Nulon Heavy Duty Diesel Coolant Top-Up

Nulon Products Australia

Chemwatch: 65-1999
Version No: 4.1.1.1
Safety Data Sheet according to WHS and ADG requirements

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

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>Nulon Heavy Duty Diesel Coolant Top-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>Product Code: HDDCTU</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

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

| Relevant identified uses | Automotive radiator coolant. Use according to manufacturer's directions. |

Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>Nulon Products Australia</th>
<th>Nulon Products NZ (Nulon NZ Ltd.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>17 Yulong Close Moorebank NSW 2170 Australia</td>
<td>80 Queen Street Auckland Central 1010 New Zealand</td>
</tr>
<tr>
<td>Telephone</td>
<td>+61 2 9608 7800</td>
<td>0800 454 108</td>
</tr>
<tr>
<td>Fax</td>
<td>+61 2 9601 4700</td>
<td>0800 547 080</td>
</tr>
<tr>
<td>Website</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:msds@nulon.com.au">msds@nulon.com.au</a></td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Emergency telephone number

<table>
<thead>
<tr>
<th>Association / Organisation</th>
<th>Chemwatch 24hr.</th>
<th>Chemwatch 24hr.</th>
<th>CHEMWATCH EMERGENCY RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency telephone numbers</td>
<td>1800 039 008</td>
<td>+800 2436 2255</td>
<td>+61 1800 951 288</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Poisons Schedule</th>
<th>S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification</td>
<td>Acute Toxicity (Oral) Category 4, Specific target organ toxicity - repeated exposure Category 2</td>
</tr>
</tbody>
</table>

Legend:

Label elements

Hazard pictogram(s)

SIGNAL WORD WARNING

Hazard statement(s)
**Precautionary statement(s) Prevention**

- **P260** Do not breathe mist/vapours/spray.
- **P264** Wash all exposed external body areas thoroughly after handling.
- **P270** Do not eat, drink or smoke when using this product.

**Precautionary statement(s) Response**

- **P314** Get medical advice/attention if you feel unwell.
- **P301+P312** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- **P330** Rinse mouth.

**Precautionary statement(s) Storage**

Not Applicable

**Precautionary statement(s) Disposal**

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

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**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

**Substances**

See section below for composition of Mixtures

**Mixtures**

<table>
<thead>
<tr>
<th>CAS No</th>
<th>% [weight]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>30-60</td>
<td>ethylene glycol</td>
</tr>
<tr>
<td>Not Available</td>
<td>&lt;1</td>
<td>dye, determined not to be hazardous</td>
</tr>
<tr>
<td>3734-33-6</td>
<td>&lt;1</td>
<td>denatonium benzoate</td>
</tr>
<tr>
<td>Not Available</td>
<td>balance</td>
<td>Ingredients determined not to be hazardous</td>
</tr>
</tbody>
</table>

---

**SECTION 4 FIRST AID MEASURES**

**Description of first aid measures**

**Eye Contact**

- If this product comes in contact with the eyes:
  - Wash out immediately with fresh running water.
  - 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.
  - Seek medical attention without delay; if pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**Skin Contact**

- If skin contact occurs:
  - Immediately remove all contaminated clothing, including footwear.
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

**Inhalation**

- If fumes or combustion products are inhaled from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

**Ingestion**

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.
- Avoid giving milk or oils.
- Avoid giving alcohol.

