

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 24.03.2015

Version number 3

Revision: 24.03.2015

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

- **1.1 Product identifier**
  - **Trade name:** DOT 4
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

  - **Application of the substance / the mixture** Brake fluid
- **1.3 Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:**

TRW Automotive Aftermarket  
Stratford Road  
Shirley  
West Midlands  
B90 4AX  
United Kingdom  
Tel. +44.121.506.5000  
Fax +44.121.506.5001  
www.trwaftermarket.com  
cst.uk@trw.com
  - **Informing department:** Tel.: +49 (0) 2631 / 912 - 0
- **1.4 Emergency telephone number:**

Poison Information Center Munich  
Phone: +49 (0) 89 - 19 240  
Information in German and English

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
  - **Classification according to Regulation (EC) No 1272/2008**



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Eye Irrit. 2 H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xi; Irritant

R36: Irritating to eyes.

- **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- **Classification system:**

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

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- **Hazard pictograms**



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- **Signal word** Warning

- **Hazard-determining components of labelling:**

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

- **Hazard statements**

H319 Causes serious eye irritation.

- **Precautionary statements**

P102

Keep out of reach of children.

P301+P310

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313

If eye irritation persists: Get medical advice/attention.

- **Information pertaining to particular dangers for man and environment**

There are analysis results available for this product or a product with a comparable composition which show an eye irritation but not an eye corrosion. This product is classified and labelled according to the analysis results.

- **2.3 Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**

- **Description:**

Mixture of the substances listed below including additives not requiring identification. Added are corrosion and oxidation inhibitors.

- **Dangerous components:**

CAS: 143-22-6 EINECS: 205-592-6 Reg.nr.: 01-2119475107-38-X	2-[2-(2-butoxyethoxy)ethoxy]ethanol ☒ Xi R41 ☒ Eye Dam. 1, H318	30-50%
CAS: 111-46-6 EINECS: 203-872-2 Reg.nr.: 01-2119457857-21-X	2,2'-oxybisethanol ☒ Xn R22 ☒ Acute Tox. 4, H302	3-<10%
CAS: 111-77-3 EINECS: 203-906-6 Reg.nr.: 01-2119475100-52-X	2-(2-methoxyethoxy)ethanol ☒ Xn R63 Repr. Cat. 3 ☒ Repr. 2, H361d	1-<2.5%
CAS: 112-34-5 EINECS: 203-961-6 Reg.nr.: 01-2119475104-44-X	2-(2-butoxyethoxy)ethanol ☒ Xi R36 ☒ Eye Irrit. 2, H319	1-<2.5%

- **Additional information** For the wording of the listed risk phrases refer to section 16.

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#### SECTION 4: First aid measures

- **4.1 Description of first aid measures**
  - **General information**  
Personal protection for the First Aider.  
Instantly remove any clothing contaminated by the product.
  - **After inhalation** Supply fresh air; consult doctor in case of symptoms.
  - **After skin contact**  
Wash with water and soap.  
If skin irritation continues, consult a doctor.
  - **After eye contact**  
Keep eye lids open and rinse them with ample amounts of clean running water for at least 15 minutes.  
In case of permanent aches and pains please go and see the doctor.
  - **After swallowing**  
Rinse out mouth and then drink plenty of water.  
Call a doctor immediately.  
Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage).
- **4.2 Most important symptoms and effects, both acute and delayed**  
No further relevant information available.
  - **Danger** Danger of kidney damage.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

#### SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
  - **Suitable extinguishing agents**  
Extinguishing powder, foam or water jet. Fight larger fires with water jet or alcohol-resistant foam.
  - **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
- **5.2 Special hazards arising from the substance or mixture**  
Inhalation of combustion gases may cause serious health hazards.  
Formation of flammable mixtures of vapours with air possible.
- **5.3 Advice for firefighters**
  - **Protective equipment:** Wear self-contained breathing apparatus.
  - **Additional information**  
Remove goods in stock from incendiary zone, if possible.  
Use water to keep fire exposed containers cool.

#### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Avoid contact with the product.  
Ensure adequate ventilation  
Particular danger of slipping on leaked/spilled product.
- **6.2 Environmental precautions:**  
Prevent from spreading (e.g. by damming-in or oil barriers).  
Do not allow to enter drainage system, surface or ground water.  
Inform respective authorities in case product reaches water or sewage system.
- **6.3 Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).  
Dispose of contaminated material as waste according to section 13.

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Complete cleaning with water.

- **6.4 Reference to other sections**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**

Prevent formation of aerosols.

Keep containers tightly sealed.

Don't eat, drink or smoke while working.

Avoid contact with eyes and skin.

- **Information about protection against explosions and fires:**

The product forms flammable fumes when heated.

- **7.2 Conditions for safe storage, including any incompatibilities**

- **Storage**

- **Requirements to be met by storerooms and containers:**

Store only in the original container.

- **Information about storage in one common storage facility:**

Store away from oxidising agents.

- **Further information about storage conditions:**

Keep container tightly sealed.

Store container in a well ventilated position.

