



## Shell Brake and Clutch Fluid DOT4

Recochem Inc.

Chemwatch: 5327-70

Version No: 2.1.1.1

Safety Data Sheet according to WHS and ADG requirements

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S.GHS.AUS.EN

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

#### Product Identifier

|                               |                                   |
|-------------------------------|-----------------------------------|
| Product name                  | Shell Brake and Clutch Fluid DOT4 |
| Synonyms                      | Product code: 24401               |
| Other means of identification | Not Available                     |

#### Relevant identified uses of the substance or mixture and uses advised against

|                          |  |
|--------------------------|--|
| Relevant identified uses | Hydraulic fluid for use in automotive brake and clutch systems.<br>Use according to manufacturer's directions. |
|--------------------------|--|

#### Details of the supplier of the safety data sheet

|                         |  |
|-------------------------|--|
| Registered company name | Recochem Inc.  |
| Address                 | 850 Montee De Liesse Montreal Quebec H4T 1P4 Canada                    |
| Telephone               | +1 905 791 17  |
| Fax                     | Not Available  |
| Website                 | <a href="http://www.recochem.com/">http://www.recochem.com/</a>        |
| Email                   | <a href="mailto:salesorders@recochem.com">salesorders@recochem.com</a> |

#### Emergency telephone number

|                                   |                              |
|-----------------------------------|------------------------------|
| Association / Organisation        | CHEMWATCH EMERGENCY RESPONSE |
| Emergency telephone numbers       | +61 1800 951 288             |
| Other emergency telephone numbers | +61 2 9186 1132              |

Once connected and if the message is not in your preferred language then please dial 01

### SECTION 2 HAZARDS IDENTIFICATION

#### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.**

|                    |   |
|--------------------|---|
| Poisons Schedule   | S6  |
| Classification [1] | Serious Eye Damage Category 1, Reproductive Toxicity Category 2   |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI |

#### Label elements

|                     |  |
|---------------------|--|
| Hazard pictogram(s) |  |
|---------------------|--|

|             |               |
|-------------|---------------|
| SIGNAL WORD | <b>DANGER</b> |
|-------------|---------------|

#### Hazard statement(s)

|        |   |
|--------|---|
| H318   | Causes serious eye damage.              |
| H361d  | Suspected of damaging the unborn child. |
| AUH019 | May form explosive peroxides.           |

Continued...

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**Precautionary statement(s) Prevention**

|      |  |
|------|--|
| P201 | Obtain special instructions before use.                                    |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |

**Precautionary statement(s) Response**

|                |  |
|----------------|--|
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308+P313      | IF exposed or concerned: Get medical advice/attention.   |
| P310           | Immediately call a POISON CENTER or doctor/physician.  |

**Precautionary statement(s) Storage**

|      |                  |
|------|------------------|
| P405 | Store locked up. |
|------|------------------|

**Precautionary statement(s) Disposal**

|      |  |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

**Substances**

See section below for composition of Mixtures

**Mixtures**

| CAS No   | %[weight] | Name                               |
|----------|-----------|------------------------------------|
| 143-22-6 | 20-45     | triethylene glycol monobutyl ether |
| 111-46-6 | 0-10      | diethylene glycol                  |
| 111-77-3 | 0-3       | diethylene glycol monomethyl ether |
| 112-34-5 | 0-3       | diethylene glycol monobutyl ether  |

**SECTION 4 FIRST AID MEASURES**

**Description of first aid measures**

|                     |  |
|---------------------|--|
| <b>Eye Contact</b>  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul> |
| <b>Skin Contact</b> | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>  |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area.</li> <li>▶ Other measures are usually unnecessary.</li> </ul>  |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Seek medical advice.</li> </ul>   |

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**SECTION 5 FIREFIGHTING MEASURES**

**Extinguishing media**

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

**Special hazards arising from the substrate or mixture**

|                             |  |
|-----------------------------|--|
| <b>Fire Incompatibility</b> | ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|--|

