Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Fleetguard Premium PG Plus Engine Coolant Premix

SYNONYMS
"pre-mixed propylene glycol based coolant"

PRODUCT NUMBERS
CC2866, CC2867, CC2868, CC2869, CC2870, CC2871

PRODUCT USE
Premixed propylene glycol based coolant.

SUPPLIER
Company: Cummins
Address:
2 Caribbean Drive
Scoresby
VIC, 3179
Australia
Telephone: +61 3 9765 3222
Emergency Tel: 1800 039 008 (24hours)
Fax: +61 3 9763 0079

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Toxicity</th>
<th>Body Contact</th>
<th>Reactivity</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

RISK
- Inhalation and/or ingestion may produce health damage*.
- May produce discomfort of the eyes, respiratory tract and skin*.
- Possible skin sensitisier*.
- Repeated exposure potentially causes skin dryness and cracking*.
- Vapours potentially cause drowsiness and dizziness*.
  * (limited evidence).

SAFETY
- Do not breathe gas/fumes/vapour/spray.
- Avoid contact with skin.
- Avoid contact with eyes.
- Wear suitable gloves.
- Wear eye/face protection.
- Use only in well ventilated areas.
- Keep container in a well ventilated place.
- Keep container tightly closed.
- In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

continued...
Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS</th>
<th>RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>propylene glycol</td>
<td>57-55-6</td>
<td></td>
<td>40-60</td>
</tr>
<tr>
<td>water</td>
<td>7732-18-5</td>
<td></td>
<td>30-60</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

SWALLOWED
• 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.

EYE
■ 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
■ 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.

INHALED
• If fumes or combustion products are inhaled remove 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.

NOTES TO PHYSICIAN
Treat symptomatically.
• Polyethylene glycols are generally poorly absorbed orally and are mostly unchanged by the kidney.
• Dermal absorption can occur across damaged skin (e.g. through burns) leading to increased osmolality, anion gap metabolic acidosis, elevated calcium, low ionised calcium, CNS depression and renal failure.
• Treatment consists of supportive care.
  [Ellenhorn and Barceloux: Medical Toxicology].
Propylene glycol is primarily a CNS depressant in large doses and may cause hypoglycaemia, lactic acidosis and seizures.
  • The usual measures are supportive care and decontamination (ipecac/ lavage/ activated charcoal/ cathartics), within 2 hours of exposure should suffice.
  • Check the anion gap, arterial pH, renal function and glucose levels.
Ellenhorn and Barceloux: Medical Toxicology.

Section 5 - FIRE FIGHTING 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.
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.

HAZCHEM
None

MINOR SPILLS
• 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
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.
• Prevent, by any means available, spillage from entering drains or water course.

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

PROCEDURE FOR HANDLING
• DO NOT allow clothing wet with material to stay in contact with skin.
• 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.

SUITABLE CONTAINER
• Polyethylene or polypropylene container.
• Packing as recommended by manufacturer.
• Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
• Glycols and their ethers undergo violent decomposition in contact with 70% perchloric acid. This seems likely to involve formation of the glycol perchlorate esters (after scission of ethers) which are explosive, those of ethylene glycol and 3-chloro-1,2-propanediol being more powerful than glyceryl nitrate, and the former so sensitive that it explodes on addition of water.
Alcohols
• are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents.
• react, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen
• react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium...
oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide, pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, trisobutylaluminium

• should not be heated above 49 deg. C. when in contact with aluminium equipment.

STORAGE REQUIREMENTS
• Store in original containers.
• Keep containers securely sealed.
• Store in a cool, dry, well-ventilated area.
• Store away from incompatible materials and foodstuff containers.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

<table>
<thead>
<tr>
<th>Source</th>
<th>Material</th>
<th>TWA ppm</th>
<th>TWA mg/m³</th>
<th>STEL ppm</th>
<th>STEL mg/m³</th>
<th>Peak ppm</th>
<th>Peak mg/m³</th>
<th>TWA F/CC</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Australia</td>
<td>propylene glycol (Propane- 1, 2-</td>
<td>10</td>
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<td></td>
<td></td>
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<tr>
<td>Exposure Standards</td>
<td>diol: particulates only)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>propylene glycol (Propane- 1, 2-</td>
<td>150</td>
<td>474</td>
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<tr>
<td>Exposure Standards</td>
<td>diol total: (vapour &amp; particulates)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

