

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Trade name or designation of the mixture	FERODO Brake Fluid
Registration number	-
Synonyms	DOT 3 – All grades, DOT 4 - grades with Wet Boiling Points < 165 °C.
Issue date	22-May-2013
Version number	04
Revision date	14-March-2017
Supersedes date	10-July-2015

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

Identified uses	Hydraulic fluid in automotive brake/clutch system.
Uses advised against	None known.

**1.3. Details of the supplier of the safety data sheet****Manufacturer/Supplier**

Company name	Federal Mogul Corporation (BE)
Address:	Central Distribution Centre Prins Boudewijnlaan 7 B-2550 Kontich, Belgium
Contact person:	Product Manager Hydraulics - GA Europe, Middle-East and Africa e-mail: Alexandru.Nitu@federalmogul.com Address: Alexandru Nitu – Calea Floreasca 169A – 014459 Bucharest
Telephone:	+4 03744 29842
1.4. Emergency Telephone:	24hr EP (INFOTRAC): 1-800-535-5053 International: (001) 352-323-3500

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture**

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

**Classification according to Regulation (EC) No 1272/2008 as amended****Health hazards**

Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.
Specific target organ toxicity - repeated exposure	Category 2 (Kidney)	H373 - May cause damage to organs (Kidney) through prolonged or repeated exposure.

**Hazard summary** Causes serious eye damage. May cause damage to the kidneys.

**2.2. Label elements****Label according to Regulation (EC) No. 1272/2008 as amended**

**Contains:** Diethylene glycol, Triethylene glycol monobutyl ether

**Hazard pictograms**

**Signal word** Warning

**Hazard statements**

H319	Causes serious eye irritation.
H373	May cause damage to organs (Kidney) through prolonged or repeated exposure.

**Precautionary statements**

<b>Prevention</b>	
P102	Keep out of reach of children.

**Response**

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.

P301 + P310

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

**Storage**

Store away from incompatible materials.

**Disposal**

Dispose of contents in accordance with local/regional/national/international regulations.

**Supplemental label information**

None.

**2.3. Other hazards**

Not a PBT or vPvB substance or mixture.

**SECTION 3: Composition/information on ingredients****3.2. Mixtures****General information**

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Triethylene glycol monobutyl ether	20 - 45	143-22-6 205-592-6	-	603-183-00-0	
<b>Classification:</b>	Eye Dam. 1;H318				B
Diethylene glycol	10 - 25	111-46-6 203-872-2	-	603-140-00-6	
<b>Classification:</b>	Acute Tox. 4;H302, STOT RE 2;H373				
2-(2-Butoxyethoxy)-ethanol	1 - 3	112-34-5 203-961-6	-	603-096-00-8	#
<b>Classification:</b>	Eye Irrit. 2;H319				
2-(2-Methoxyethoxy)ethanol	0 - < 3	111-77-3 203-906-6	-	603-107-00-6	#
<b>Classification:</b>	Repr. 2;H361d				

**List of abbreviations and symbols that may be used above**

#: This substance has been assigned Community workplace exposure limit(s).

**Composition comments**

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

**SECTION 4: First aid measures****General information**

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

**4.1. Description of first aid measures****Inhalation**

Move injured person into fresh air and keep person calm under observation. Get medical attention if any discomfort continues.

**Skin contact**

Remove contaminated clothes and rinse skin thoroughly with water. Get medical attention if irritation develops or persists.

**Eye contact**

Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.

**Ingestion**

Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.

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

Exposed individuals may experience eye tearing, redness, and discomfort. Defats the skin.

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

Treat symptomatically.

**SECTION 5: Firefighting measures****General fire hazards**

This product is not flammable. Will burn if involved in a fire.

**5.1. Extinguishing media****Suitable extinguishing media**

Water spray, dry powder or carbon dioxide.

**Unsuitable extinguishing media**

Water jet.

**5.2. Special hazards arising from the substance or mixture**

During fire, gases hazardous to health may be formed.

### 5.3. Advice for firefighters

#### Special protective equipment for firefighters

Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

#### Special fire fighting procedures

Use standard firefighting procedures and consider the hazards of other involved materials. Containers close to fire should be removed immediately or cooled with water.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

Extinguish all ignition sources. Avoid sparks, flames and smoking. Ventilate. Avoid contact with skin and eyes. Wear suitable protective clothing.

#### For emergency responders

Use personal protection recommended in Section 8 of the SDS.

### 6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

### 6.3. Methods and material for containment and cleaning up

Absorb spillage with suitable absorbent material. Collect in containers and seal securely.

### 6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid contact with skin and eyes. Wear appropriate personal protective equipment. Do not eat, drink or smoke when using the product. See Section 8 for personal protective equipment. Observe good industrial hygiene practices.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container in a well-ventilated place. Keep away from heat, sparks and open flame. Store away from incompatible materials.

