not met

Brake Fluid DOT 4	
Viscosity, kinematic	5 - 10 mm²/s

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Chronic aquatic toxicity : Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Brake Fluid DOT 4	
LC50 other aquatic organisms 1	> 250 - 350 mg/l (Leuciscus Idus) (DIN 38412 T.15; analogy) 96h
EC50 other aquatic organisms 1	> 5000 mg/l (Bacteriën) (OECD 2091; analogy)

2,2' -oxybisethanol; diethylene glycol (111-46-6)	
LC50 fish 1	75200 mg/l (Pimephales promelas)
EC50 Daphnia 1	> 10000 mg/l (DIN 38412/11) 24h

2-(2-methoxyethoxy)ethanol; diethylene glycol monomethyl ether (111-77-3)	
LC50 fish 1	5741 mg/l (Pimephales promelas) (US-EPA)
EC50 Daphnia 1	1192 mg/l (EPA-660/3-75-009 (1975))
EC50 other aquatic organisms 1	> 1000 mg/l (OECD 209)
EC50 other aquatic organisms 2	> 1000 mg/l (Selenastrum Capricornutum) (OECD 201)

2-(2-butoxyethoxy)ethanol; diethylene glycol monobutyl ether (112-34-5)	
LC50 other aquatic organisms 1	1300 mg/l
EC50 Daphnia 1	100 mg/l (EU Method C.2)
EC50 96h algae (1)	>= 100 mg/l

12.2. Persistence and degradability

Brake Fluid DOT 4	
Persistence and degradability	Readily biodegradable.
Biodegradation	97 % (static; analogy)

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

Brake Fluid DOT 4	
Ecology - soil	Prevent entry to sewers and public waters.

12.5. Results of PBT and vPvB assessment

Brake Fluid DOT 4
PBT: not relevant – no registration required
vPvB: not relevant – no registration required

Component	
Boric acid (10043-35-3)	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

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Overland transport

No data available

Transport by sea

No data available

Air transport

No data available

Inland waterway transport

No data available

Rail transport

No data available

14.7. Transport in bulk according to Annex II of Marpol and the 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:	
29. Substances which are classified as germ cell mutagen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 3 or Appendix 4, respectively.	Brake Fluid DOT 4
30. Substances which are classified as reproductive toxicant category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 5 or Appendix 6, respectively.	Brake Fluid DOT 4
55. 2-(2-butoxyethoxy)ethanol (DEGBE)	2-(2-butoxyethoxy)ethanol; diethylene glycol monobutyl ether
3. Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008	2-[2-(2-butoxyethoxy)ethoxy]ethanol; TEGBE; triethylene glycol monobutylether; butoxytriethylene glycol
3(b) 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	2-[2-(2-butoxyethoxy)ethoxy]ethanol; TEGBE; triethylene glycol monobutylether; butoxytriethylene glycol
28. Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.	Brake Fluid DOT 4

Contains a substance on the REACH candidate list in concentration ≥ 0.1% or with a lower specific limit: Boric acid (EC 233-139-2, CAS 10043-35-3)

Contains no REACH Annex XIV substances

Directive 2012/18/EU (SEVESO III)

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No

SECTION 16: Other information

Abbreviations and acronyms:	
	Abbreviations and acronyms: RID: Regulations Concerning the International Transport of Dangerous Goods by Rail ICAO: International Civil Aviation Organization ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road IMDG: International Maritime Code for Dangerous Goods IATA: International Air Transport Association GHS: Globally Harmonized System of Classification and labelling of Chemicals EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) VOC: Volatile Organic Compounds (USA, EU) LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

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
Repr. 1B	Reproductive toxicity, Category 1B
Repr. 2	Reproductive toxicity, Category 2
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360FD	May damage fertility. May damage the unborn child.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

SDS EU (REACH Annex II)

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