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

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours. Treat symptomatically.
To treat poisoning by the higher aliphatic alcohols (up to C7):

- Gastric lavage with copious amounts of water.
- It may be beneficial to instill 60 ml of mineral oil into the stomach.
- Oxygen and artificial respiration as needed.
- Electrolyte balance: it may be useful to start 500 ml M/6 sodium bicarbonate intravenously but maintain a cautious and conservative attitude toward electrolyte replacement unless shock or severe acidosis threatens.
- To protect the liver, maintain carbohydrate intake by intravenous infusions of glucose.
- Haemodialysis if coma is deep and persistent. [GOSSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products, Ed 5]

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**BASIC TREATMENT**

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for shock.
- Monitor and treat, where necessary, for pulmonary oedema.
- Anticipate and treat, where necessary, for seizures.
- **DO NOT use emetics.** Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

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**ADVANCED TREATMENT**

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV DSW TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- If the patient is hypoglycaemic (decreased or loss of consciousness, tachycardia, pallor, dilated pupils, diaphoresis and/or dextrose strip or glucometer readings below 50 mg), give 50% dextrose.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

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**EMERGENCY DEPARTMENT**

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- Acidosis may respond to hyperventilation and bicarbonate therapy.
- Haemodialysis might be considered in patients with severe intoxication.
- Consult a toxicologist as necessary. BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

For C8 alcohols and above.

Symptomatic and supportive therapy is advised in managing patients.

For acute or short term repeated exposures to ethylene glycol:

- Early treatment of ingestion is important. Ensure emesis is satisfactory.
- Test and correct for metabolic acidosis and hypocalcaemia.
- Apply sustained diuresis when possible with hypertonic mannitol.
- Evaluate renal status and begin haemodialysis if indicated. [J.L.O]
- Rapid absorption is an indication that emesis or lavage is effective only in the first few hours. Cathartics and charcoal are generally not effective.
- Correct acidosis, fluid/electrolyte balance and respiratory depression in the usual manner. Systemic acidosis (below 7.2) can be treated with intravenous sodium bicarbonate solution.
- Ethanol therapy prolongs the half-life of ethylene glycol and reduces the formation of toxic metabolites.
- Pyridoxine and thiamine are cofactors for ethylene glycol metabolism and should be given (50 to 100 mg respectively) intramuscularly, four times per day for 2 days.
- Magnesium is also a cofactor and should be replenished. The status of 4-methylpyrazole, in the treatment regime, is still uncertain. For clearance of the material and its metabolites, haemodialysis is much superior to peritoneal dialysis. [Ellenhorn and Barceloux: Medical Toxicology]

It has been suggested that there is a need for establishing a new biological exposure limit before a workshift that is clearly below 100 mmol ethoxy-acetic acids per mole creatinine in morning urine of people occupationally exposed to ethylene glycol ethers. This arises from the finding that an increase in urinary stones may be associated with such exposures.


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**SECTION 5 FIREFIGHTING MEASURES**

**Extinguishing media**

The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas. Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.

In such an event consider:

- foam.
**Special hazards arising from the substrate or mixture**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire Incompatibility</strong></td>
<td>None known.</td>
</tr>
</tbody>
</table>

### Advice for firefighters

#### Fire Fighting

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.

#### Fire/Explosion Hazard

- The material is not readily combustible under normal conditions.
- However, it will break down under fire conditions and the organic component may burn.
- Not considered to be a significant fire risk.
- Heat may cause expansion or decomposition with violent rupture of containers.

- Decomposes on heating and produces toxic fumes of:
  - carbon dioxide (CO2)
  - other pyrolysis products typical of burning organic material.
  - May emit poisonous fumes.
  - May emit corrosive fumes.

### 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Minor Spills**  | Slippery when spilt.  
  - Clean up all spills immediately.  
  - Avoid breathing vapours and contact with skin and eyes.  
  - Control personal contact with the substance, by using protective equipment.  
  - Contain and absorb spill with sand, earth, inert material or vermiculite. |
| **Major Spills**  | Slippery when spilt.  
  - Moderate hazard.  
  - Clear area of personnel and move upwind.  
  - Alert Fire Brigade and tell them location and nature of hazard.  
  - Wear breathing apparatus plus protective gloves. |

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

### SECTION 7 HANDLING AND STORAGE

#### Precautions for safe handling

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safe handling</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - Avoid all personal contact, including inhalation.  
  - Wear protective clothing when risk of exposure occurs.  
  - Use in a well-ventilated area.  
  - Prevent concentration in hollows and sumps. |
| **Other information** |  
  - Store in original containers.  
  - Keep containers securely sealed.  
  - Store in a cool, dry, well-ventilated area.  
  - Store away from incompatible materials and foodstuff containers. |