**Advice for firefighters**

|                      |  |
|----------------------|--|
| <b>Fire Fighting</b> | <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> </ul> |
|----------------------|--|

|                              |  |
|------------------------------|--|
|                              | <ul style="list-style-type: none"> <li>▶ Use water delivered as a fine spray to control fire and cool adjacent area.</li> <li>▶ Avoid spraying water onto liquid pools.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> </ul>   |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>▶ Combustible.</li> <li>▶ Slight fire hazard when exposed to heat or flame.</li> <li>▶ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> <li>▶ On combustion, may emit toxic fumes of carbon monoxide (CO).</li> <li>▶ May emit acrid smoke.</li> <li>▶ Mists containing combustible materials may be explosive.</li> </ul> <p>Combustion products include:<br/>carbon dioxide (CO<sub>2</sub>)<br/>other pyrolysis products typical of burning organic material.<br/>May emit poisonous fumes.<br/>May emit corrosive fumes.</p> |
| <b>HAZCHEM</b>               | Not Applicable   |

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

See section 8

### Environmental precautions

See section 12

### Methods and material for containment and cleaning up

|                     |  |
|---------------------|--|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Remove all ignition sources.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid breathing vapours and contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Contain and absorb spill with sand, earth, inert material or vermiculite.</li> <li>▶ Wipe up.</li> <li>▶ Place in a suitable, labelled container for waste disposal.</li> </ul> |
| <b>Major Spills</b> | <p>Moderate hazard.</p> <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ No smoking, naked lights or ignition sources.</li> <li>▶ Increase ventilation.</li> </ul>                       |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 HANDLING AND STORAGE

### Precautions for safe handling

|                          |  |
|--------------------------|--|
| <b>Safe handling</b>     | <p>The tendency of many ethers to form explosive peroxides is well documented. Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe</p> <ul style="list-style-type: none"> <li>▶ <b>DO NOT concentrate by evaporation, or evaporate extracts to dryness, as residues may contain explosive peroxides with DETONATION potential.</b></li> <li>▶ Any static discharge is also a source of hazard.</li> <li>▶ Before any distillation process remove trace peroxides by shaking with excess 5% aqueous ferrous sulfate solution or by percolation through a column of activated alumina.</li> <li>▶ Distillation results in uninhibited ether distillate with considerably increased hazard because of risk of peroxide formation on storage.</li> <li>▶ Add inhibitor to any distillate as required.</li> <li>▶ When solvents have been freed from peroxides by percolation through columns of activated alumina, the absorbed peroxides must promptly be desorbed by treatment with polar solvents such as methanol or water, which should then be disposed of safely.</li> </ul> <p>The substance accumulates peroxides which may become hazardous only if it evaporates or is distilled or otherwise treated to concentrate the peroxides. The substance may concentrate around the container opening for example.</p> <p>Purchases of peroxidisable chemicals should be restricted to ensure that the chemical is used completely before it can become peroxidised.</p> <ul style="list-style-type: none"> <li>▶ A responsible person should maintain an inventory of peroxidisable chemicals or annotate the general chemical inventory to indicate which chemicals are subject to peroxidation. An expiration date should be determined. The chemical should either be treated to remove peroxides or disposed of before this date.</li> <li>▶ The person or laboratory receiving the chemical should record a receipt date on the bottle.</li> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Prevent concentration in hollows and sumps.</li> <li>▶ <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li> <li>▶ Avoid smoking, naked lights or ignition sources.</li> <li>▶ Avoid contact with incompatible materials.</li> </ul> |
| <b>Other information</b> | <ul style="list-style-type: none"> <li>▶ Store in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ No smoking, naked lights or ignition sources.</li> <li>▶ Store in a cool, dry, well-ventilated area.</li> <li>▶ Store away from incompatible materials and foodstuff containers.</li> <li>▶ Protect containers against physical damage and check regularly for leaks.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul>   |

### Conditions for safe storage, including any incompatibilities

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|                                |  |
|--------------------------------|--|
| <b>Suitable container</b>      | <ul style="list-style-type: none"> <li>▶ Metal can or drum</li> <li>▶ Packaging as recommended by manufacturer.</li> <li>▶ Check all containers are clearly labelled and free from leaks.</li> </ul> |
| <b>Storage incompatibility</b> | <ul style="list-style-type: none"> <li>▶ Avoid reaction with oxidising agents</li> </ul>   |