### 7.3. Specific end use(s)

Hydraulic fluid in automotive brake/clutch system.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

##### UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
2-(2-Butoxyethoxy)-ethanol (CAS 112-34-5)	STEL	101.2 mg/m <sup>3</sup>
	TWA	15 ppm 67.5 mg/m <sup>3</sup> 10 ppm
2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)	TWA	50.1 mg/m <sup>3</sup> 10 ppm
	TWA	101 mg/m <sup>3</sup> 23 ppm

##### EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Components	Type	Value
2-(2-Butoxyethoxy)-ethanol (CAS 112-34-5)	STEL	101.2 mg/m <sup>3</sup>
	TWA	15 ppm 67.5 mg/m <sup>3</sup> 10 ppm
2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)	TWA	50.1 mg/m <sup>3</sup> 10 ppm

#### Biological limit values

No biological exposure limits noted for the ingredient(s).

#### Recommended monitoring procedures

Follow standard monitoring procedures.

#### Derived no effect levels (DNELs)

Not available.

#### Predicted no effect concentrations (PNECs)

Not available.

## Exposure guidelines

### UK EH40 WEL: Skin designation

2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)

Can be absorbed through the skin.

## 8.2. Exposure controls

**Appropriate engineering controls** Use explosion-proof equipment. Adequate ventilation should be provided whenever the material is heated or mists are generated. Provide easy access to water supply and eye wash facilities.

### Individual protection measures, such as personal protective equipment

**General information** Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

**Eye/face protection** Chemical goggles and face shield are recommended.

#### Skin protection

**- Hand protection** Chemical resistant gloves. Butyl rubber gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

**- Other** Wear appropriate clothing to prevent repeated or prolonged skin contact.

**Respiratory protection** In case of inadequate ventilation or when the product is heated, use suitable respiratory equipment with gas filter (type A2).

**Thermal hazards** When material is heated, wear gloves to protect against thermal burns.

**Hygiene measures** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

**Environmental exposure controls** Environmental manager must be informed of all major releases.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Appearance

**Physical state** Liquid.

**Form** Liquid.

**Colour** Colourless to amber.

**Odour** Bland.

**Odour threshold** Not available.

**pH** 7 - 11.5

**Melting point/freezing point** < -50 °C (< -58 °F)

**Initial boiling point and boiling range** > 205 °C (> 401 °F)

**Flash point** > 80.0 °C (> 176.0 °F)

**Evaporation rate** Not available.

**Flammability (solid, gas)** Not available.

#### Upper/lower flammability or explosive limits

**Flammability limit - lower (%)** Not available.

**Flammability limit - upper (%)** Not available.

**Vapour pressure** < 0.002 bar

**Vapour density** Not available.

**Relative density** 1.01 - 1.07

**Solubility(ies)** Miscible in water. Miscible with: Ethanol.

**Partition coefficient (n-octanol/water)** < 2

**Auto-ignition temperature** > 300 °C (> 572 °F)

**Decomposition temperature** Not available.

**Viscosity** 5 - 10 cSt @ ( 20°C) Approximate

**Explosive properties** Not available.

**Oxidising properties** Not available.

**9.2. Other information** No relevant additional information available.

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	The product is stable and non reactive under normal conditions of use, storage and transport.
<b>10.2. Chemical stability</b>	Stable under normal temperature conditions. Glycol Ethers can form peroxides on storage – do not distil to dryness.
<b>10.3. Possibility of hazardous reactions</b>	Will not occur.
<b>10.4. Conditions to avoid</b>	Avoid exposure to high temperatures or direct sunlight.
<b>10.5. Incompatible materials</b>	Strong oxidising agents. Mineral oil.
<b>10.6. Hazardous decomposition products</b>	Carbon dioxide. Carbon monoxide. Formaldehyde. Formic acid.

## SECTION 11: Toxicological information

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

### Information on likely routes of exposure

<b>Inhalation</b>	Glycol does not easily form a vapour at normal temperatures. Therefore, it must be heated or misted before inhalation exposure can occur.
<b>Skin contact</b>	May cause skin irritation.
<b>Eye contact</b>	Causes serious eye irritation.
<b>Ingestion</b>	May cause discomfort if swallowed.