The following materials had no OELs on our records
• water: CAS:7732- 18- 5

MATERIAL DATA

FLEETGUARD PREMIUM PG PLUS ENGINE COOLANT PREMIX:

PROPYLENE GLYCOL:

for propylene glycol:

Saturated vapour concentration @ 20 deg C. = 65.8 ppm, 204.6 mg/m³; i.e higher concentrations can only occur as aerosols or at higher temperatures.

Odour Threshold: Practically odourless.</.

WATER:

No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION

RESPIRATOR

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

EYE

• 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. 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. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1338 or national equivalent].

continued...
HANDS/FEET
• Wear chemical protective gloves, e.g. PVC.
• Wear safety footwear or safety gumboots, e.g. Rubber.
NOTE:
• The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
• Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.
The selection of the 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.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

OTHER
• Overalls.
• P.V.C. apron.
• Barrier cream.
• Skin cleansing cream.

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.

APPEARANCE
Royal blue coloured alkaline liquid with a mild odour; mixes with water.

PHYSICAL PROPERTIES
Liquid.
Mixes with water.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>State</td>
<td>Liquid</td>
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<tr>
<td>Melting Range (°C)</td>
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<tr>
<td>Boiling Range (°C)</td>
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</tr>
<tr>
<td>Flash Point (°C)</td>
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</tr>
<tr>
<td>Decomposition Temp (°C)</td>
<td>Not Available</td>
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<tr>
<td>Autoignition Temp (°C)</td>
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<tr>
<td>Upper Explosive Limit (%)</td>
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<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Applicable</td>
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<tr>
<td>Volatile Component (%vol)</td>
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</tr>
<tr>
<td>Molecular Weight</td>
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<tr>
<td>Viscosity</td>
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<tr>
<td>Solubility in water (g/L)</td>
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<tr>
<td>pH (1% solution)</td>
<td>Not Available</td>
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<tr>
<td>pH (as supplied)</td>
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<tr>
<td>Vapour Pressure (kPa)</td>
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<tr>
<td>Specific Gravity (water=1)</td>
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<tr>
<td>Relative Vapour Density</td>
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<tr>
<td>(air=1)</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.
Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be damaging to the health of the individual.

EYE
■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN
■ 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. Repeated exposure may cause skin cracking, flaking or drying following normal handling and use. 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.

INHALED
■ 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. There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

CHRONIC HEALTH EFFECTS
■ There is limited evidence that, skin contact with this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Propylene glycol is though, by some, to be a sensitising principal following the regular use of topical creams by eczema patients. A study of 866 persons using a formulation containing propylene glycol in a patch test indicated that propylene glycol caused primary irritation in 16% of exposed individuals probably caused by dehydration.

TOXICITY AND IRRITATION
■ No significant acute toxicological data identified in literature search. 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. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.

SKIN
propylene glycol GESAMP/EHS Composite List - GESAMP Hazard Profiles D1: skin irritation/corrosion 0

Section 12 - ECOLOGICAL INFORMATION

No data

Ecotoxicity
Ingredient Persistence: Persistence: Air Bioaccumulation Mobility
propylene glycol LOW No Data LOW HIGH

continued...
Section 13 - DISPOSAL CONSIDERATIONS

- Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area.
  - A Hierarchy of Controls seems to be common - the user should investigate:
    - Reduction.
    - 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 licenced to accept chemical and/or pharmaceutical wastes or incineration in a licenced apparatus (after admixture with suitable combustible material).
    - Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
None  (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE
None

REGULATIONS

Regulations for ingredients

propylene glycol (CAS: 57-55-6) is found on the following regulatory lists;

water (CAS: 7732-18-5) is found on the following regulatory lists;

No data for Fleetguard Premium PG Plus Engine Coolant Premix (CW: 32-3900)
Section 16 - 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. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

- The (M)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.

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This is the end of the MSDS.