Brake Fluid • DOT 3 • DOT 4

1. Identification

Product Use
As hydraulic fluid in Automotive brakes and Clutches

Product Name
DOT 3 – All GradesDOT 4 – Grades with Wet Boiling Points less than 165 °C

Company Name
DJ Auto Asia Pacific Pte Ltd
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2. Hazards Identification

Classification
This product is not classified as hazardous under European Law.

Physical Hazards
Product is not classified as flammable but will burn.

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

Environmental Hazards
Low

3. Composition / Information on Ingredients

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

Hazardous Ingredients

<table>
<thead>
<tr>
<th>Hazardous Ingredients</th>
<th>Einesc/Eilincs No.</th>
<th>CAS-No.</th>
<th>Concentration (%)</th>
<th>Hazard Classification</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl tri glycol</td>
<td>205-592-6</td>
<td>143-22-6</td>
<td>&lt; 20 - 45</td>
<td>Xi</td>
<td>R41</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>203-872-2</td>
<td>111-46-6</td>
<td>&lt;25</td>
<td>Xn</td>
<td>R22</td>
</tr>
<tr>
<td>Methyl Diglycol</td>
<td>203-906-6</td>
<td>111-77-3</td>
<td>&lt;5</td>
<td>Xn</td>
<td>R63</td>
</tr>
</tbody>
</table>

See Section 16 for explanation of the risk phrases.

4. First Aid Measures

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

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

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

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.

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 overexposure should be directed at control of symptoms and the patient’s clinical condition.
5. **Fire Fighting Measures**

   **Suitable Extinguishing Media**
   Alcohol resistant foam, dry powder or water (fog or fine spray).

   **Unsuitable Extinguishing Media**
   Water jets (although these may be used to cool adjacent containers).

   **Exposure Hazards**
   No special risk – combustion products may contain harmful or irritant fumes.

   **Special Protective Equipment**
   In extreme conditions self-contained breathing apparatus should be worn.

6. **Accidental Release Measures**

   **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.

   **Environmental Precaution**
   Prevent from entering drains, ditches or rivers. If this happens inform relevant authorities. Prevent gross contamination of soil.

   **Methods for Cleaning Up**
   Contain spillage using sand or earth. Remove all material to a suitable container for subsequent disposal. Label salvages container appropriately. Flush contaminated area with plenty of water.

7. **Handling and Storage**

   **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.

   **Handling**
   No specific handling precautions are necessary.

   **Specific Use**
   Users are referred to the Specification SAE J1707 “Service Maintenance of Brake Fluids”.

8. **Exposure Controls / Personal Protection**

   **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 vapor or 10 mg/m3 particulate should be adhered to and this will ensure no limits for ingredients are exceeded. Due to the low vapor pressure of the preparation, vapor is not generally a problem at ambient temperature. Handling equipment should minimize the formation of mists.

   **Respiratory Protection**
   No specific precautions at ambient temperature. If fluid is being heated or atomized, use suitable engineering control measures.

   **Hand Protection**
   Wear suitable impervious gloves to avoid prolonged or repeated contact. Polyethylene natural or butyl rubber and PVC are suitable materials.

   **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.

   **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.

   **Environmental Exposure Controls**
   No special measures required.
9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>DOT 3 - colourless to amber (Although visually some brake fluid may be dyed)</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear Liquid - colourless to amber</td>
<td>Visual</td>
</tr>
<tr>
<td>Odour</td>
<td>Bland</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>7.0 to 11.50</td>
<td>SAEJ 1703</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&gt; 205 °C</td>
<td>SAEJ 1703</td>
</tr>
<tr>
<td>Melting Point</td>
<td>&lt; -50 °C</td>
<td>SAEJ 1703</td>
</tr>
<tr>
<td>Flash Point</td>
<td>DOT 3: &gt; 80 °C DOT 4: &gt; 90 °C</td>
<td>IP35</td>
</tr>
<tr>
<td>Auto Ignition Temperature</td>
<td>&gt; 300 °C</td>
<td>ASTM D286</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density @ 20°C</td>
<td>1.010 - 1.070 g/ml</td>
<td>DIN51757</td>
</tr>
<tr>
<td>Solubility</td>
<td>In water: miscible in any ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In ethanol: miscible in any ratio</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>&lt; 2.0 (all main ingredients)</td>
<td>OECD117</td>
</tr>
<tr>
<td>n-Octanol / Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viscosity @ 20°C</td>
<td>Approx. 5 - 10cst</td>
<td>ASTM D445</td>
</tr>
<tr>
<td>Vapour Pressure 20°C</td>
<td>&lt; 2 millibars.</td>
<td>Reid</td>
</tr>
<tr>
<td>Vapour Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td></td>
<td>Negligible</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

**Conditions to Avoid**
Product is stable under normal conditions. Glycol Ethers can form peroxide on storage – do not distil to dryness.

**Materials to Avoid**
Strong oxidizing agents. For user safety, brake fluid should never be contaminated with any other substance.

**Hazardous Decomposition Products**
None known.

11. Toxicological Information (comments may be based on analogy with similar products)

**Eye Contact**
Product has an irritating effect on the eye, but it is not classed as an eye irritant (OECD Test Method 405).

**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 = > 2000mg/kg.

**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.

**Inhalation**
Unlikely to be hazardous by inhalation at ambient due to low vapor 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).

**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.
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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

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.

Mobility
Soluble in water and will partition to aqueous phase. Volatilization from water to air not expected. Mobile in soil until degraded.

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.

Bioaccumulative Potential
Not expected to bioaccumulate. Log POW for all main ingredients = < 2.0

13. Disposal Consideration

Disposal Dangers
Not significant. As for spillages - avoid liquid entering drains, rivers etc.

Disposal Methods
Controlled incineration or recycling is recommended.

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

UN No /Class None
ADR/RID Not classified
IMO/IMDG Not classified as hazardous
Marine Pollutant No
IATA/IACO Class Not classified

15. Regulatory Information

E.U. Classification Xi - Irritant
Risk Phrases R36 - Irritating to eyes
Safety Phrases S2 - Keep out of reach of children
S26 (Modified) - In case of contact with eyes, rinse immediately with water for 10 min.
If irritation persists seek medical advice.
S46 - If swallowed seek medical advice immediately and show this container or label.

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.

16. Other Information

Risk (R) Phrases
R22 – Harmful if swallowed.
R41 – Risk of serious damage to eyes.
R63 – Possible risk of harm to the unborn child.

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

Legal Disclaimer
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