

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

1.1 Product identifier

febi 21754 brake fluid DOT 4
Article number: 26746, 26461, 21754

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

1.2.1 Relevant uses

brake fluid

1.2.2 Uses advised against

None known.

1.3 Details of the supplier of the safety data sheet

Company Ferdinand Bilstein GmbH + Co. KG
Wilhelmstr. 47
58256 Ennepetal / GERMANY
Phone +49 2333 911-0
Fax +49 2333 911-444
Homepage www.febi.com
E-mail info@febi.com

Address enquiries to

Technical information info@febi.com

Safety Data Sheet info@febi.com

1.4 Emergency telephone number

Advisory body +49 (0)89-19240 (24h) (English)

Company +49 2333 911-0

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Repr. 2: H361d Suspected of damaging the unborn child.

2.2 Label elements

The product is classified as hazardous in accordance to OSHA Standard 29 CFR 1910.1200 (HCS 2012)

Hazard pictograms



Signal word WARNING

Contains: Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0

Hazard statements H361d Suspected of damaging the unborn child.

Precautionary statements

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container to in accordance with local/regional/national/international regulation.

Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 2 / 14

2.3 Other hazards

Physico-chemical hazards	No particular hazards known.
Human health dangers	If swallowed or in the event of vomiting, risk of product entering the lungs. Frequent persistent contact with the skin can cause skin irritation.
Environmental hazards	Does not contain any PBT or vPvB substances.
Other hazards	none

This product is classified as hazardous in accordance to OSHA Standard 29 CFR 1910.1200.

SECTION 3: Composition / Information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

The product is a mixture.

Range [%]	Substance
30 - < 50	Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate CAS: 30989-05-0
10 - < 14	Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
1 - < 10	Diethylen glycol CAS: 111-46-6
1 - < 3	Diisopropanolamine CAS: 110-97-4

Comment on component parts Substances of Very High Concern - SVHC: substances are not contained or are below 0,1%.
For full text of H-statements and R-phrases: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information	Take off contaminated clothing and wash before reuse.
Inhalation	Ensure supply of fresh air. In the event of symptoms seek medical treatment.
Skin contact	When in contact with the skin, clean with soap and water. Consult a doctor if skin irritation persists.
Eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Consult a doctor immediately. Do not induce vomiting. Rinse out mouth and give plenty of water to drink.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
Forward this sheet to the doctor.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	foam, dry powder, water spray jet, carbon dioxide
Extinguishing media that must not be used	Full water jet

Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 3 / 14

5.2 Special hazards arising from the substance or mixture

Not combusted hydrocarbons.
Risk of formation of toxic pyrolysis products.
Carbon monoxide (CO)
Nitrogen oxides (NO_x).

5.3 Advice for firefighters

Use self-contained breathing apparatus.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.
Collect contaminated firefighting water separately, must not be discharged into the drains.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation.
High risk of slipping due to leakage/spillage of product.
Forms slippery surfaces with water.

6.2 Environmental precautions

Prevent spread over a wide area (e.g. by containment or oil barriers).
Do not discharge into the drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up

Take up with absorbent material (e.g. general-purpose binder).
Dispose of absorbed material in accordance with the regulations.

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Use only in well-ventilated areas.
The product is combustible.
Do not eat, drink or smoke when using this product.
Use barrier skin cream.
Wash hands before breaks and after work.
Contaminated work clothing should not be allowed out of the workplace.
Take off contaminated clothing and wash before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in original container.
Prevent penetration into the ground.
Do not store together with oxidizing agents.
Keep container tightly closed.
Keep container in a well-ventilated place.
Protect from heat/overheating.
Keep in a cool place. Store in a dry place.
The product is hygroscopic.

7.3 Specific end use(s)

See product use, SECTION 1.2



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 4 / 14

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with occupational exposure limits to be monitored (US)

not applicable

DNEL

Substance
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
Industrial, inhalative, Long-term - systemic effects, 29,1 mg/m ³
Industrial, dermal, Long-term - systemic effects, 8,3 mg/kg bw/day
general population, oral, Long-term - systemic effects, 4,1 mg/kg bw/day
general population, inhalative, Long-term - systemic effects, 7,2 mg/m ³
general population, dermal, Long-term - systemic effects, 4,1 mg/kg bw/day
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
Industrial, dermal, Long-term - systemic effects, 208 mg/kg bw/day
Industrial, inhalative, Long-term - systemic effects, 195 mg/m ³
general population, oral, Long-term - systemic effects, 12,5 mg/kg bw/day
general population, inhalative, Long-term - systemic effects, 117 mg/m ³
general population, dermal, Long-term - systemic effects, 125 mg/kg bw/day
Diethylen glycol, CAS: 111-46-6
Industrial, inhalative, Long-term - systemic effects, 44 mg/m ³
Industrial, inhalative, Long-term - local effects, 60 mg/m ³ (AF= 2)
Industrial, dermal, Long-term - systemic effects, 43 mg/kg bw/d (AF= 105)
general population, inhalative, Long-term - local effects, 12 mg/m ³ (AF0 10)
general population, dermal, Long-term - systemic effects, 21 mg/kg bw/d (AF= 210)
general population, inhalative, Long-term - systemic effects, 12 mg/m ³