#### Conditions for safe storage, including any incompatibilities

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suitable container</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - **DO NOT** use aluminium or galvanised containers  
  - Polyethylene or polypropylene container.  
  - Packing as recommended by manufacturer.  
  - Check all containers are clearly labelled and free from leaks. |
| **Storage incompatibility** |  
  - Ethylene glycol:  
    - reacts violently with oxidisers and oxidising acids, sulfuric acid, chlorosulfonic acid, chromyl chloride, perchloric acid  
    - forms explosive mixtures with sodium perchlorate  
    - is incompatible with strong acids, caustics, aliphatic amines, isocyanates, chlorosulfonic acid, oleum, potassium bichromate, phosphorus pentasulfide, sodium chloride |

### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Control parameters
### OCCUPATIONAL EXPOSURE LIMITS (OEL)

#### INGREDIENT DATA

<table>
<thead>
<tr>
<th>Source</th>
<th>Ingredient</th>
<th>Material name</th>
<th>TWA</th>
<th>STEL</th>
<th>Peak</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Exposure Standards</td>
<td>ethylene glycol</td>
<td>Ethylene glycol (vapour)</td>
<td>20 ppm / 52 mg/m³</td>
<td>104 mg/m³ / 40 ppm</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Australia Exposure Standards</td>
<td>ethylene glycol</td>
<td>Ethylene glycol (particulate)</td>
<td>10 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### EMERGENCY LIMITS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Material name</th>
<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethylene glycol</td>
<td>Ethylene glycol</td>
<td>30 ppm</td>
<td>150 ppm</td>
<td>900 ppm</td>
</tr>
</tbody>
</table>

### OCCUPATIONAL EXPOSURE BANDING

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Occupational Exposure Band Rating</th>
<th>Occupational Exposure Band Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>denatonium benzoate</td>
<td>E</td>
<td>≤ 0.01 mg/m³</td>
</tr>
</tbody>
</table>

**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

**Appropriate engineering controls**

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:
- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- 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.

**Personal protection**

- Safety glasses with side shields.
- Chemical goggles.
- 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.

**Eye and face protection**

**Skin protection**

- See Hand protection below

**Hands/feet protection**

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

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. 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.

Personal hygiene is a key element of effective hand care.

**Body protection**

- See Other protection below

**Other protection**

- Overalls.
- P.V.C. apron.
- Barrier cream.

### Recommended material(s)

#### GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the: “Forsberg Clothing Performance Index”

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

Nulon Heavy Duty Diesel Coolant Top-Up

<table>
<thead>
<tr>
<th>Material</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEOPRENE</td>
<td>A</td>
</tr>
<tr>
<td>BUTYL</td>
<td>C</td>
</tr>
<tr>
<td>NATURAL RUBBER</td>
<td>C</td>
</tr>
<tr>
<td>NATURAL+NEOPRENE</td>
<td>C</td>
</tr>
</tbody>
</table>

#### Respiratory protection


Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

<table>
<thead>
<tr>
<th>Required Minimum Protection Factor</th>
<th>Half-Face Respirator</th>
<th>Full-Face Respirator</th>
<th>Powered Air Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 x ES</td>
<td>A-AUS P2</td>
<td>-</td>
<td>A-PAPR-AUS / Class 1 P2</td>
</tr>
<tr>
<td>up to 50 x ES</td>
<td>-</td>
<td>A-AUS / Class 1 P2</td>
<td>-</td>
</tr>
</tbody>
</table>
SECTION 10 STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Reactivity</th>
<th>See section 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>- Unstable in the presence of incompatible materials.</td>
</tr>
<tr>
<td></td>
<td>- Product is considered stable.</td>
</tr>
<tr>
<td></td>
<td>- Hazardous polymerisation will not occur.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions</td>
<td>See section 7</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>See section 7</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>See section 7</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>See section 5</td>
</tr>
</tbody>
</table>

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless, inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. Aliphatic alcohols with more than 3-carbons cause headache, dizziness, drowsiness, muscle weakness and delirium, central depression, coma, seizures and behavioural changes. Secondary respiratory depression and failure, as well as low blood pressure and irregular heart rhythms, may follow.

