

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

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

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

Product identifier

- Trade name: **DOT 5.1 ESP**
- Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.
 - Application of the substance / the preparation Brake fluid

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

Emergency telephone number:

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

2 Hazards identification

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

The product is not classified according to the CLP regulation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC Void**Information concerning particular hazards for human and environment:**

The product does not have 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.

Label elements**Labelling according to EU guidelines:**

Observe the normal safety regulations when handling chemicals

The product is not subject to identification regulations under EC Directives and the Ordinance on Hazardous Materials.

Safety phrases:

2 Keep out of the reach of children.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

46 If swallowed, seek medical advice immediately and show this container or label.

Special labelling of certain preparations:

Safety data sheet available for professional user on request.

Other hazards**Results of PBT and vPvB assessment**

- PBT: Not applicable.

(Contd. on page 2)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP· **vPvB:** Not applicable.

(Contd. from page 1)

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**

- **Description:**

Mixture of the substances listed below including additives not requiring identification.

- **Dangerous components:**

CAS: 143-22-6 EINECS: 205-592-6 Reg.nr.: 01-2119531322-53-X	2-[2-(2-butoxyethoxy)ethoxy]ethanol ☒ Xi R41 ☒ Eye Dam. 1, H318	1 - < 20%
CAS: 111-46-6 EINECS: 203-872-2 Reg.nr.: 01-2119457857-21-X	2,2'-oxybisethanol ☒ Xn R22 ☒ STOT RE 2, H373; ☒ Acute Tox. 4, H302	1 - < 10%
CAS: 112-34-5 EINECS: 203-961-6 Reg.nr.: 01-2119475104-44-X	2-(2-butoxyethoxy)ethanol ☒ Xi R36 ☒ Eye Irrit. 2, H319	< 3%
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	< 3%

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

4 First aid measures

- **Description of first aid measures**

- **General information** Remove contaminated clothing.

- **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**

Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.

- **After swallowing**

Rinse out mouth and then drink plenty of water.

Instantly call for doctor.

- **Information for doctor**

- **Most important symptoms and effects, both acute and delayed**

Dizziness

Gastric or intestinal trouble

Acidosis

Headache

Sickness

- **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

5 Firefighting measures

- **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.

- **Special hazards arising from the substance or mixture**

Inhalation of combustion gases may cause serious health hazards.

(Contd. on page 3)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 2)

Formation of flammable mixtures of vapours with air possible.

- **Advice for firefighters**
 - **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information**
 - Remove fill mass from incendiary zone, if possible.
 - Use water to keep fire exposed containers cool.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
 - Avoid contact with the product.
 - Particular danger of slipping on leaked/spilled product.
- **Environmental precautions:**
 - Prevent from spreading (e.g. by damming-in or oil barriers).
 - Do not allow to enter drainage system, surface or ground water.
 - If material reaches soil inform authorities responsible for such cases.
- **Methods and material for containment and cleaning up:**
 - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).
 - Clean the accident area carefully; suitable cleaners are:
 - warm water and cleaning agent
- **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.

7 Handling and storage

- **Handling**
 - **Precautions for safe handling**
 - Keep containers tightly sealed.
 - Avoid splashes or spray in enclosed areas.
 - Don't eat, drink or smoke while working.
 - **Information about protection against explosions and fires:** Do not heat close to flash point.
- **Conditions for safe storage, including any incompatibilities**
 - **Storage**
 - **Requirements to be met by storerooms and containers:**
 - Store only in the original container.
 - Keep container tightly closed.
 - **Information about storage in one common storage facility:**
 - Store away from oxidizing agents.
 - **Further information about storage conditions:**
 - Store container in a well ventilated position.
 - Store under dry conditions.
 - **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Control parameters**
 - **Components with limit values that require monitoring at the workplace:**
 - OEL: occupational exposure limit
 - WEL: workplace exposure limit

111-46-6 2,2'-oxybisethanol

WEL (Great Britain) Long-term value: 101 mg/m³, 23 ppm

(Contd. on page 4)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 3)

112-34-5 2-(2-butoxyethoxy)ethanol

WEL (Great Britain)	Short-term value: 101.2 mg/m ³ , 15 ppm Long-term value: 67.5 mg/m ³ , 10 ppm
IOELV (European Union)	Short-term value: 101.2 mg/m ³ , 15 ppm Long-term value: 67.5 mg/m ³ , 10 ppm

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

Oral	DNEL (consumer, long-term, systemic)	2.5 mg/kg bw/day (human)
Dermal	DNEL (consumer, long-term, systemic)	25 mg/kg bw/day (human)
	DNEL (worker, long-term, systemic)	50 mg/kg bw/day (human)
Inhalative	DNEL (consumer, long-term, systemic)	117 mg/m ³ (human)
	DNEL (worker, long-term, systemic)	195 mg/m ³ (human)