**Symptoms** Exposed individuals may experience eye tearing, redness, and discomfort. Defats the skin.

### 11.1. Information on toxicological effects

**Acute toxicity** May cause discomfort if swallowed.

<b>Components</b>	<b>Species</b>	<b>Test results</b>
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2-(2-Butoxyethoxy)-ethanol (CAS 112-34-5)

#### Acute

##### **Dermal**

LD50	Rabbit	2700 mg/kg
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##### **Oral**

LD50	Rat	4500 mg/kg
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2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)

#### Acute

##### **Dermal**

LD50	Rabbit	8980 ml/kg
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##### **Oral**

LD50	Rat	6700 ml/kg
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Diethylene glycol (CAS 111-46-6)

#### Acute

##### **Dermal**

LD50	Rabbit	11890 mg/kg
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Triethylene glycol monobutyl ether (CAS 143-22-6)

#### Acute

##### **Dermal**

LD50	Rabbit	3.54 ml/kg
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##### **Oral**

LD50	Rat	5300 mg/kg
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**Skin corrosion/irritation** May cause skin irritation.

**Serious eye damage/eye irritation** Causes serious eye irritation.

**Respiratory sensitisation** No data available.

**Skin sensitisation** Not a skin sensitizer.

**Germ cell mutagenicity** No data available.

**Carcinogenicity** No data available.

**Reproductive toxicity** Not classified. The product contains a small amount of substance that is suspected of damaging the unborn child.

<b>Specific target organ toxicity - single exposure</b>	No data available.
<b>Specific target organ toxicity - repeated exposure</b>	May cause damage to organs (Kidney) through prolonged or repeated exposure.
<b>Aspiration hazard</b>	No data available.
<b>Mixture versus substance information</b>	Not available.
<b>Other information</b>	Glycol ethers: Some glycol ethers cause adverse effects in animals that include the reproductive system, offspring, blood, kidney and liver. Organic solvents may be absorbed into the body by inhalation and cause permanent damage to the nervous system, including the brain.

## SECTION 12: Ecological information

**12.1. Toxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test results
Triethylene glycol monobutyl ether (CAS 143-22-6)		
<b>Aquatic</b>		
<i>Acute</i>		
Fish	LC50	Pimephales promelas
		2400 mg/l, 96 hours

**12.2. Persistence and degradability** Expected to be inherently biodegradable. Expected to be readily biodegradable.

**12.3. Bioaccumulative potential** Potential to bioaccumulate is low.

### Partition coefficient n-octanol/water (log Kow)

FERODO Brake Fluid	< 2
2-(2-Butoxyethoxy)-ethanol (CAS 112-34-5)	0.56

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** No data available.

**Mobility in general** The product is miscible with water. May spread in water systems.

**12.5. Results of PBT and vPvB assessment** Not a PBT or vPvB substance or mixture.

**12.6. Other adverse effects** No data available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Residual waste** Dispose of in accordance with local regulations.

**Contaminated packaging** Since emptied containers retain product residue, follow label warnings even after container is emptied.

**EU waste code** 16 01 13\*  
Waste codes should be assigned by the user based on the application for which the product was used.

**Disposal methods/information** Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

## SECTION 14: Transport information

### ADR

14.1. - 14.6.: Not regulated as dangerous goods.

### RID

14.1. - 14.6.: Not regulated as dangerous goods.

### ADN

14.1. - 14.6.: Not regulated as dangerous goods.

### IATA

14.1. - 14.6.: Not regulated as dangerous goods.

### IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

**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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

#### Authorisations

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended**

Not listed.

#### Restrictions on use

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

2-(2-Butoxyethoxy)-ethanol (CAS 112-34-5)

2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)

**Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.**

Not listed.

#### Other EU regulations

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Not listed.

#### Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended and respective national laws implementing EC directives. The product is classified and labelled in accordance with EC directives or respective national laws.

#### National regulations

Follow national regulation for work with chemical agents.

#### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

## SECTION 16: Other information

#### List of abbreviations

DNEL: Derived No-Effect Level.  
PNEC: Predicted No-Effect Concentration.  
PBT: Persistent, bioaccumulative and toxic.  
vPvB: Very Persistent and very Bioaccumulative.

#### References

Registry of Toxic Effects of Chemical Substances (RTECS)  
HSDB® - Hazardous Substances Data Bank

#### Information on evaluation method leading to the classification of mixture

Classification of this product as Serious eye irritation Category 2 (H319) is based on tests conducted on the product as a whole, rather than calculations based on ingredients. The mixture is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

#### Full text of any H-statements not written out in full under Sections 2 to 15

H302 Harmful if swallowed.  
H318 Causes serious eye damage.  
H361d Suspected of damaging the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure by ingestion.

#### This SDS contains revisions in the following section(s):

This safety data sheet contains revisions in the following section(s): 1, 16.

#### Training information

Follow training instructions when handling this material.

**Disclaimer**

The information provided on this data sheet was abstracted from supplier safety data sheets and standard references in occupational health and toxicology. Federal-Mogul makes no representation or warranty with respect to the information obtained from such references. The information is however, as of the date provided, true and accurate to the best of Federal-Mogul's knowledge, and should be used to make an independent determination of the methods to safeguard workers and the environment.