PNEC

Substance
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
seawater, 21,12 µg/L
freshwater, 211,2 µg/L
sewage treatment plants (STP), 100 mg/L
sediment (freshwater), 760 µg/kg sediment dw
sediment (seawater), 76 µg/kg sediment dw
soil, 28,3 µg/kg soil dw
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
freshwater, 2 mg/L
oral (food), 111 mg/kg food
soil, 460 µg/kg soil dw
sediment (seawater), 660 µg/kg sediment dw
sediment (freshwater), 6,6 mg/kg sediment dw
sewage treatment plants (STP), 500 µg/L
seawater, 200 µg/L
Diethylen glycol, CAS: 111-46-6
freshwater, 10 mg/L (AF= 10)
seawater, 1 mg/L (AF= 100)



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 5 / 14

sediment (freshwater), 20.9 mg/kg dw
sewage treatment plants (STP), 199.5 mg/L (AF= 10)
sediment (seawater), 2.09 mg/kg dw
soil, 1.53 mg/kg dw

8.2 Exposure controls

Additional advice on system design	Ensure adequate ventilation on workstation. Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.
Eye protection	safety glasses
Hand protection	The details concerned are recommendations. Please contact the glove supplier for further information. > 0,4 mm; Nitrile rubber, >480 min (EN 374-1/-2/-3).
Skin protection	Oil-resistant protective clothing. Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier. Avoid contact with eyes and skin. Do not inhale vapors.
Respiratory protection	In the event of occupational exposure limits being exceeded or of inadequate ventilation: wear appropriate respiratory protection. Short term: filter apparatus, filter A. (DIN EN 14387)
Thermal hazards	none
Delimitation and monitoring of the environmental exposition	Comply with applicable environmental regulations limiting discharge to air, water and soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	yellow
Odor	characteristic
Odor threshold	not applicable
pH-value	ca 8.5 (20° C) (FMVSS 116)
pH-value [1%]	No information available.
Boiling point [°C]	> 260 (FMVSS 116)
Flash point [°C]	> 139 (DIN ISO 2719)
Flammability [°C]	> 200 (DIN 51794)
Lower explosion limit	1,5 Vol%
Upper explosion limit	No information available.
Oxidizing properties	no
Vapor pressure/gas pressure [kPa]	< 0,1 kPa (20° C)
Density [g/cm ³]	ca. 1,06 (DIN 51 757) (20 °C / 68,0 °F)
Relative density	not determined
Bulk density [kg/m ³]	not applicable
Solubility in water	miscible
Solubility other solvents	No information available.
Partition coefficient [n-octanol/water]	No information available.
Kinematic viscosity	ca. 15 - 17 mm ² /s (20° C) (FMVSS 116)
Relative vapour density	No information available.
Evaporation speed	No information available.
Melting point [°C]	No information available.
Auto-ignition temperature	No information available.
Decomposition temperature [°C]	ca. 360
Particle characteristics	No information available.

9.2 Other information

No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reactions known if used as directed.
The product is hygroscopic.

10.2 Chemical stability

Stable under normal ambient conditions (ambient temperature).
Decomposes begins at ca. 360 °C.

10.3 Possibility of hazardous reactions

Reactions with oxidizing agents.

10.4 Conditions to avoid

See SECTION 7.2.



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 7 / 14

10.5 Incompatible materials

Sensitive to moisture

10.6 Hazardous decomposition products

No hazardous decomposition products known.



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 8 / 14

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

Product
ATE-mix, oral, > 2000 mg/kg
Substance
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LD50, oral, Rat, >2000 mg/kg bw
NOAEL, oral, Rat, >1000 mg/kg bw/day
Diisopropanolamine, CAS: 110-97-4
LD50, oral, Rat, 6720 mg/kg bw
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
LD50, oral, Rat, >2000 mg/kg bw
Diethylen glycol, CAS: 111-46-6
Oral lethal dose for humans: 0,014 mg/kg (ECHA)
LD50, oral, Rat, > 16500 mg/kg
ATE, oral, 500 mg/kg (Cat. 4), for ATEmix calculation

Acute dermal toxicity

Substance
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LD50, dermal, Rat, >2000 mg/kg bw
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
LD50, dermal, Rabbit, 3540 mg/kg bw
Diethylen glycol, CAS: 111-46-6
LD50, dermal, Rabbit, 13300 mg/kg

Acute inhalational toxicity

Substance
Diethylen glycol, CAS: 111-46-6
LC50, inhalative, Rat, > 4,6 mg/l/4h

Serious eye damage/irritation

Toxicological data of complete product are not available.
 Slight irritant effect - does not require labelling.
 No classification due to substance-specific concentration limits.
 No classification.
 Calculation method

Substance
Diethylen glycol, CAS: 111-46-6
Rabbit, in vivo, non-irritating

Skin corrosion/irritation

Based on the information available, the classification criteria have not been fulfilled.