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control parameters**

**OCCUPATIONAL EXPOSURE LIMITS (OEL)**

**INGREDIENT DATA**

| Source                       | Ingredient        | Material name        | TWA                | STEL          | Peak          | Notes         |
|------------------------------|-------------------|----------------------|--------------------|---------------|---------------|---------------|
| Australia Exposure Standards | diethylene glycol | 2,2'-Oxybis[ethanol] | 23 ppm / 100 mg/m3 | Not Available | Not Available | Not Available |

**EMERGENCY LIMITS**

| Ingredient                         | Material name  | TEEL-1  | TEEL-2  | TEEL-3  |
|------------------------------------|--|---------|---------|---------|
| diethylene glycol                  | Diethylene glycol  | 6.9 ppm | 140 ppm | 860 ppm |
| diethylene glycol monomethyl ether | Methoxyethoxy)ethanol, 2-(2-; (Diethylene glycol monomethyl ether) | 3.4 ppm | 37 ppm  | 220 ppm |
| diethylene glycol monobutyl ether  | Butoxyethoxy)ethanol, 2-(2-; (Diethylene glycol monobutyl ether)   | 30 ppm  | 33 ppm  | 200 ppm |

| Ingredient                         | Original IDLH | Revised IDLH  |
|------------------------------------|---------------|---------------|
| triethylene glycol monobutyl ether | Not Available | Not Available |
| diethylene glycol                  | Not Available | Not Available |
| diethylene glycol monomethyl ether | Not Available | Not Available |
| diethylene glycol monobutyl ether  | Not Available | Not Available |

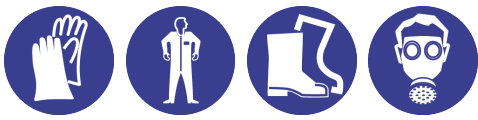
**OCCUPATIONAL EXPOSURE BANDING**

| Ingredient                         | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|------------------------------------|-----------------------------------|----------------------------------|
| diethylene glycol monomethyl ether | E                                 | ≤ 0.1 ppm                        |
| diethylene glycol monobutyl ether  | E                                 | ≤ 0.1 ppm                        |

**Notes:**

Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

**Exposure controls**

|   |  |
|---|--|
| <b>Appropriate engineering controls</b> | <p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.</p> <p>Employers may need to use multiple types of controls to prevent employee overexposure.</p> |
| <b>Personal protection</b>              |   |
| <b>Eye and face protection</b>          | <ul style="list-style-type: none"> <li>▶ Safety glasses with side shields.</li> <li>▶ Chemical goggles.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable.</li> </ul>   |
| <b>Skin protection</b>                  | See Hand protection below  |
| <b>Hands/feet protection</b>            | <ul style="list-style-type: none"> <li>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> </ul> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p>                |
| <b>Body protection</b>                  | See Other protection below   |

**Other protection**

- ▶ Overalls.
- ▶ P.V.C. apron.
- ▶ Barrier cream.
- ▶ Skin cleansing cream.
- ▶ Eye wash unit.

**Respiratory protection**

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

- ▶ Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- ▶ The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- ▶ Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES****Information on basic physical and chemical properties**

