

# MATERIAL SAFETY DATA SHEET

## FERODO BRAKE FLUID

### 1 IDENTIFICATION

1.1 Product Name:

**FERODO DOT4 ESP, DOT5.1**

1.2 Supplier:

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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1 General - Blend of polyglycol ethers, glycol ether borate esters and polyglycols with added corrosion and oxidation inhibitors.

2.2 Hazardous Ingredients:

Hazardous Ingredients	Einecs/Eilincs No	CAS Number	Concentration %	Hazard Classification	Risk Phrases
Butyl tri glycol	205-592-6	143-22-6	>20	Xi	R36
Di ethylene glycol	203-872-2	111-46-6	<20	Xn	R22
Methyl di glycol	203-906-6	111-77-3	<5	Xn	R63

### 3. HAZARDS IDENTIFICATION

3.1 Physical Hazards - Not Significant.

3.2 Health Hazards – Not classified but slightly irritating to eyes. Mildly irritating to skin. When ingested it may be absorbed and cause renal damage at high dosage.

3.3 Environmental Hazards – Low.

### 4. FIRST AID MEASURES

4.1 Inhalation - Remove to fresh air. If recovery is not rapid seek medical attention.

4.2 Skin Contact - Remove contaminated clothing. Wash affected skin with soap and water. If irritation persists seek medical attention.

4.3 Eye Contact - Flush eye with water for at least 10 mins. If irritation persists seek medical attention.

- 4.4 Ingestion - Obtain medical advice immediately. If patient is fully conscious, wash out mouth with water and give plenty of water to drink. Induce vomiting only under medical supervision.
- 4.5 Note to Physicians – Medical personnel seeking to administer first aid are referred to the services of the Poisons Information Centre, who can advise in such instances. There is no specific antidote and treatment of over exposure should be directed at control of symptoms and the patient's clinical condition.

## **5. FIRE FIGHTING MEASURES**

- 5.1 Suitable Extinguishing Media – Alcohol resistant foam, dry powder or water (Fog or Fine spray).
- 5.2 Unsuitable Extinguishing Media - Water jets (although these may be used to cool adjacent containers).
- 5.3 Exposure Hazards – No special risk - combustion products may contain harmful or irritant fumes
- 5.4 Special Protective Equipment - In extreme conditions self-contained breathing apparatus should be worn.

## **6. ACCIDENTAL RELEASE MEASURES**

- 6.1 Personal Precautions – Avoid contact with eyes, skin and clothing. When cleaning up large spillages, suitable protective clothing should be worn including eye protection and impervious gloves.
- 6.2 Environmental Precautions - Prevent from entering drains, ditches or rivers. If this happens inform relevant authorities. Prevent gross contamination of soil.
- 6.3 Methods for Cleaning Up - Contain spillage using sand or earth. Remove all material to a suitable container for subsequent disposal. Label Salvage Container appropriately. Flush contaminated area with plenty of water.

## **7. HANDLING AND STORAGE**

- 7.1 Storage - Suitable bulk storage vessels are mild/stainless steel tanks fitted with a dry air breathing system or tight head steel drums. Do not store in lined tanks or drums. Brake fluid absorbs water from the atmosphere – always keep containers tightly closed. Avoid contamination with any other substances and in particular with mineral oils which are incompatible.
- 7.2 Handling - No specific handling precautions are necessary.
- 7.3 Specific Use – Users are referred to the specification SAE J1707 "Service Maintenance of Brake Fluids"

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

- 8.1 Exposure Controls – No official TLV/OEL figures available for the entire preparation. However 8 h TWA limits of 100mg/m<sup>3</sup> vapour or 10mg/m<sup>3</sup> particulate should be adhered to and this will ensure no limits for ingredients are exceeded.  
Due to the low vapour pressure of the preparation, vapour is not generally a problem at ambient temperature. Handling equipment should minimise the formation of mists.
- 8.2 Respiratory Protection – No specific precautions at ambient temperature. If fluid is being heated or atomised, use suitable engineering control measures.
- 8.3 Hand Protection – Wear suitable impervious gloves to avoid prolonged or repeated contact. Polyethylene natural or butyl rubber and PVC are suitable materials.
- 8.4 Eye Protection - Wear close-fitting goggles where there is a risk of splashing. Eye baths should be provided at locations where accidental exposure may occur.
- 8.5 Skin Protection - Where significant exposure is possible wear impervious body covering. It is recommended that showers are provided at locations where accidental exposure may occur.
- 8.6 Environmental Exposure Controls – No special measures are required.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

			<b>Tested in Accordance With</b>
9.1	Appearance	Clear liquid – Usually colourless to amber	
9.2	Odour	Bland	
9.3	pH	7.0 to 10.50	SAE J 1703
9.4	Boiling Point	>260°C	SAE J 1703
9.5	Melting Point	< -50°C	SAE J 1703
9.6	Flash Point	> 100°C	IP 35
9.7	Auto-Ignition Temperature	> 300°C	ASTM D 286
9.8	Flammability Limits in Air	Not established	
9.9	Density @ 20°C	1.040 – 1.090 g/ml	
9.10	Solubility	In water - miscible in any ratio In ethanol - miscible in any ratio	
9.11	Partition Coefficient n-Octenol/Water (Log POW)	<2.0 (all main ingredients)	OECD 117
9.12	Viscosity @ 20°C	Approx. 5-10 cSt	ASTM D 445
9.13	Vapour Pressure @ 20°C	<2 milibars	Reid
9.14	Vapour Density	Not established	
9.15	Evaporation Rate	Negligible	

## 10. STABILITY AND REACTIVITY

- 10.1 Conditions to avoid - Product is stable under normal conditions. Glycol Ethers can form peroxide on storage – do not distil to dryness.
- 10.2 Materials to Avoid - Strong oxidising agents. For user safety, brake fluid should never be contaminated with any other substance.
- 10.3 Hazardous Decomposition Products – None known.