Substance
Diethylen glycol, CAS: 111-46-6
-, OECD 439, non-irritating

Respiratory or skin sensitisation

Based on the information available, the classification criteria have not been fulfilled.



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 9 / 14

Substance
Diethylen glycol, CAS: 111-46-6
Guinea pig, EU Method B.6; in vivo (non-LLNA), non-sensitizing

Specific target organ toxicity — single exposure Based on the information available, the classification criteria have not been fulfilled.

Specific target organ toxicity — repeated exposure Based on the information available, the classification criteria have not been fulfilled.

Mutagenicity Based on the information available, the classification criteria have not been fulfilled.

Substance
Diethylen glycol, CAS: 111-46-6
no adverse effect observed

Reproduction toxicity Suspected of damaging the unborn child.
Calculation method

Substance
Diethylen glycol, CAS: 111-46-6
NOAEL, oral, mouse, 3060 mg/kg bw/d (Effect on fertility), no adverse effect observed

Carcinogenicity Based on the information available, the classification criteria have not been fulfilled.

Aspiration hazard Based on the information available, the classification criteria have not been fulfilled.

General remarks
 Toxicological data of complete product are not available.
 The toxicity data listed pertaining to the ingredients are intended for those working in the medicinal professions, experts for occupational health and safety and toxicologists.

SECTION 12: Ecological information

12.1 Toxicity

Substance
Tris[2-(2-(2-methoxyethoxy)ethoxy)ethyl]orthoborate, CAS: 30989-05-0
LC50, (96h), fish, 222,2 mg/L
EC50, (48h), Crustacea, 211,2 mg/L
EC50, (72h), Algae, 224,4 mg/L
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
LC50, (96h), fish, >1,5 g/L
EC50, (48h), Crustacea, >3 g/L
NOEC, (72h), Algae, >2,5 g/L
Diethylen glycol, CAS: 111-46-6
LC50, (96h), Pimephales promelas, 752 mg/l
EC50, (24h), Daphnia magna, > 100 mg/l
EC10, (0,5h), Activated sewage sludge, > 1995 mg/l
EC5, (8d), Scenedesmus quadricauda (alga), 2700 mg/l

12.2 Persistence and degradability

Behaviour in environment compartments No information available.

Behaviour in sewage plant No information available.

Biological degradability No information available.

Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 10 / 14

12.3 Bioaccumulative potential

CAS 110-97-4: Log Pow = -0,82

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Based on all available information not to be classified as PBT or vPvB respectively.

12.6 Endocrine disrupting properties

No information available.

12.7 Other adverse effects

Do not discharge product unmonitored into the environment or into the drainage.
The toxicity data pertaining to the ingredients were supplied by the manufacturers of raw materials.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

In according to RoHS!
Coordinate disposal with the disposal contractor/authorities if necessary.

Contaminated packaging

Packaging that cannot be cleaned should be disposed of as for product.
Uncontaminated packaging may be taken for recycling.

RCRA Hazard Class (40CFR 261)

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities.

SECTION 14: Transport

14.1 UN number

Transport by land according to ADR/RID not applicable

Inland navigation (ADN) not applicable

Marine transport in accordance with IMDG not applicable

Air transport in accordance with IATA not applicable

DOT Road Shipment Information (49 CFR) not applicable



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 11 / 14

14.2 UN proper shipping name

- Transport by land according to ADR/RID NO DANGEROUS GOODS
- Inland navigation (ADN) NO DANGEROUS GOODS
- Marine transport in accordance with IMDG NOT CLASSIFIED AS "DANGEROUS GOODS"
- Air transport in accordance with IATA NOT CLASSIFIED AS "DANGEROUS GOODS"
- DOT Road Shipment Information (49 CFR) not applicable

14.3 Transport hazard class(es)

- Transport by land according to ADR/RID not applicable
- Inland navigation (ADN) not applicable
- Marine transport in accordance with IMDG not applicable
- Air transport in accordance with IATA not applicable
- DOT Road Shipment Information (49 CFR) not applicable

14.4 Packing group

- Transport by land according to ADR/RID not applicable
- Inland navigation (ADN) not applicable
- Marine transport in accordance with IMDG not applicable
- Air transport in accordance with IATA not applicable
- DOT Road Shipment Information (49 CFR) not applicable

Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 12 / 14

14.5 Environmental hazards

Transport by land according to ADR/RID no

Inland navigation (ADN) no

Marine transport in accordance with IMDG no

Air transport in accordance with IATA no

DOT Road Shipment Information (49 CFR) no

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

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

US Regulations

National regulations 29 CFR 1910.1200-HCS 2012, OSHA-PEL, ACGIH-TLV, NTP, IARC, SARA Title III, NFPA, TSCA, California - Prop. 65

- SARA, 302 This product does not contain any ingredients regulated under this list.