|   |  |  |                |
|---|--|--|----------------|
| <b>Appearance</b>                                   | Clear colourless to amber liquid with bland odour; miscible with water and ethanol. Colourless |  |                |
| <b>Physical state</b>                               | Liquid   | <b>Relative density (Water = 1)</b>            | 1.02-1.07      |
| <b>Odour</b>  | Not Available  | <b>Partition coefficient n-octanol / water</b> | Not Available  |
| <b>Odour threshold</b>                              | Not Available  | <b>Auto-ignition temperature (°C)</b>          | >300           |
| <b>pH (as supplied)</b>                             | 7.0-10.0   | <b>Decomposition temperature</b>               | >300           |
| <b>Melting point / freezing point (°C)</b>          | <-50   | <b>Viscosity (cSt)</b>                         | Not Available  |
| <b>Initial boiling point and boiling range (°C)</b> | >260   | <b>Molecular weight (g/mol)</b>                | Not Applicable |
| <b>Flash point (°C)</b>                             | >100   | <b>Taste</b>                                   | Not Available  |
| <b>Evaporation rate</b>                             | Not Applicable   | <b>Explosive properties</b>                    | Not Available  |
| <b>Flammability</b>                                 | Not Applicable   | <b>Oxidising properties</b>                    | Not Available  |
| <b>Upper Explosive Limit (%)</b>                    | Not Available  | <b>Surface Tension (dyn/cm or mN/m)</b>        | Not Available  |
| <b>Lower Explosive Limit (%)</b>                    | Not Available  | <b>Volatile Component (%vol)</b>               | Not Available  |
| <b>Vapour pressure (kPa)</b>                        | <0   | <b>Gas group</b>                               | Not Available  |
| <b>Solubility in water</b>                          | Miscible   | <b>pH as a solution (1%)</b>                   | Not Available  |
| <b>Vapour density (Air = 1)</b>                     | Not Available  | <b>VOC g/L</b>                                 | Not Available  |

**SECTION 10 STABILITY AND REACTIVITY**

|   |  |
|---|--|
| <b>Reactivity</b>                         | See section 7  |
| <b>Chemical stability</b>                 | <ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul> |
| <b>Possibility of hazardous reactions</b> | See section 7  |
| <b>Conditions to avoid</b>                | See section 7  |
| <b>Incompatible materials</b>             | See section 7  |
| <b>Hazardous decomposition products</b>   | See section 5  |

**SECTION 11 TOXICOLOGICAL INFORMATION****Information on toxicological effects**

|                     |   |
|---------------------|---|
| <b>Inhaled</b>      | The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.<br>Inhalation hazard is increased at higher temperatures.   |
| <b>Ingestion</b>    | Accidental ingestion of the material may be damaging to the health of the individual.   |
| <b>Skin Contact</b> | The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. |
| <b>Eye</b>          | If applied to the eyes, this material causes severe eye damage.   |

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|   |   |   |
|---|---|---|
| <b>Chronic</b>                            | Based on experience with animal studies, exposure to the material may result in toxic effects to the development of the foetus, at levels which do not cause significant toxic effects to the mother. Some glycol esters and their ethers cause wasting of the testicles, reproductive changes, infertility and changes to kidney function. Shorter chain compounds are more dangerous. |   |
| <b>Shell Brake and Clutch Fluid DOT4</b>  | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|   | Oral (Rat) LD50: >5000 mg/kg <sup>[2]</sup>   | Not Available   |
| <b>triethylene glycol monobutyl ether</b> | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|   | Dermal (rabbit) LD50: >2000 mg/kg <sup>[2]</sup>  | Eye (rabbit): 20 mg/24h - moderate                              |
|   | Oral (rat) LD50: 5300 mg/kg <sup>[2]</sup>  | Eye (rabbit): 50 mg - SEVERE                                    |
|   |   | Eye: adverse effect observed (irritating) <sup>[1]</sup>        |
|   |   | Skin (rabbit):10 mg/24h(open)mild                               |
|   |   | Skin (rabbit):500 mg/24h - mild                                 |
|   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |   |
| <b>diethylene glycol</b>                  | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|   | Dermal (rabbit) LD50: 11890 mg/kg <sup>[2]</sup>  | Eye (rabbit) 50 mg mild   |
|   | Oral (rat) LD50: 12000 mg/kg <sup>[2]</sup>   | Eye: no adverse effect observed (not irritating) <sup>[1]</sup> |
|   |   | Skin (human): 112 mg/3d-I mild                                  |
|   | Skin (rabbit): 500 mg mild  |   |
|   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |   |
| <b>diethylene glycol monomethyl ether</b> | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|   | Dermal (rabbit) LD50: 2525 mg/kg <sup>[2]</sup>   | Eye (rabbit): 500 mg moderate                                   |
|   | Oral (rat) LD50: 4040 mg/kg <sup>[2]</sup>  | Eye (rabbit): 500 mg/24h mild                                   |
|   |   | Eye: no adverse effect observed (not irritating) <sup>[1]</sup> |
|   | Skin: no adverse effect observed (not irritating) <sup>[1]</sup>  |   |
| <b>diethylene glycol monobutyl ether</b>  | <b>TOXICITY</b>   | <b>IRRITATION</b>   |
|   | Dermal (rabbit) LD50: >2000 mg/kg <sup>[2]</sup>  | Eye (rabbit): 20 mg/24h moderate                                |
|   | Oral (rat) LD50: =4500 mg/kg <sup>[2]</sup>   | Eye (rabbit): 5 mg - SEVERE                                     |
| <b>Legend:</b>                            | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances   |   |

