SAFETY DATA SHEET

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 5.1 - All grades, DOT 4 - grades with Wet Boiling Points > 165 °C.
Issue date	22-May-2013
Version number	03
Revision date	10-July-2015
Supersedes date	22-May-2013

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 GA Europe, Middle-East and Africa e-mail: mario.garelli@federalmogul.com Address: Mario Garelli - via Fermi, 8 - 37135 Verona - ITALY; Tel. +39 045 82 81 354
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

This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Hazard summary Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.

2.2. Label elements

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

Hazard pictograms	None.
Signal word	None.
Hazard statements	The mixture does not meet the criteria for classification.

Precautionary statements

Prevention	Observe good industrial hygiene practices.
Response	None.
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	143-22-6 205-592-6	-	603-183-00-0	
Classification: Eye Dam. 1;H318					
Diethylene glycol	< 10	111-46-6 203-872-2	-	603-140-00-6	
Classification: Acute Tox. 4;H302, STOT RE 2;H373					
2-(2-Methoxyethoxy)ethanol	< 3	111-77-3 203-906-6	-	603-107-00-6	#
Classification: 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 and persists.

Eye contact Flush thoroughly with water for at least 15 minutes. Get medical attention if irritation persists after washing.

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 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-Methoxyethoxy)ethanol (CAS 111-77-3)	TWA	50.1 mg/m3
		10 ppm
Diethylene glycol (CAS 111-46-6)	TWA	101 mg/m3
		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-Methoxyethoxy)ethanol (CAS 111-77-3)	TWA	50.1 mg/m3
		10 ppm

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

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no-effect level (DNEL) 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.

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 Risk of contact: Wear approved safety goggles.

Skin protection

- Hand protection Wear protective 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 - 10.5
Melting point/freezing point	< -50 °C (< -58 °F)
Initial boiling point and boiling range	> 260 °C (> 500 °F)
Flash point	> 100.0 °C (> 212.0 °F)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
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	1.04 - 1.09
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.
Oxidizing properties	Not available.
9.2. Other information	No relevant additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Stable under normal temperature conditions. Glycol Ethers can form peroxides on storage – do not distil to dryness.
10.3. Possibility of hazardous reactions	Will not occur.
10.4. Conditions to avoid	Avoid exposure to high temperatures or direct sunlight.
10.5. Incompatible materials	Strong oxidising agents. Mineral oil.
10.6. Hazardous decomposition products	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	
Inhalation	Unlikely to be hazardous by inhalation because of the low vapour pressure of the substance at ambient temperature. Glycol does not easily form a vapour at normal temperatures. Therefore, it must be heated or misted before inhalation exposure can occur.
Skin contact	May cause skin irritation.
Eye contact	Product has an irritating effect on the eye, but it is not classed as an eye irritant (OECD Test Method 405).
Ingestion	May cause discomfort if swallowed.
Symptoms	Exposed may experience eye tearing, redness, and discomfort.

11.1. Information on toxicological effects

Acute toxicity	May cause discomfort if swallowed.

Components	Species	Test results
2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)		
Acute		
Dermal		
LD50	Rabbit	8980 ml/kg
Oral		
LD50	Rat	6700 ml/kg

Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	Product has an irritating effect on the eye, but it is not classed as an eye irritant (OECD Test Method 405).
Respiratory sensitisation	No data available.
Skin sensitisation	Not a skin sensitiser.
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.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	No data available.
Mixture versus substance information	Not available.
Other information	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.
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
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

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

ADN

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 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 (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 as amended

Not listed.

Regulation (EC) No. 689/2008 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 authorization, 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-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.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

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

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)
Diethylene glycol (CAS 111-46-6)

Directive 94/33/EC on the protection of young people at work

Not listed.

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

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

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.

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.