111-46-6 2,2'-oxybisethanol

Dermal	DNEL (consumer, long-term, systemic)	53 mg/kg bw/day (human)
	DNEL (worker, long-term, systemic)	106 mg/kg bw/day (human)
Inhalative	DNEL (consumer, long-term, local)	12 mg/m ³ (human)
	DNEL (worker, short-term, local)	60 mg/m ³ (human)

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

Oral	DNEL (consumer, long-term, systemic)	1.5 mg/kg bw/day (human)
Dermal	DNEL (consumer, short-term, systemic)	0.27 mg/kg bw/day (human)
	DNEL (worker, long-term, systemic)	0.53 mg/kg bw/day (human)
Inhalative	DNEL (consumer, long-term, systemic)	25 mg/m ³ (human)
	DNEL (worker, long-term, systemic)	50.1 mg/m ³ (human)

112-34-5 2-(2-butoxyethoxy)ethanol

Oral	DNEL (consumer, long-term, systemic)	1.25 mg/kg bw/day (human)
Dermal	DNEL (consumer, long-term, systemic)	10 mg/kg bw/day (human)
	DNEL (worker, long-term, systemic)	20 mg/kg bw/day (human)
Inhalative	DNEL (consumer, long-term, local)	34 mg/m ³ (human)
	DNEL (consumer, long-term, systemic)	34 mg/m ³ (human)
	DNEL (consumer, short-term, local)	50.6 mg/m ³ (human)
	DNEL (worker, long-term, local)	67.5 mg/m ³ (human)
	DNEL (worker, long-term, systemic)	67.5 mg/m ³ (human)
	DNEL (worker, short-term, local)	101.2 mg/m ³ (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 (.)

111-46-6 2,2'-oxybisethanol

PNEC STP	199.5 mg/L (.)
PNEC aqua (freshwater)	10 mg/L (.)
PNEC aqua (intermittent releases)	10 mg/L (.)

(Contd. on page 5)

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

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 4)

PNEC aqua (marine water)	1 mg/L (.)
PNEC sediment (freshwater)	20.9 mg/kg sedim. dw (.)
PNEC soil	1.53 mg/kg soil dw (.)
111-77-3 2-(2-methoxyethoxy)ethanol	
PNEC STP	10000 mg/L (.)
PNEC aqua (freshwater)	12 mg/L (.)
PNEC aqua (intermittent releases)	12 mg/L (.)
PNEC aqua (marine water)	1.2 mg/L (.)
PNEC soil	2.44 mg/kg soil dw (.)
112-34-5 2-(2-butoxyethoxy)ethanol	
PNEC STP	200 mg/L (.)
PNEC aqua (freshwater)	1.0 mg/L (.)
PNEC aqua (marine water)	0.1 mg/L (.)
PNEC oral	56 mg/kg food (.)
PNEC sediment (freshwater)	4 mg/kg sedim. dw (.)
PNEC sediment (marine water)	0.4 mg/kg sedim. dw (.)
PNEC soil	0.4 mg/kg soil dw (.)

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **Exposure controls**

· **Personal protective equipment**

· **General protective and hygienic measures**

Do not eat or drink while working.

Wash hands during breaks and at the end of the work.

Do not carry cleaning cloths impregnated with the product in trouser pockets.

· **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).

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

Butyl rubber, BR

Chloroprene rubber, CR

Nitrile rubber, NBR

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.

· **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:** Safety glasses recommended during refilling.

GB

(Contd. on page 6)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 5)

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

- **Form:**

Fluid

- **Colour:**

Different according to colour

- **Odour:**

odourless

- **Odour threshold:**

Not determined.

- **pH-value at 20 °C:**

7.0 - 11.5 (SAE J 1703)

- **Change in condition**

- **Melting point/Melting range:**

< -50 °C (SAE J 1703)

- **Boiling point/Boiling range:**

> 260 °C (SAE J 1703)

- **Flash point:**

> 120 °C (IP 35)

- **Inflammability (solid, gaseous)**

Not applicable.

- **Ignition temperature:**

> 300 °C (ASTM D 286)

- **Decomposition temperature:**

> 300 °C

- **Self-inflammability:**

Product is not selfigniting.

- **Danger of explosion:**

Product is not explosive.

- **Critical values for explosion:**

- **Lower:**

Not determined.

- **Upper:**

Not determined.