|   |   |
|---|---|
| <b>TRIETHYLENE GLYCOL MONOBUTYL ETHER</b>   | Tri-ethylene glycol ethers undergo enzymatic oxidation to toxic alkoxy acids. They may irritate the skin and the eyes. At high oral doses, they may cause depressed reflexes, flaccid muscle tone, breathing difficulty and coma. Death may result in experimental animal. However, repeated exposure may cause dose dependent damage to the kidneys as well as reproductive and developmental defects.   |
| <b>DIETHYLENE GLYCOL</b>  | Diglycolic acid is formed following the oxidation of accidentally ingested diethylene glycol in the body and can lead to severe complications with fatal outcome.   |
| <b>DIETHYLENE GLYCOL MONOMETHYL ETHER</b>   | The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.   |
| <b>TRIETHYLENE GLYCOL MONOBUTYL ETHER &amp; DIETHYLENE GLYCOL MONOBUTYL ETHER</b> | The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.  |
| <b>TRIETHYLENE GLYCOL MONOBUTYL ETHER &amp; DIETHYLENE GLYCOL</b>                 | The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.  |
| <b>DIETHYLENE GLYCOL MONOMETHYL ETHER &amp; DIETHYLENE GLYCOL MONOBUTYL ETHER</b> | This category includes diethylene glycol ethyl ether (DGEE), diethylene glycol propyl ether (DGPE) diethylene glycol butyl ether (DGBE) and diethylene glycol hexyl ether (DGHE) and their acetates. Studies show that they can cause kidney and liver damage, skin and eye irritation as well as blood changes but do not cause damage to the reproductive, genetic and developmental abnormalities, sensitisation or respiratory systems. However, DGEE is reported to cause sperm insufficiency. |

|  |   |                                 |   |
|--|---|---------------------------------|---|
| <b>Acute Toxicity</b>                    | ✗ | <b>Carcinogenicity</b>          | ✗ |
| <b>Skin Irritation/Corrosion</b>         | ✗ | <b>Reproductivity</b>           | ✓ |
| <b>Serious Eye Damage/Irritation</b>     | ✓ | <b>STOT - Single Exposure</b>   | ✗ |
| <b>Respiratory or Skin sensitisation</b> | ✗ | <b>STOT - Repeated Exposure</b> | ✗ |
| <b>Mutagenicity</b>                      | ✗ | <b>Aspiration Hazard</b>        | ✗ |

Legend: ✗ – Data either not available or does not fill the criteria for classification  
✓ – Data available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Continued...

Shell Brake and Clutch Fluid DOT4

| Shell Brake and Clutch Fluid DOT4 | ENDPOINT      | TEST DURATION (HR) | SPECIES       | VALUE         | SOURCE        |
|-----------------------------------|---------------|--------------------|---------------|---------------|---------------|
|                                   | Not Available | Not Available      | Not Available | Not Available | Not Available |

| triethylene glycol monobutyl ether | ENDPOINT | TEST DURATION (HR) | SPECIES                       | VALUE       | SOURCE |
|------------------------------------|----------|--------------------|-------------------------------|-------------|--------|
|                                    | LC50     | 96                 | Fish                          | 2-400mg/L   | 2      |
|                                    | EC50     | 48                 | Crustacea                     | 2-705mg/L   | 2      |
|                                    | EC50     | 72                 | Algae or other aquatic plants | 1-589mg/L   | 2      |
|                                    | EC0      | 24                 | Crustacea                     | 1-989.5mg/L | 2      |
|                                    | NOEC     | 96                 | Fish                          | 1-mg/L      | 2      |

