

**THE FIRST NAME IN BRAKES**

SAFETY DATA SHEET

1	IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
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Product name: FERODO Brake Fluid

Synonyms: DOT 3 – All grades, DOT 4 - grades with Wet Boiling Points < 165 °C.

Supplier:

Federal Mogul Corporation (BE)
Central Distribution Centre
Prins Boudewijnlaan 7
B-2550 Kontich, Belgium

Emergency telephone:

24hr EP (INFOTRAC): 1-800-535-5053
International: (001) 352-323-3500

Intended use: Hydraulic fluid in automotive brake/clutch systems

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

2	HAZARDS IDENTIFICATION
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The product has been classified according to the legislation in force.

Classification: | Xi; R41 |

The full text for all R-phrases is displayed in Section 16.

Potential health effects

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.

Eye contact: Risk of serious damage to eyes.

Skin contact: May cause skin irritation. Defats the skin.

Ingestion: May cause discomfort if swallowed. May cause damage to the liver and kidneys. May cause central nervous system effects.

Other health effects: Glycol ethers: Some glycol ethers cause adverse effects in animals that include the reproductive system, offspring, blood, kidney and liver. Contains a substance/a group of substances with possible risk of harm to the

unborn child. Organic solvents may be absorbed into the body by inhalation and cause permanent damage to the nervous system, including the brain.

Potential physical / chemical effects: The product is combustible, but not flammable.

Environment: The product components are 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.

3 COMPOSITION/INFORMATION ON INGREDIENTS

General information: The product is a mixture.

Chemical name	EC No.	CAS-No.	Concentration *	Classification	Notes
Triethylene glycol monobutyl ether	205-592-6	143-22-6	20 - 45%	Xi;R41	-
Diethylene glycol	203-872-2	111-46-6	< 25%	Xn;R22	-
2-(2-Methoxyethoxy)ethanol	203-906-6	111-77-3	< 5%	Repro. Cat. 3;R63	-

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

The full text for all R-phrases is displayed in Section 16.

4 FIRST-AID MEASURES

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

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.

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

Ingestion: Rinse mouth thoroughly with water and give large amounts of milk or water, if person is conscious. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.

Note to physician: Treat symptomatically.

5 FIRE-FIGHTING MEASURES

Extinguishing media: Water spray, dry powder or carbon dioxide.

Inappropriate extinguishing media: Water jet.

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.

Unusual fire & explosion hazards: During fire, gases hazardous to health may be formed.

Hazardous combustion products: Carbon dioxide, Carbon monoxide, Formaldehyde, Formic acid, Methanol

Protective measures: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated

in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions: Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Avoid contact with skin and eyes. Wear suitable protective clothing. See Section 8 for personal protective equipment.

Spill cleanup methods: Remove sources of ignition. Absorb spillage with non-combustible, absorbent material. Collect in containers and seal securely. For waste disposal, see section 13.

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

Notification procedures: Inform authorities if large amounts are involved.

7 HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. The product is combustible, and heating may generate vapours which may form explosive vapour/air mixtures. Do not smoke and do not spray near a naked flame or other sources of ignition. Ground container and transfer equipment to eliminate static electric sparks. Observe good industrial hygiene practices.

Storage: Follow rules for flammable liquids. Keep container in a well-ventilated place. Keep away from heat, sparks and open flame. Store away from incompatible materials.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:

Chemical name	Source	Type	Workplace exposure limits	Notes
Diethylene glycol	EH40/2005	TWA	101 mg/m ³ 23 ppm	

Engineering controls: Use explosion-proof ventilation equipment. Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours. Provide easy access to water supply and eye wash facilities.

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

Eye protection: Chemical goggles and face shield are recommended.

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

Skin protection: Wear appropriate clothing to prevent repeated or prolonged skin contact.

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.

Environmental exposure controls: Environmental manager must be informed of all major spillages.

