SAFETY DATA SHEET

1. Identification

GHS product identifier **FERODO Brake Fluid**

Other means of identification

Product code FBX050-Z

Synonyms Brake Fluid DOT 3 & DOT 4 (Boiling Points >260°C and Wet Boiling Points <165°C)

Recommended use Hydraulic fluid in automotive brake/clutch system.

Recommended restrictions Uses other than the recommended use.

Manufacturer information

Manufacturer/Supplier

Company name Federal-Mogul Global Aftermarket EMEA bv

Address Prins Boudewijnlaan 5
B-2550 Kontich
Belgium

Telephone +32 3 450 83 10

Contact person Braking_EMEA@DRiV.com

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2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Serious eye damage/eye irritation	Category 2
Reproductive toxicity (fertility, the unborn child)	Category 2

Environmental hazards Not classified.

Label elements

Signal word Warning

Hazard statement Causes serious eye irritation. Suspected of damaging the unborn child. Suspected of damaging fertility.

Precautionary statement

Prevention If medical advice is needed, have product container or label at hand. Keep out of reach of children. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Storage Store locked up.

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

Other hazards which do not result in classification None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Triethylene glycol monobutyl ether	143-22-6	25 - 40

Chemical name	CAS number	%
Tris[2-[2-(2-methoxyethoxy) ethoxy]ethyl] orthoborate	30989-05-0	15 - 25
3,6,9,12-Tetraoxahexadecan-1-ol	1559-34-8	5 - 10
Diethylene glycol	111-46-6	5 - 10
2-(2-Butoxyethoxy)ethanol	112-34-5	1 - 3
2-(2-Methoxyethoxy)ethanol	111-77-3	< 1

Composition comments

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.

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

4. 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

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion

Rinse mouth thoroughly with water and give large amounts of milk or water, if person is conscious. Get medical attention if any discomfort continues.

Most important symptoms/effects, acute and delayed

Severe eye irritation. Exposed individuals may experience eye tearing, redness, and discomfort. Defats the skin. Central nervous system. Headaches, dizziness and nausea. May cause abdominal discomfort if swallowed.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

5. Fire-fighting measures

Suitable extinguishing media

Alcohol resistant foam. Dry powder. Carbon dioxide (CO2). Water mist.

Unsuitable extinguishing media

Water jet.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions 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.

Fire fighting equipment/instructions

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

General fire hazards

Will burn if involved in a fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Follow standard emergency procedure. Avoid breathing mist/vapours. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Avoid contact with skin and eyes. Ensure adequate ventilation. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained. Wear appropriate personal protective equipment (See Section 8).

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.
For waste disposal, see section 13 of the SDS.

Environmental precautions

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

7. Handling and storage

Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapours. Avoid contact with skin and eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Provide adequate ventilation. Wear appropriate personal protective equipment. For personal protection, see Section 8 of the SDS. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Keep container in a well-ventilated place. Store between 15°C - 30°C (60°F - 86°F). Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits
No exposure limits noted for ingredient(s).

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

Appropriate engineering controls
Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection
Wear appropriate chemical resistant gloves. Full contact: Glove material: Butyl rubber. Use gloves with breakthrough time of >480 minutes minutes. Minimum glove thickness 0.3 mm. Nitrile. Use gloves with breakthrough time of > 480 minutes. Minimum glove thickness 0.2 mm. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

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

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment. Appropriate respirator selection should be made by a qualified professional.

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

General hygiene considerations
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.

9. Physical and chemical properties

Appearance

Physical state
Liquid.

Form
Liquid.

Colour
Amber.

Odour
Mild.

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 °C (> 212 °F)

Evaporation rate
0.01 (n-butylacetate = 100)

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)
Property has not been measured.

Explosive limit – upper (%)
Property has not been measured.

Vapour pressure
1 mbar

Vapour density
Property has not been measured.

Relative density
1.02 - 1.07

Solubility(ies)

Solubility (water)
Soluble in water.