| diethylene glycol | ENDPOINT | TEST DURATION (HR) | SPECIES                       | VALUE      | SOURCE |
|-------------------|----------|--------------------|-------------------------------|------------|--------|
|                   | LC50     | 96                 | Fish                          | 66-mg/L    | 2      |
|                   | EC50     | 48                 | Crustacea                     | =84000mg/L | 1      |
|                   | EC50     | 96                 | Algae or other aquatic plants | 9-362mg/L  | 2      |
|                   | NOEC     | 552                | Crustacea                     | >=1-mg/L   | 2      |

| diethylene glycol monomethyl ether | ENDPOINT | TEST DURATION (HR) | SPECIES                       | VALUE     | SOURCE |
|------------------------------------|----------|--------------------|-------------------------------|-----------|--------|
|                                    | LC50     | 96                 | Fish                          | 5-741mg/L | 2      |
|                                    | EC50     | 48                 | Crustacea                     | 1-192mg/L | 2      |
|                                    | EC50     | 96                 | Algae or other aquatic plants | >1-mg/L   | 2      |
|                                    | EC0      | 96                 | Algae or other aquatic plants | 1-mg/L    | 2      |

| diethylene glycol monobutyl ether | ENDPOINT | TEST DURATION (HR) | SPECIES                       | VALUE     | SOURCE |
|-----------------------------------|----------|--------------------|-------------------------------|-----------|--------|
|                                   | LC50     | 96                 | Fish                          | 1-300mg/L | 2      |
|                                   | EC50     | 48                 | Crustacea                     | 4-950mg/L | 2      |
|                                   | EC50     | 72                 | Algae or other aquatic plants | 1-101mg/L | 2      |
|                                   | NOEC     | 96                 | Algae or other aquatic plants | >=100mg/L | 1      |

**Legend:** *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

**DO NOT** discharge into sewer or waterways.

**Persistence and degradability**

| Ingredient                         | Persistence: Water/Soil | Persistence: Air |
|------------------------------------|-------------------------|------------------|
| triethylene glycol monobutyl ether | LOW                     | LOW              |
| diethylene glycol                  | LOW                     | LOW              |
| diethylene glycol monomethyl ether | LOW                     | LOW              |
| diethylene glycol monobutyl ether  | LOW                     | LOW              |

**Bioaccumulative potential**

| Ingredient                         | Bioaccumulation       |
|------------------------------------|-----------------------|
| triethylene glycol monobutyl ether | LOW (LogKOW = 0.0178) |
| diethylene glycol                  | LOW (BCF = 180)       |
| diethylene glycol monomethyl ether | LOW (BCF = 0.18)      |
| diethylene glycol monobutyl ether  | LOW (BCF = 0.46)      |

**Mobility in soil**

| Ingredient                         | Mobility       |
|------------------------------------|----------------|
| triethylene glycol monobutyl ether | LOW (KOC = 10) |
| diethylene glycol                  | HIGH (KOC = 1) |
| diethylene glycol monomethyl ether | HIGH (KOC = 1) |
| diethylene glycol monobutyl ether  | LOW (KOC = 10) |

Shell Brake and Clutch Fluid DOT4

**SECTION 13 DISPOSAL CONSIDERATIONS**

**Waste treatment methods**

|                                     |   |
|-------------------------------------|---|
| <b>Product / Packaging disposal</b> | <ul style="list-style-type: none"> <li>▶ Recycle wherever possible or consult manufacturer for recycling options.</li> <li>▶ Consult State Land Waste Authority for disposal.</li> <li>▶ Bury or incinerate residue at an approved site.</li> <li>▶ Recycle containers if possible, or dispose of in an authorised landfill.</li> </ul> |
|-------------------------------------|---|

