



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

1.1. Product identifier

DOT 4 1987479106-KDE;1987479107-KDE;1987479108-KDE;1987479109-KDE;1987479111-KDE

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

Use of the substance/mixture

Brake fluid

1.3. Details of the supplier of the safety data sheet

Company name: Robert Bosch GmbH
Street: Auf der Breit 4
Place: D-76227 Karlsruhe
Telephone: +49 721-942-0

Responsible Department: Service Deutschland: 0 900 1 942 010-5
Responsible for the safety data sheet: sds@gbk-ingelheim.de

1.4. Emergency telephone number: INTERNATIONAL: +49 - (0) 6132 - 84463, GBK GmbH (24h - 7d/w - 365d/a)
In England and Wales: NHS 111 In Scotland: NHS 24 - dial 111

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Hazard categories:

Reproductive toxicity: Repr. 2

Hazard Statements:

Suspected of damaging the unborn child.

2.2. Label elements

Regulation (EC) No. 1272/2008

Hazard components for labelling

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

Signal word: Warning

Pictograms:



Hazard statements

H361d Suspected of damaging the unborn child.

Precautionary statements

P201 Obtain special instructions before use.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

2.3. Other hazards

According to Regulation (EC) No 1907/2006 (REACH) none of the substances, contained in this product are a PBT / vPvB substance.

High risk of slipping due to leakage/spillage of product.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical characterization

Mixture of the following substances with non-hazardous admixtures



**Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
30989-05-0	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate			10 - < 15 %
	250-418-4		01-2119462824-33	
	Repr. 2; H361d			
	Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol			0 - < 12 %
	907-996-4		01-2119531322-53	
	Eye Dam. 1; H318 EUH066			
71035-05-7	Ester of boric acid			5 - < 7 %
	Acute Tox. 4; H302			
112-27-6	2,2'-(ethylenedioxy)diethanol			2 - < 4 %
	203-953-2		01-2119438366-35	
112-34-5	2-(2-Butoxyethoxy)ethanol			1 - < 3 %
	203-961-6	603-096-00-8	01-2119475104-44	
	Eye Irrit. 2; H319			
111-46-6	2,2' -Oxybisethanol			1 - < 2 %
	203-872-2	603-140-00-6	01-2119457857-21	
	Acute Tox. 4, STOT RE 2; H302 H373			
111-77-3	2-(2-Methoxyethoxy)ethanol			0 - < 1 %
	203-906-6	603-107-00-6	01-2119475100-52	
	Repr. 2; H361d			
128-37-0	2,6-bis(1,1-dimethylethyl)-4-methylphenol			0 - < 0,2 %
	204-881-4		01-2119480433-40	
	Aquatic Chronic 1; H410			

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

Further Information

Specific concentration limits

2-Butoxyethanol (by products from manufacture of)

2-[2-(2-Butoxyethoxy) ethoxy] ethanol

H318; C \geq 30%

H319; 20% \leq C < 30 %

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

Remove contaminated soaked clothing immediately.

In the event of persistent symptoms receive medical treatment.

After inhalation

Move to fresh air in case of accidental inhalation of vapours or decomposition products.

Call a physician immediately.

If patient is not breathing, apply artificial respiration.

After contact with skin

In case of contact with skin wash off with soap and water .

Consult a doctor if skin irritation persists.

After contact with eyes

Remove contact lens.





Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Seek medical treatment by eye specialist.

After ingestion

Do not induce vomiting.
Call a physician immediately.
Rinse out mouth and give plenty of water to drink.
Never give anything by mouth to an unconscious person.
Induce vomiting only upon the advice of a physician.

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

Suspected of damaging the unborn child.
Contact with eyes, skin or oral tissues may cause irritation.
Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

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

Treat symptoms.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Alcohol-resistant foam, dry chemical, carbon dioxide (CO₂), water-spray.

Unsuitable extinguishing media

Full water jet.

5.2. Special hazards arising from the substance or mixture

Fire may produce:
carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x)

5.3. Advice for firefighters

In case of fire, wear suitable respiratory equipment with positive air supply.
Protective suit.

Additional information

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing.
Ensure adequate ventilation.
Attention. Hazard of skidding.

6.2. Environmental precautions

Do not discharge into the drains/surface waters/ground water.
Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up

Take up with absorbent material (e.g. sand, kieselguhr, acid binder, general-purpose binder, sawdust).
Shovel into suitable container for disposal.

6.4. Reference to other sections

Observe protective instructions (see Sections 7 and 8).
Information for disposal see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Ensure adequate ventilation.
Avoid contact with skin, eyes and clothing.
When using do not eat, drink or smoke.

Advice on protection against fire and explosion

No special protective measures against fire required.

7.2. Conditions for safe storage, including any incompatibilities



**Requirements for storage rooms and vessels**

To be kept tightly closed, in a cool and dry place.