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PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid

Colour: Colorless to amber

Odour: Bland

Odour threshold: No data available.

pH: 7 - 11.5

Melting point: <-50°C (-58°F)

Freezing point: No data available.

Boiling Point: >205°C (401°F)

Relative density: 1.01 - 1.07

Vapour pressure: < 0.002 bar

Vapour density (air=1): No data available.

Evaporation rate: No data available.

Volatile: No data available

Solubility in water: Miscible with water.

Solubility (other): Miscible with: Ethanol

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

Viscosity: 5 cst - 10 cst @20°C (Approximate)

Flash point: >80°C (176°F)

Autoignition temperature: >300°C (572°F)

Flammability limit - lower(%): No data available.

Flammability limit - upper (%): No data available.

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STABILITY AND REACTIVITY

Stability: This product is stable under expected conditions of use. Glycol Ethers can form peroxides on storage – do not distil to dryness.

Conditions to avoid: Avoid exposure to high temperatures or direct sunlight.

Incompatible materials: Strong oxidising agents. Mineral oil

Hazardous decomposition products:

At elevated temperatures:	Carbon dioxide, Carbon monoxide, Formaldehyde, Formic acid
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Possibility of hazardous reactions: Will not occur.

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TOXICOLOGICAL INFORMATION

Specified substance(s)

Acute toxicity:

Chemical name	Test results
Diethylene glycol	Oral LD50 (Rat): 12565 mg/kg
Diethylene glycol	Dermal LD50 (Rabbit): 11890 mg/kg
2-(2-Methoxyethoxy)ethanol	Oral LD50 (Rat): 4080 mg/kg
Triethylene glycol monobutyl ether	Oral LD50 (Rat): 5300 mg/kg
2-(2-Methoxyethoxy)ethanol	Dermal LD50 (Rabbit): 2550 mg/kg

Triethylene glycol monobutyl ether	Dermal LD50 (Rabbit): 3540 mg/kg
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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.

Eye contact: Risk of serious damage to eyes.

Skin contact: May cause skin irritation. Defats the skin.

Ingestion: May cause discomfort if swallowed.

Sensitisation: No data available.

Listed carcinogens: None

Mutagenesis: No data available.

Reproductive toxicity: Contains a substance/a group of substances with possible risk of harm to the unborn child.

Other effects: 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.

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ECOLOGICAL INFORMATION

Ecotoxicity: The product components are 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.

Specified substance(s)

Chemical name	Test
Diethylene glycol	EC50 (Daphnia): 49000 mg/l
Diethylene glycol	LC50 (Fathead minnow): 78000 mg/l
Diethylene glycol	LC50 (Rainbow trout): >1000 mg/l
Diethylene glycol	LC50 (Goldfish): >5000 mg/l
2-(2-Methoxyethoxy)ethanol	LC50 (96 hour(s), Bluegill sunfish): 7500 ppm

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

Persistence and degradability: Expected to be inherently biodegradable. Expected to be readily biodegradable.

Bioaccumulation potential: Potential to bioaccumulate is low. Log Pow: =< 2.0

Other adverse effects: No data available.

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DISPOSAL CONSIDERATIONS

General information: Dispose in accordance with applicable federal, state, and local regulations.

Disposal methods: 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.

European waste codes

Unused product: 16 01 13*

14	TRANSPORT INFORMATION
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ADR/RID Not regulated.

IMDG Not regulated.

IATA Not regulated.

15	REGULATORY INFORMATION
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Irritant.

R41; Risk of serious damage to eyes.

S24/25; Avoid contact with skin and eyes. S26; In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39; Wear eye/face protection. S60; This material and its container must be disposed of as hazardous waste.

16	OTHER INFORMATION
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Wording of the R-phrases in sections 2 and 3: R22; Harmful if swallowed. R41; Risk of serious damage to eyes. R63; Possible risk of harm to the unborn child.

Inventory status: All substances are listed on EINECS.

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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.