**Inhaled**

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. For ethylene glycol:

Symptoms following swallowing ethylene glycol include failure of breathing, central nervous system depression, cardiovascular collapse, lung swelling, acute kidney failure, and even brain damage. Swallowing 100 millilitres has caused death. There are three stages of ethylene glycol poisoning. The severity of each stage depends upon the amount of ethylene glycol swallowed.

Repeated exposure may cause skin cracking, flaking or drying following normal handling and use. Open cuts, abraded or irritated skin should not be exposed to this material. There is some evidence to suggest that the material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

**Skin Contact**

There is some evidence that the material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

**Eye**

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. There is some evidence from animal testing that exposure to this material may result in reduced fertility. There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby. Exposure to ethylene glycol over a period of several weeks may cause throat irritation, mild headache and low backache. These may worsen with increasing concentration of the substance. They may progress to a burning sensation in the throat, a burning cough, and drowsiness.

**Chronic**

Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

### Nulon Heavy Duty Diesel Coolant Top-Up

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### ethylene glycol

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal (rabbit) LD50: 9530 mg/kg[2]</td>
<td>Eye (rabbit): 100 mg/1h - mild</td>
</tr>
<tr>
<td>Inhalation (rat) LC50: 100.2 mg/l/8hr[2]</td>
<td>Eye (rabbit): 12 mg/m3/3D</td>
</tr>
<tr>
<td>Oral (rat) LD50: ~3.56-12.7 mg/kg[2]</td>
<td>Eye (rabbit): 1440mg/6h-moderate</td>
</tr>
<tr>
<td>Eye (rabbit): 500 mg/24h - mild</td>
<td>Eye: no adverse effect observed (not irritating)[1]</td>
</tr>
<tr>
<td>Skin (rabbit): 555 mg(open)-mild</td>
<td>Skin: no adverse effect observed (not irritating)[1]</td>
</tr>
</tbody>
</table>

### denatonium benzoate

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>dermal (rat) LD50: &gt;2000 mg/kg[1]</td>
<td>Eye: adverse effect observed (irreversible damage)[1]</td>
</tr>
<tr>
<td>Inhalation (rat) LC50: 0.2 mg/l/4H[2]</td>
<td>Skin: adverse effect observed (irritating)[1]</td>
</tr>
<tr>
<td>Oral (rat) LD50: 584 mg/kg[2]</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

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

### Nulon Heavy Duty Diesel Coolant Top-Up

No significant acute toxicological data identified in literature search.

**ETHYLENE GLYCOL**

[Estimated Lethal Dose (human) 100 ml; RTECS quoted by Orica] Substance is reproductive effector in rats (birth defects). Mutagenic to rat cells.

**DENATONIUM BENZOATE**

Somnolence, tremor, ataxia recorded. Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.

Most undiluted cationic surfactants satisfy the criteria for classification as Harmful (Xn) with R22 and as Irritant (X) for skin and eyes with R38 and R41.

For quaternary ammonium compounds (QACs):
Quaternary ammonium compounds are synthetically made surfactants. Studies show that its solubility, toxicity and irritation depend on chain length and bond type while effect on histamine depends on concentration. QACs may cause muscle paralysis with no brain involvement. There is a significant association between the development of asthma symptoms and the use of QACs as disinfectant.

Nulon Heavy Duty Diesel Coolant Top-Up & ETHYLENE GLYCOL

For ethylene glycol:
Ethylene glycol is quickly and extensively absorbed throughout the gastrointestinal tract. Limited information suggests that it is also absorbed through the airways; absorption through skin is apparently slow. Following absorption, it is distributed throughout the body. In humans, it is initially metabolized by alcohol dehydrogenase to form glycoaldehyde, which is rapidly converted to glycolic acid and glyoxal.

