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SAFETY DATA SHEET

1. IDENTIFICATION

1.1 Product Name

Orthene Universal Brake Fluid: DOT 4 – Grades with Wet Boiling Points $\geq 165^{\circ}\text{C}$. Brembo equivalent is “Sport Evo 500++”.

1.2 Intended use

As a hydraulic fluid in automotive brake and clutch systems.

1.3 Supplier:

Orthene Chemicals Ltd., Brember Road, South Harrow Industrial Estate, Harrow, Middlesex, HA2 8UJ, England.
+44 (0)20 8864 4414 (Recorded emergency message out of hours). E mail: technical@orthene.co.uk.

2. HAZARDS IDENTIFICATION

2.1 Classification

This product is not classified as hazardous under European Law.

2.2 Physical Hazards

Product is not classified as flammable but will burn.

2.3 Health Hazards Moderately irritating to eyes. Mildly irritating to skin. When ingested it may be absorbed and cause renal damage at high dosage.

2.4 Environmental Hazards

Low

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 General

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

3.2 Hazardous Ingredients

Hazardous Ingredients	Einecs/ Eilincs No.	CAS- Number	Concentration in %	Hazard Classification	Risk Phrases
Butyl tri glycol	205-592-6	143-22-6	<20	Xi	R41
Diethylene glycol	203-872-2	111-46-6	<20	Xn	R22
Methyl Diglycol	203-906-6	111-77-3	<5	Xn	R63

See Section 16 for explanation of the risk phrases.

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 Service, 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 Precaution

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

Di ethylene glycol (2, 2' Oxidiethanol) 8h TWA: 23ppm / 101mg/m³ (EH40)

No official TLV/OEL figures available for the entire preparation. However, 8 h TWA limits of 100 mg/m³ vapour or 10 mg/m³ 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 required.

9. PHYSICAL AND CHEMICAL PROPERTIES

		Test method
9.1 Appearance	Clear liquid – colourless to amber (although some brake fluids may be dyed)	Visual
9.2 Odour	Bland	N/A
9.3 pH	7.0 to 10.50	SAE J 1703
9.4 Boiling point	> 260 Deg.C.	SAE J 1703

9.5 Melting point	< -50 Deg.C.	SAE J 1703
9.6 Flash point	> 100 Deg.C.	IP 35
9.7 Auto ignition temp.	> 300 Deg.C.	ASTM D 286
9.8 Flammability limits in air	Not established	
9.9 Density @ 20°C	1.040 – 1.090 g/ml	DIN 51757
9.10 Solubility	In water: miscible in any ratio In ethanol: miscible in any ratio	
9.11 Partition Coefficient n-Octanol/Water	< 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 millibars	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 classed as an eye irritant (OECD Test Method 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 sensitizers. 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 due to low vapour pressure.

If product is inhaled at elevated temperatures or as an aerosol it may irritate respiratory tract and may cause systemic 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 minor ingredient – Methyl Diglycol – 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 = > 100 mg/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.

12.3 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.

12.4 Bioaccumulative Potential

Not expected to bioaccumulate. 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 E.U. used brake fluids are classified as Hazardous Waste (Directive 91/689/EEC). EWC number: 16.01.13.

14. TRANSPORT INFORMATION

14.1 UN No /Class	None
14.2 ADR/RID	Not classified
14.3 IMO/IMDG	Not classified as hazardous
14.4 Marine Pollutant	No
14.5 IATA/IACO Class	Not classified

15. REGULATORY INFORMATION

15.1 E.U. Classification (U.K.–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. In the U.K. this would include the HSWA and COSHH.

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 flush immediately with water for 10 minutes. If irritation persists seek medical advice.
4. If swallowed seek medical advice immediately and show this container or label.

16. OTHER INFORMATION

16.1 Risk (R) Phrases

R22 –Harmful if swallowed.

R41 –Risk of serious damage to eyes.

R63 –Possible risk of harm to the unborn child.

16.2 Revisions

Changes to this edition of the MSDS are indicated by a bar in the margin.

16.3 Legal Disclaimer

The information contained herein is based on the present knowledge and experience of Orthene Chemicals Ltd. It in no way constitutes the users own assessment of work place risk as required by other Health and Safety legislation.

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