## 11. TOXICOLOGICAL INFORMATION (Comments may be based on analogy with similar products)

- 11.1 Eye Contact - Product has an irritating effect on the eye, but it is not classified as an eye irritant. (Test Method OECD 405)
- 11.2 Skin Contact – Not classified as irritant (test method OECD 404) although some sensitive individuals may be affected. Repeated contact may de-fat the skin and cause dermatitis. Product does not contain any known sensitisers. Acute percutaneous toxicity is low
- LD50 (sk) Rat = > 2000 mg/kg.
- 11.3 Ingestion - Product is of relatively low acute oral toxicity – however if any significant amount is ingested there is a risk of renal damage which in extreme cases could lead to kidney failure, coma and death.
- LD50 (oral) Rat = > 5000 mg/kg.  
Sparse experience indicates lethal dose in man could be considerably less.
- 11.4 Inhalation - Unlikely to be hazardous by inhalation at ambient temperatures due to low vapour pressure. If product is inhaled at elevated temperatures or as an aerosol it may irritate the respiratory tract and may cause systematic effects similar to ingestion (see above).
- 11.5 Chronic or Long Term Toxicity - General - there are no reports of long term adverse affects in man.
- Carcinogenicity Not known to be carcinogenic.  
Mutagenicity Not known to be mutagenic.  
Reproductive Toxicity Major ingredients have not been shown to cause significant fertility or development problems at levels which are not themselves toxic to the animal concerned. One major ingredient – Methyl di glycol – has been shown to affect foetus development in some studies and is classified as R63 – possible risk of harm to the unborn child.

## 12. ECOLOGICAL INFORMATION

- 12.1 Ecotoxicity – Product is of low acute ecotoxicity.  
Fish 96h LC50 = >100mg/l (Oncorhynchus Mykiss)

Daphnia 48h      EC50 = not determined but expected to be virtually non toxic  
Algae 72h      EC50 = not determined but expected to be virtually non toxic

- 12.2 Mobility - Soluble in water and will partition to aqueous phase. Volatilisation from water to air not expected. Mobile in soil until degraded.
- 12.2 Persistence / Degradability - Product is inherently biodegradable and is expected to be readily biodegradable.  
OECD 302B (Zahn Wellans/EMPA) = 100% elimination at 21 days.  
If admitted into adapted biological water treatment plants, no adverse effects on the degrading action of the live sludge are expected.
- 12.3 Bioaccumulative Potential – Not expected to be bioaccumulative.  
Log POW for all main ingredients = <2.0

### 13 DISPOSAL CONSIDERATIONS

- 13.1 Disposal Dangers - Not significant. As for spillages – avoid liquid entering drains, rivers etc
- 13.2 Disposal Methods - Controlled incineration or recycling is recommended.
- 13.3 Regulations - Dispose of in accordance with local and national regulations. In the EU used brake fluids are covered by the Hazardous Waste Directive (91/689/EEC), while the Waste Framework Directive (75/442/EEC) also applies.

### 14 TRANSPORT INFORMATION

- 14.1 UK/EU Regulations - Not classified
- 14.2 UN No./Class - None
- 14.3 ADR/RID - Not classified
- 14.4 IMO/IMDG - Not classified as hazardous
- 14.5 Marine Pollutant - No
- 14.6 IATA/IACO Class - Not classified

### 15 REGULATORY INFORMATION

- 15.1 EU Classification (UK CHIP 3)      Not classified as hazardous  
Risk Phrases                              N/A  
Safety Phrases                             N/A
- 15.2 Restrictions on use or exposure - To be in accord with local and national regulations.
- 15.3 Other – While the product is not officially classified as dangerous for supply, the following risk and safety phrases are strongly recommended:  
1. Mildly irritating to the eyes  
2. Keep out of reach of children  
3. In case of contact with eyes, rinse immediately with water for 10 min. If irritation persists seek medical advice.  
4. If swallowed seek medical advice immediately and show this container or label.

### 16 OTHER INFORMATION

- 16.1 Legal Disclaimer - The information contained herein is based on the present knowledge and experience of Federal-Mogul S.à.r.l. It in no way constitutes the users own assessment of work place risk as required by other health and safety legislation.
- 16.2 Federal-Mogul S.à.r.l. does not, by supplying this information, guarantee or warrant any specific properties or qualities of goods supplied. It is the responsibility of the purchaser to determine whether the goods ordered are fit for any purpose for which they may be required.

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