Hints on joint storage

Incompatible with:

Strong oxidizing agents, reducing agents.

Acids and bases.

Further information on storage conditions

Keep away from food, drink and animal feeding stuffs.

7.3. Specific end use(s)

Brake fluid

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Exposure limits (EH40)**

CAS No	Substance	ppm	mg/m ³	fibres/ml	Category	Origin
111-46-6	2,2'-Oxydiethanol	23	101		TWA (8 h)	WEL
128-37-0	2,6-Di-tert-butyl-p-cresol	-	10		TWA (8 h)	WEL
112-34-5	2-(2-Butoxyethoxy)ethanol	10	67.5		TWA (8 h)	WEL
		15	101.2		STEL (15 min)	WEL
111-77-3	2-(2-Methoxyethoxy)ethanol	10	50.1		TWA (8 h)	WEL

8.2. Exposure controls**Protective and hygiene measures**

Use barrier skin cream.

Remove and wash contaminated clothing before re-use.

Wash hands before breaks and at the end of workday .

Avoid contact with skin, eyes and clothing.

When using do not eat, drink or smoke.

Eye/face protection

Safety goggles (EN 166).

Hand protection

Short time contact: Solvent-resistant gloves (nitrile rubber). (EN 374)

Glove material must be impermeable and resistant against product / substance / preparation. Gloves material should comply with breakthrough times, permeation rates, and degradation.

Requirements can vary as a function of the use. Therefore it is necessary to adhere additionally to the recommendations given by the manufacturer of protective gloves.

Respiratory protection

No personal respiratory protective equipment normally required.

In case of insufficient ventilation wear suitable respiratory equipment (gas filter type A) (EN 14387).

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state: Liquid
 Colour: Amber
 Odour: Characteristic

pH-Value (at 20 °C): 7 - 11

Changes in the physical state

Melting point: n.d.





DOT 4 1987479106-KDE;1987479107-KDE;1987479108-KDE;1987479109-KDE;1987479111-KDE
00377-0079

Initial boiling point and boiling range: 245 °C

Sublimation point: n.a.

Softening point: n.d.

Flash point: 125 °C

Flammability

Solid: n.a.

Gas: n.a.

Explosive properties

The product is not explosive.

Lower explosion limits: n.d.

Upper explosion limits: n.d.

Ignition temperature: 350 °C

Auto-ignition temperature

Solid: n.a.

Gas: n.a.

Decomposition temperature: n.d.

Oxidizing properties

Not oxidising.

Vapour pressure: (at 20 °C) n.d.

Density (at 20 °C): 1,02 - 1,07 g/cm³

Bulk density: n.a.

Water solubility: Completely miscible

Solubility in other solvents

n.d.

Partition coefficient: n.d.

Viscosity / dynamic: n.d.

Viscosity / kinematic: n.d.

Flow time: n.d.

Vapour density: n.d.

Evaporation rate: n.d.

Solvent separation test: n.d.

Solvent content: n.d.

9.2. Other information

No data available

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

No decomposition if used as directed.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reactions with acids, alkalies and oxidizing agents

Reactions with reducing agents.

10.4. Conditions to avoid

To avoid thermal decomposition, do not overheat.

The product is hygroscopic.

10.5. Incompatible materials

Strong oxidizing agents, reducing agents.

Acids and bases.

10.6. Hazardous decomposition products

Carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x)

SECTION 11: Toxicological information



11.1. Information on toxicological effects

Acute toxicity

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

No toxicological data available.

2,6-bis(1,1-dimethylethyl)-4-methylphenol

LD50/oral > 2930 mg/kg

LD50/dermal > 2000 mg/kg

2,2'-(ethylenedioxy)diethanol

LD50/oral > 2000 mg/kg

LD50/dermal > 16 ml/kg

LC50/inhalation: > 5,2 mg/l

1,1'-iminodipropan-2-ol, di-isopropanolamine

LD50/oral = 6720 mg/kg

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol

LD50/oral = 2630 mg/kg

LD50/dermal = 3540 mg/kg

2,2' -Oxybisethanol

LD50/oral/rat: 12565 mg/kg

LD50/dermal/rabbit: 11890 mg/kg

2-(2-Methoxyethoxy)ethanol

LD50/oral/rat: = 5500 mg/kg

2-(2-Butoxyethoxy)ethanol

LD50/oral/rat: 3384 mg/kg

LD50/dermal/rabbit: 2700 mg/kg

Irritation and corrosivity

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

Sensitising effects

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

Carcinogenic/mutagenic/toxic effects for reproduction

Suspected of damaging the unborn child. (Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl] orthoborate; 2-(2-Methoxyethoxy)ethanol)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: 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

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

Aspiration hazard

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

Additional information on tests

Classification in compliance with the assessment procedure specified in the Regulation (EC) no 1272/2008.

Practical experience

Other observations

Contact with eyes, skin or oral tissues may cause irritation.