### Acute Toxicity

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Test Duration (hr)</th>
<th>Species</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>96</td>
<td>Fish</td>
<td>&gt;72-860mg/L</td>
<td>2</td>
</tr>
<tr>
<td>EC50</td>
<td>48</td>
<td>Crustacea</td>
<td>&gt;100mg/L</td>
<td>2</td>
</tr>
<tr>
<td>EC50</td>
<td>48</td>
<td>Algae or other aquatic plants</td>
<td>&gt;3-536mg/L</td>
<td>2</td>
</tr>
<tr>
<td>NOEC</td>
<td>552</td>
<td>Crustacea</td>
<td>&gt;=1-mg/L</td>
<td>2</td>
</tr>
</tbody>
</table>

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

### Persistence and degradability

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol</td>
<td>LOW (half-life = 24 days)</td>
<td>LOW (half-life = 3.46 days)</td>
</tr>
</tbody>
</table>

### Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol</td>
<td>LOW (BCF = 200)</td>
</tr>
</tbody>
</table>

### Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol</td>
<td>HIGH (KOC = 1)</td>
</tr>
</tbody>
</table>
### SECTION 13 DISPOSAL CONSIDERATIONS

#### Waste treatment methods

<table>
<thead>
<tr>
<th>Product / Packaging disposal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers may still present a chemical hazard/danger when empty.</td>
<td></td>
</tr>
<tr>
<td>Return to supplier for reuse/recycling if possible.</td>
<td></td>
</tr>
<tr>
<td>Otherwise:</td>
<td></td>
</tr>
<tr>
<td>If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</td>
<td></td>
</tr>
<tr>
<td>Where possible retain label warnings and SDS and observe all notices pertaining to the product.</td>
<td></td>
</tr>
</tbody>
</table>

Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- **Reduction**
- **Reuse**
- **Recycling**
- **Disposal** (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use.

- **DO NOT** allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licensed to accept chemical and/or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material).
- Decontaminate empty containers.

### SECTION 14 TRANSPORT INFORMATION

#### Labels Required

<table>
<thead>
<tr>
<th>Marine Pollutant</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZCHEM</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**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

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

- Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
- Australia Inventory of Chemical Substances (AICS)

**DENATONIUM BENZOATE IS FOUND ON THE FOLLOWING REGULATORY LISTS**

- Australia Inventory of Chemical Substances (AICS)
- Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

**National Inventory Status**

<table>
<thead>
<tr>
<th>National Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia - AICS</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada - DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada - NDSL</td>
<td>No (ethylene glycol; denatonium benzoate)</td>
</tr>
<tr>
<td>China - IECSC</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe - EINEC / ELINCS / NLP</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan - ENCS</td>
<td>No (denatonium benzoate)</td>
</tr>
<tr>
<td>Korea - KECI</td>
<td>Yes</td>
</tr>
<tr>
<td>Country</td>
<td>Status</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Yes</td>
</tr>
<tr>
<td>USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Yes</td>
</tr>
<tr>
<td>Mexico</td>
<td>Yes</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Yes</td>
</tr>
<tr>
<td>Russia</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Revision Date</th>
<th>07/03/2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Date</td>
<td>03/08/2016</td>
</tr>
</tbody>
</table>

#### SDS Version Summary

<table>
<thead>
<tr>
<th>Version</th>
<th>Issue Date</th>
<th>Sections Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1.1</td>
<td>01/11/2019</td>
<td>One-off system update. NOTE: This may or may not change the GHS classification</td>
</tr>
<tr>
<td>4.1.1.1</td>
<td>07/03/2020</td>
<td>Classification change due to full database hazard calculation/update.</td>
</tr>
</tbody>
</table>

**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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TEL (+61 3) 9572 4700.