Partition coefficient (n-octanol/water)
1.5

Auto-ignition temperature
> 280 °C (> 536 °F)

Decomposition temperature	300 °C (572 °F)
Viscosity	Property has not been measured.
Other information	
Explosive properties	Not explosive.
Kinematic viscosity	5 - 10 cSt (20 °C (68 °F))
Oxidising properties	Not oxidising.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions. Glycol Ethers can form peroxides on storage – do not distil to dryness.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Avoid exposure to high temperatures or direct sunlight. Contact with incompatible materials.
Incompatible materials	Strong oxidizers, strong acids, and strong bases. Strong reducing agents.
Hazardous decomposition products	Fire or high temperatures create: Carbon monoxide. Carbon dioxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Glycol does not easily form a vapour at normal temperatures. Therefore, it must be heated or misted before inhalation exposure can occur.
Skin contact	Prolonged or repeated contact may dry skin and cause dermatitis.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Exposed individuals may experience eye tearing, redness, and discomfort. Defats the skin. Central nervous system. May cause abdominal discomfort if swallowed. Headaches, dizziness and nausea.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
FERODO Brake Fluid (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 3000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg
Components	**Species**	**Test Results**
2-(2-Butoxyethoxy)ethanol (CAS 112-34-5)		
Acute		
Dermal		
LD50	Rabbit	2700 mg/kg
Oral		
LD50	Rat	4500 mg/kg
2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)		
Acute		
Dermal		
LD50	Rabbit	8980 ml/kg
Oral		
LD50	Rat	6700 ml/kg
Diethylene glycol (CAS 111-46-6)		
Acute		
Oral		
LD50	Rat	16500 mg/kg

Components	Species	Test Results
Triethylene glycol monobutyl ether (CAS 143-22-6)		
Acute		
Dermal		
LD50	Rabbit	3540 mg/kg
Oral		
LD50	Rat	5300 mg/kg

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitisation

Respiratory sensitisation Based on available data, the classification criteria are not met.

Skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Suspected of damaging fertility. Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

Chronic effects None known.

Further information Glycol ethers: Some glycol ethers cause adverse effects in animals that include the reproductive system, offspring, blood, kidney and liver.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
FERODO Brake Fluid (CAS Mixture)			
Acute			
	LC50	Fish, Rainbow Trout (Oncorhynchus mykiss)	> 100 mg/l, 96 hours

Components		Species	Test Results
Diethylene glycol (CAS 111-46-6)			
Aquatic			
Algae	NOEC	Algae	100 mg/l, 72 hours
Acute			
Crustacea	EC50	Aquatic invertebrates	100000 mg/l, 24 hours
Fish	LC50	Fish	7520 mg/l, 96 hours
Chronic			
Crustacea	EC50	Aquatic invertebrates	33911 mg/kg/D, 21 days
Triethylene glycol monobutyl ether (CAS 143-22-6)			
Aquatic			
Acute			
Fish	LC50	Pimephales promelas	2400 mg/l, 96 hours

Persistence and degradability Expected to be inherently biodegradable. Expected to be readily biodegradable. (OECD 302B).

Bioaccumulative potential The product is not expected to bioaccumulate.

Partition coefficient n-octanol / water (log Kow)

FERODO Brake Fluid	1.5
2-(2-Butoxyethoxy)ethanol (CAS 112-34-5)	0.56
2-(2-Methoxyethoxy)ethanol (CAS 111-77-3)	-1.18
Diethylene glycol (CAS 111-46-6)	-1.47
Triethylene glycol monobutyl ether (CAS 143-22-6)	0.02

Mobility in soil This product is water soluble and may disperse in soil.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

ADR

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

Safety, health and environmental regulations specific for the product in question	This product is classified in accordance with SANS 10234: 2019 – Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Hazardous Substances Act, 1973 (Act No. 15 of 1973)

Not listed.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Montreal Protocol

Not applicable.

Kyoto Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date	14-May-2024
Revision date	-
Version No.	01
List of abbreviations	ADR: Agreement concerning the International Carriage of Dangerous Goods by Road. CAS: Chemical Abstract Service. EC50: Effective Concentration, 50%. IATA: International Air Transport Association. IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk. IMDG: International Maritime Dangerous Goods. LC50: Lethal Concentration, 50%. LD50: Lethal Dose, 50%. MARPOL: International Convention for the Prevention of Pollution from Ships. NOEC: No observed effect concentration. RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
References	HSDB® - Hazardous Substances Data Bank ECHA: European Chemical Agency. Registry of Toxic Effects of Chemical Substances (RTECS)

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.
This SDS contains revisions in the following section(s):	1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 15, 16.