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known.

SECTION 12: Ecological information

12.1. Toxicity

Ecological data are not available.

2,6-bis(1,1-dimethylethyl)-4-methylphenol

EC50/Daphnia/48 h > 0,61 mg/l

NOEC/Daphnia = 0,316 mg/l

2,2'-(ethylenedioxy)diethanol

EC50/Daphnia/48 h > 10000 mg/l





DOT 4 1987479106-KDE;1987479107-KDE;1987479108-KDE;1987479109-KDE;1987479111-KDE
00377-0079

1,1'-iminodipropan-2-ol, di-isopropanolamine

LC50/Fish/96 h > 222,2 mg/l

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol

LC50/Fish/96 h > 1800 mg/l

EC50/Daphnia/48 h > 3200 mg/l

EC50/Algae/72 h = 391 mg/l

EC10/Algae/72 h = 188 mg/l

2,2' -Oxybisethanol

LC50/Fish/96 h > 75 mg/l

12.2. Persistence and degradability

2,6-bis(1,1-dimethylethyl)-4-methylphenol; 2,2'-(ethylenedioxy)diethanol; 1,1'-iminodipropan-2-ol, di-isopropanolamine;
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol; 2-(2-Butoxyethoxy)ethanol;
2-(2-Methoxyethoxy)ethanol
Readily biodegradable.

12.3. Bioaccumulative potential

2,2'-(ethylenedioxy)diethanol; Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and
3,6,9,12-tetraoxahexadecan-1-ol; 2-(2-Butoxyethoxy)ethanol; 2-(2-Methoxyethoxy)ethanol
Low bio-accumulation can be estimated because of low log Po/w.

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

According to Regulation (EC) No 1907/2006 (REACH) none of the substances, contained in this product are a PBT / vPvB substance.

12.6. Other adverse effects

Low hazard to waters.

Further information

Do not flush into surface water or sanitary sewer system.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Advice on disposal

Can be incinerated, when in compliance with local regulations.

Waste disposal number of waste from residues/unused products

160113 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08); brake fluids; hazardous waste

Contaminated packaging

Empty containers should be taken for local recycling, recovery or waste disposal.

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

Packaging that cannot be cleaned should be disposed of like the product.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number:

No dangerous good in sense of this transport regulation.

14.2. UN proper shipping name:

No dangerous good in sense of this transport regulation.

14.3. Transport hazard class(es):

No dangerous good in sense of this transport regulation.

14.4. Packing group:

No dangerous good in sense of this transport regulation.

Inland waterways transport (ADN)

14.1. UN number:

No dangerous good in sense of this transport regulation.

14.2. UN proper shipping name:

No dangerous good in sense of this transport regulation.

14.3. Transport hazard class(es):

No dangerous good in sense of this transport regulation.

14.4. Packing group:

No dangerous good in sense of this transport regulation.



**Marine transport (IMDG)**

14.1. UN number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number:	No dangerous good in sense of this transport regulation.
14.2. UN proper shipping name:	No dangerous good in sense of this transport regulation.
14.3. Transport hazard class(es):	No dangerous good in sense of this transport regulation.
14.4. Packing group:	No dangerous good in sense of this transport regulation.

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

14.6. Special precautions for user

No dangerous good in sense of this transport regulation.

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

No dangerous good in sense of this transport regulation.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Restrictions on use (REACH, annex XVII):

Entry 54: 2-(2-Methoxyethoxy)ethanol

Entry 55: 2-(2-Butoxyethoxy)ethanol

2004/42/EC (VOC): 0 %

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

National regulatory information**15.2. Chemical safety assessment**

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information**Abbreviations and acronyms**

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route

RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses

ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure

IMDG = International Maritime Code for Dangerous Goods

IATA/ICAO = International Air Transport Association / International Civil Aviation Organization

MARPOL = International Convention for the Prevention of Pollution from Ships

IBC-Code = International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

REACH = Registration, Evaluation, Authorization and Restriction of Chemicals

CAS = Chemical Abstract Service

EN = European norm

ISO = International Organization for Standardization

DIN = Deutsche Industrie Norm

PBT = Persistent Bioaccumulative and Toxic

LD = Lethal dose

LC = Lethal concentration

EC = Effect concentration

IC = Median immobilisation concentration or median inhibitory concentration





DOT 4 1987479106-KDE;1987479107-KDE;1987479108-KDE;1987479109-KDE;1987479111-KDE
00377-0079

Relevant H and EUH statements (number and full text)

H302	Harmful if swallowed.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.

Further Information

Data of items 4 to 8, as well as 10 to 12, do partly not refer to the use and the regular employing of the product (in this sense consult information on use and on product), but to liberation of major amounts in case of accidents and irregularities.

The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge.

The delivery specifications are contained in the corresponding product sheet.

This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations.

(n.a. = not applicable; n.d. = not determined)

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)