- SARA, 311 Diethylene glycol(CAS 111-46-6); Diisopropanolamine(CAS 110-97-4)

- SARA, 313 Diethylene glycol(CAS 111-46-6); Diisopropanolamine(CAS 110-97-4)

- CA Proposition 65 No components require labeling under California Proposition 65.

No chemical substances in this material are named on the California P65 list.

- TSCA All chemical substances in this material are included on or exempted from listing on the TSCA Inventory.

- FDA

American Conference of Governmental Industrial Hygienists - ACGIH Does not contain any relevant substances fulfilling the classification criteria.

International Agency for Research on Cancer IARC Does not contain any relevant substances fulfilling the classification criteria.

National Toxicology Program - NTP Diethylene glycol; Diisopropanolamine is named in the NTP - National Toxicology Program.

HAP-VOC No information available.

Transport-regulations DOT-Classification, ADR (2021); IMDG-Code (2021, 40. Amdt.); IATA-DGR (2021)

15.2 Chemical safety assessment

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

SECTION 16: Other information

16.1 Abbreviations and acronyms:

ACGIH = American Conference of Governmental Industrial Hygienists;
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;
CAS = Chemical Abstracts Service;
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act;
CFR = Code of Federal Regulations;
CPR = Controlled Products Regulations;
DMEL = Derived Minimum Effect Level;
DNEL = Derived No Effect Level;
DOT = Department of Transportation;
EC50 = Median effective concentration;
EPA = Environmental Protection Agency;
GHS = Globally Harmonized System of Classification and Labelling of Chemicals;
IATA = International Air Transport Association;
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;
IC50 = Inhibition concentration, 50%;
IMDG = International Maritime Code for Dangerous Goods;
IARC = International Agency of Research on Cancer;
IATA = International Air Transport Association;
TSCA = Toxic Substance Control Act;
HMIS = Hazardous Materials Identification System;
NFPA = National Fire Protection Association;
NIOSH = National Institute for Occupational Safety and Health;
OSHA = Occupational Safety and Health Administration;
LC50 = Lethal concentration, 50%;
LD50 = Median lethal dose, 50%;
MARPOL = International Convention for the Prevention of Marine Pollution from Ships;
PBT = Persistent, Bioaccumulative and Toxic substance;
PNEC = Predicted No-Effect Concentration;
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals;
SARA = Superfund Amendments and Reauthorization Act;
TLV@TWA = Threshold limit value – time-weighted average;
TLV@STEL = Threshold limit value – short-time exposure limit;
VOC = Volatile Organic Compounds;
vPvB = very Persistent and very Bioaccumulative;

16.2 Ratings



Ferdinand Bilstein GmbH + Co. KG

Date printed 05.01.2022, Revision 05.01.2022

Version 12. Supersedes version: 11

Page 14 / 14

NFPA Ratings



TOP, FLAMMABILITY: 1 - Slight Hazard
 LEFT, HEALTH: 2 - Moderate Hazard
 RIGHT, REACTIVITY: 1 - Slight Hazard
 BOTTOM, SPECIAL NOTICE: -

HMIS Ratings

HEALTH	2*
FLAMMABILITY	1
PHYSICAL HAZARD	1
PERSONAL PROTECTION	X

2*- Moderate chronic Hazard
 1 - Slight Hazard
 1 - Slight Hazard
 X - Personal protection rating to be supplied by user depending on use conditions

PERSONAL PROTECTION:

- A - Safety Glasses
- B - Safety Glasses and Gloves
- C - Safety Glasses, Gloves and Protection Apron
- D - Face Shield, Gloves and Protection Apron
- E - Safety Glasses, Gloves and Dust Respirator
- F - Safety Glasses, Gloves, Protection Apron and Dust Respirator
- G - Safety Glasses, Gloves and Vapor Respirator.
- H - Splash Goggles, Gloves, Protection Apron and Vapor Respirator.
- I - Safety Glasses, Gloves, Dust Respirator and Vapor Respirator.
- J - Splash Goggles, Gloves, Protection Apron, Dust Respirator and Vapor Respirator.
- K - Airline Mask or Hood, Gloves, Full Suit and Boots.
- X - Personal protection rating to be supplied by user depending on use conditions

Modified position

none