Store under dry conditions.

- **7.3 Specific end use(s)** Brake fluid

### SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**

- **Components with limit values that require monitoring at the workplace:**

WEL: workplace exposure limit

IOELV: Indicative Occupational Exposure Limit Values, workplace threshold value of the European Union

111-46-6 2,2'-oxybisethanol	
WEL (Great Britain)	Long-term value: 101 mg/m <sup>3</sup> , 23 ppm

111-77-3 2-(2-methoxyethoxy)ethanol	
WEL (Great Britain)	Long-term value: 50.1 mg/m <sup>3</sup> , 10 ppm
	Sk
IOELV (European Union)	Long-term value: 50.1 mg/m <sup>3</sup> , 10 ppm
	Skin

112-34-5 2-(2-butoxyethoxy)ethanol	
WEL (Great Britain)	Short-term value: 101.2 mg/m <sup>3</sup> , 15 ppm
	Long-term value: 67.5 mg/m <sup>3</sup> , 10 ppm
IOELV (European Union)	Short-term value: 101.2 mg/m <sup>3</sup> , 15 ppm
	Long-term value: 67.5 mg/m <sup>3</sup> , 10 ppm

- **DNELs**

143-22-6 2-[2-(2-butoxyethoxy)ethoxy]ethanol		
Dermal	DNEL (worker, long-term, systemic)	50 mg/kg bw/day (human)
Inhalative	DNEL (worker, long-term, systemic)	195 mg/m <sup>3</sup> (human)

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**111-46-6 2,2'-oxybisethanol**

Dermal	DNEL (worker, long-term, systemic)	106 mg/kg bw/day (human)
Inhalative	DNEL (worker, short-term, local)	60 mg/m <sup>3</sup> (human)

**111-77-3 2-(2-methoxyethoxy)ethanol**

Dermal	DNEL (worker, long-term, systemic)	0.53 mg/kg bw/day (human)
Inhalative	DNEL (worker, long-term, systemic)	50.1 mg/m <sup>3</sup> (human)

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

PNEC STP	500 mg/L (.)
PNEC aqua (freshwater)	1.5 mg/L (.)
PNEC aqua (intermittent releases)	5 mg/L (.)
PNEC aqua (marine water)	0.15 mg/L (.)
PNEC oral	111 mg/kg food (.)
PNEC sediment (freshwater)	5.77 mg/kg sedim. dw (.)
PNEC sediment (marine water)	0.13 mg/kg sedim. dw (.)
PNEC soil	0.45 mg/kg soil dw (.)

**· Additional information:**

The lists that were valid during the compilation were used as basis.

**· 8.2 Exposure controls****· Personal protective equipment****· General protective and hygienic measures**

Take off all contaminated clothing immediately.  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes.

**· Breathing equipment:**

Not necessary if room is well-ventilated.  
Use breathing protection only when aerosol or mist is formed.  
Filter A/P2.

**· Protection of hands:** Use gloves of stable material (i.e. nitril rubber).**· Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Chloroprene rubber, CR

Nitrile rubber, NBR

Recommended thickness of the material: 0.4 mm

**· Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**· Eye protection:** Tightly sealed safety glasses.**SECTION 9: Physical and chemical properties****· 9.1 Information on basic physical and chemical properties****· General Information****· Appearance:****· Form:**

Fluid

**· Colour:**

Colourless

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· <b>Odour:</b>	Recognisable
· <b>Odour threshold:</b>	Not determined.
· <b>pH-value at 20 °C:</b>	7 - 11.5 (SAE J 1703)
· <b>Change in condition</b>	
· <b>Melting point/Melting range:</b>	< -50 °C (SAE J 1703)
· <b>Boiling point/Boiling range:</b>	> 260 °C (SAE J 1703)
· <b>Flash point:</b>	> 100 °C (IP 35)
· <b>Inflammability (solid, gaseous)</b>	Not applicable.
· <b>Ignition temperature:</b>	> 300 °C (ASTM D 286)
· <b>Decomposition temperature:</b>	Not determined.
· <b>Self-inflammability:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Critical values for explosion:</b>	
· <b>Lower:</b>	Not determined.
· <b>Vapour pressure at 20 °C:</b>	< 2 hPa
· <b>Density at 20 °C</b>	1.02- 1.07 g/cm <sup>3</sup> (DIN 51757)
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with</b>	
· <b>Water:</b>	Fully miscible
· <b>Partition coefficient (n-octanol/water):</b>	< 2 log POW
· <b>Viscosity:</b>	
· <b>dynamic at 20 °C:</b>	5 - 10 cSt (ASTM D 445)
· <b>9.2 Other information</b>	No further relevant information available.

### SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
  - **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**  
Possible formation of peroxide  
Reacts with light alloys to form hydrogen
- **10.4 Conditions to avoid**  
Brake fluids should never be contaminated with any other substance.
- **10.5 Incompatible materials:** Avoid contact with strong oxidizing agents.
- **10.6 Hazardous decomposition products:**  
None in case of intended use and storage in compliance with instructions.