- **Vapour pressure at 20 °C:**

< 2 mbar

- **Density at 20 °C**

1.03 - 1.09 g/cm³ (DIN 51757)

- **Solubility in / Miscibility with**

- **Water:**

Fully miscible

- **Partition coefficient (n-octanol/water) at 20 °C:**

< 2.0 (OECD 117)

- **Viscosity:**

- **dynamic at 20 °C:**

5 - 10 cSt (ASTM D 445)

- **Other information**

No further relevant information available.

10 Stability and reactivity

- **Reactivity**

- **Chemical stability**

- **Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.

- **Possibility of hazardous reactions**

Possible formation of peroxide

Reacts with light alloys to form hydrogen

- **Conditions to avoid** Heat.

- **Incompatible materials:**

Avoid contact with strong oxidizing agents.

Can attack paints and coatings as well as some plastics and rubber.

- **Hazardous decomposition products:**

None in case of intended use and storage in compliance with instructions.

GB

(Contd. on page 7)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 6)

11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

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

Oral	LD50	5170 mg/kg (rat)
Dermal	LD50	3540 mg/kg (rabbit)

111-46-6 2,2'-oxybisethanol

Oral	LD50	16500 mg/kg (rat)
Dermal	LD50	13300 mg/kg (rabbit)
Inhalative	LC50	> 4.6 mg/l/4h (rat)

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

Oral	LD50	7128 mg/kg (rat) (OECD 201)
Dermal	LD50	9404 mg/kg (rabbit) (OECD 402)

- **Primary irritant effect:**

- **on the skin:** No irritant effect.
- **on the eye:** Splashes can cause temporary eye irritation.

- **Sensitization:** No sensitizing effect known.

- **Additional toxicological information:**

The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version.

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

- **Repeated dose toxicity** Repeated oral intake can cause kidney damage.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity:**

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

EC50 (static)	> 612.6 mg/l/72h (Desmodesmus subspicatus)
	2210 mg/l/48h (Daphnia magna)
LC50	2400 mg/l/96h (Pimephales promelas)
	2200-4600 mg/l/96h (Leuciscus idus) (DIN 38412-15)

111-46-6 2,2'-oxybisethanol

EC50 (static)	> 10000 mg/l/24h (Daphnia magna) (DIN 38412-11)
LC50 (dynamic)	75200 mg/l/96h (Pimephales promelas)

- **Persistence and degradability** Easily biodegradable

- **Behaviour in environmental systems:**

- **Bioaccumulative potential**

Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.

- **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.

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

(Contd. on page 8)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 7)

- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**

- **Recommendation**

The waste code numbers mentioned are recommendations based on the probable use of the product.

When storing used mineral oil products, ensure that the categories for waste oil and mixing instructions are observed.

- **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.
 - **Recommended cleaning agent:** Water, if necessary with cleaning agent.

14 Transport information

- **UN-Number**

- **ADR, ADN, IMDG, IATA** Void

- **UN proper shipping name**

- **ADR, ADN, IMDG, IATA** Void

- **Transport hazard class(es)**

- **ADR, ADN, IMDG**
 - **Class** Void

- **IATA**
 - **Class** Void
Not Restricted.

- **Packing group**

- **ADR, IMDG, IATA** Void

- **Environmental hazards:**

- **Marine pollutant:** No

- **Special precautions for user**

Not applicable.

- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

- **UN "Model Regulation":**

-

GB

(Contd. on page 9)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 16.05.2013

Version number 1

Revision: 16.05.2013

Trade name: DOT 5.1 ESP

(Contd. from page 8)

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
 - **Designation according to EC guidelines:**
Observe the normal safety regulations when handling chemicals
The product is not subject to identification regulations under EC Directives and the Ordinance on Hazardous Materials.
 - **Safety phrases:**
 - 2 Keep out of the reach of children.
 - 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 - 46 If swallowed, seek medical advice immediately and show this container or label.
 - **Special designation of certain preparations:**
Safety data sheet available for professional user on request.
 - **National regulations**
 - **Technical instructions (air):**
- | Class | Share in % |
|-------|------------|
| I | < 2,5 |
| NK | 10-<25 |
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
 - **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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.
 - H373 May cause damage to organs through prolonged or repeated exposure.
 - 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 Consulting GmbH, Hanomagstr. 12, D-30449 Hanover, Germany,
tel.: (+49) 511 42079 311, reach@dekra.com.
- **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 Harmonized System of Classification and Labelling of Chemicals
 - DNEL: Derived No-Effect Level (REACH)
 - PNEC: Predicted No-Effect Concentration (REACH)
 - LC50: Lethal concentration, 50 percent
 - LD50: Lethal dose, 50 percent