**SECTION 14 TRANSPORT INFORMATION**

**Labels Required**

|                         |                |
|-------------------------|----------------|
| <b>Marine Pollutant</b> | NO             |
| <b>HAZCHEM</b>          | Not Applicable |

**Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**SECTION 15 REGULATORY INFORMATION**

**Safety, health and environmental regulations / legislation specific for the substance or mixture**

**TRIETHYLENE GLYCOL MONOBUTYL ETHER IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|  |   |
|--|---|
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals | IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk   |
| Australia Inventory of Chemical Substances (AICS)                            | IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances   |
| GESAMP/EHS Composite List - GESAMP Hazard Profiles                           | IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO |
| IMO IBC Code Chapter 17: Summary of minimum requirements                     |   |

**DIETHYLENE GLYCOL IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|   |   |
|---|---|
| Australia Exposure Standards  | Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6 |
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals                | GESAMP/EHS Composite List - GESAMP Hazard Profiles  |
| Australia Inventory of Chemical Substances (AICS)   | IMO IBC Code Chapter 17: Summary of minimum requirements                                    |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5 | IMO IBC Code Chapter 18: List of products to which the Code does not apply                  |
|   | IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances                               |

**DIETHYLENE GLYCOL MONOMETHYL ETHER IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|   |   |
|---|---|
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals                | GESAMP/EHS Composite List - GESAMP Hazard Profiles  |
| Australia Inventory of Chemical Substances (AICS)   | IMO IBC Code Chapter 17: Summary of minimum requirements  |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6 | IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk   |
| Chemical Footprint Project - Chemicals of High Concern List                                 | IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO |

**DIETHYLENE GLYCOL MONOBUTYL ETHER IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|   |   |
|---|---|
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals                | IMO IBC Code Chapter 17: Summary of minimum requirements  |
| Australia Inventory of Chemical Substances (AICS)   | IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk   |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5 | IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances   |
| GESAMP/EHS Composite List - GESAMP Hazard Profiles  | IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO |

**National Inventory Status**

| National Inventory            | Status  |
|-------------------------------|---|
| Australia - AICS              | Yes   |
| Canada - DSL                  | Yes   |
| Canada - NDLS                 | No (diethylene glycol monomethyl ether; diethylene glycol; diethylene glycol monobutyl ether; triethylene glycol monobutyl ether) |
| China - IECSC                 | Yes   |
| Europe - EINEC / ELINCS / NLP | Yes   |
| Japan - ENCS                  | Yes   |
| Korea - KECI                  | Yes   |
| New Zealand - NZIoC           | Yes   |
| Philippines - PICCS           | Yes   |
| USA - TSCA                    | Yes   |
| Taiwan - TCSI                 | Yes   |
| Mexico - INSQ                 | No (triethylene glycol monobutyl ether)   |
| Vietnam - NCI                 | Yes   |
| Russia - ARIPS                | Yes   |



## Shell Brake and Clutch Fluid DOT4

**Legend:**

Yes = All CAS declared ingredients are on the inventory

No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

**SECTION 16 OTHER INFORMATION**

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 12/09/2019 |
| <b>Initial Date</b>  | 12/09/2019 |

**SDS Version Summary**

| Version | Issue Date | Sections Updated     |
|---------|------------|----------------------|
| 2.1.1.1 | 12/09/2019 | Supplier Information |

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

**Definitions and abbreviations**

PC—TWA: Permissible Concentration-Time Weighted Average  
 PC—STEL: Permissible Concentration-Short Term Exposure Limit  
 IARC: International Agency for Research on Cancer  
 ACGIH: American Conference of Governmental Industrial Hygienists  
 STEL: Short Term Exposure Limit  
 TEEL: Temporary Emergency Exposure Limit.  
 IDLH: Immediately Dangerous to Life or Health Concentrations  
 OSF: Odour Safety Factor  
 NOAEL :No Observed Adverse Effect Level  
 LOAEL: Lowest Observed Adverse Effect Level  
 TLV: Threshold Limit Value  
 LOD: Limit Of Detection  
 OTV: Odour Threshold Value  
 BCF: BioConcentration Factors  
 BEI: Biological Exposure Index

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