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### SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** Irritant effect.
  - **Sensitisation:** No sensitizing effect known.
- **Additional toxicological information:**  
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version: Irritant
  - **Acute effects (acute toxicity, irritation and corrosivity)**  
There are analysis results available for this product or a product with a comparable composition which show an eye irritation but not an eye corrosion. This product is classified and labelled according to the analysis results.
  - **Repeated dose toxicity**  
Repeated oral intake can cause kidney damage.

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

Oral	NOAEL (90d)	250 mg/kg bw/day (rat) (OECD 408)
Dermal	NOAEL (90d)	4000 mg/kg /bw/day (rat)

#### 111-46-6 2,2'-oxybisethanol

Oral	NOAEL (28d)	936 mg/kg bw/day (rat) (OECD 407)
Dermal	NOAEL (28d)	3549 mg/kg bw/day (mouse)

### SECTION 12: Ecological information

- **12.1 Toxicity**
  - **Aquatic toxicity:**

<b>143-22-6 2-[2-(2-butoxyethoxy)ethoxy]ethanol</b>	
EC50 (static)	> 612.6 mg/l/72h (Desmodosmus subspicatus)
	2210 mg/l/48h (Daphnia magna)
LC50	2400 mg/l/96h (Pimephales promelas)
	2200-4600 mg/l/96h (Leuciscus idus) (DIN 38412-15)
<b>111-46-6 2,2'-oxybisethanol</b>	
EC50 (static)	> 10000 mg/l/24h (Daphnia magna) (DIN 38412-11)
LC50 (dynamic)	75200 mg/l/96h (Pimephales promelas)
  - **12.2 Persistence and degradability** Easily biodegradable
  - **Other information:** There are no data available about the preparation.
  - **12.3 Bioaccumulative potential**  
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.
  - **12.4 Mobility in soil** No further relevant information available.
  - **Additional ecological information:**
    - **General notes:**  
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.  
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

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- **12.5 Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
  - **Recommendation**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
The waste code numbers mentioned are recommendations based on the probable use of the product.

- **European waste catalogue**

16 00 00	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 01 00	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)
16 01 13*	brake fluids

- **Uncleaned packagings:**
  - **Recommendation:**  
Disposal must be made according to official regulations.  
Dispose of packaging according to regulations on the disposal of packagings.  
Non contaminated packagings can be used for recycling.  
Cleaned packing materials have to be admitted to local recycling circuits.
  - **Recommended cleaning agent:** Water, if necessary with cleaning agent.

### SECTION 14: Transport information

- |   |                 |
|---|-----------------|
| · <b>14.1 UN-Number</b><br>· <b>ADR, ADN, IMDG, IATA</b>                                    | Void            |
| · <b>14.2 UN proper shipping name</b><br>· <b>ADR, ADN, IMDG, IATA</b>                      | Void            |
| · <b>14.3 Transport hazard class(es)</b><br>· <b>ADR, ADN, IMDG, IATA</b><br>· <b>Class</b> | Void            |
| · <b>14.4 Packing group</b><br>· <b>ADR, IMDG, IATA</b>                                     | Void            |
| · <b>14.5 Environmental hazards:</b><br>· <b>Marine pollutant:</b>                          | No              |
| · <b>14.6 Special precautions for user</b>  | Not applicable. |
| · <b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>       | Not applicable. |
| · <b>UN "Model Regulation":</b>   | -               |

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### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Labelling according to Regulation (EC) No 1272/2008**  
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



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- **Signal word** Warning
- **Hazard-determining components of labelling:**  
2-[2-(2-butoxyethoxy)ethoxy]ethanol
- **Hazard statements**  
H319 Causes serious eye irritation.
- **Precautionary statements**  
P102 Keep out of reach of children.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 If eye irritation persists: Get medical advice/attention.
- **National regulations**
- **Water hazard class:**  
Water hazard class 1 (Self-assessment): slightly hazardous for water.

#### · **Substances of very high concern (SVHC) according to REACH, Article 57**

None of the ingredients is contained.

- **15.2 Chemical safety assessment:**  
A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**  
H302 Harmful if swallowed.  
H318 Causes serious eye damage.  
H319 Causes serious eye irritation.  
H361d Suspected of damaging the unborn child.
- **Risk phrases**  
R22 Harmful if swallowed.  
R36 Irritating to eyes.  
R41 Risk of serious damage to eyes.  
R63 Possible risk of harm to the unborn child.

#### · **Department issuing data specification sheet:**

This Material Safety Data Sheet has been drawn up in cooperation with:  
DEKRA Assurance Services GmbH, Hanomagstr. 12, D-30449 Hanover, Germany,  
phone: (+49) 511 42079 - 0, reach@dekra.com.

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**Abbreviations and acronyms:**

- ADR: Accord européen sur le transport des marchandises dangereuses par Route (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 Harmonised 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)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1  
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2  
Repr. 2: Reproductive toxicity, Hazard Category 2

- \* **Data compared to the previous version altered.**

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