SAFETY DATA SHEET
QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Product number ZGB00QAFR001L, ZGB00QAFR005L, ZGB00QAFR020L, ZGB00QAFR0205L

Internal identification B16901, 16605, 16610, 16613, 16620

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

Identified uses Antifreeze liquid.

Uses advised against This product is not recommended for any industrial, professional or consumer use other than the identified uses stated above.

1.3. Details of the supplier of the safety data sheet

Supplier Volkswagen Group United Kingdom Ltd
Yeomans Drive
Blakelands
Milton Keynes

MK14 5AN
01908 601601

1.4. Emergency telephone number

Emergency telephone Tel: +44 1604 701111 (Office Hours Monday - Friday (0900 Hrs - 1700 Hrs))

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

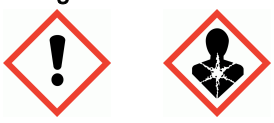
Physical hazards Not Classified

Health hazards Acute Tox. 4 - H302 STOT RE 2 - H373

Environmental hazards Not Classified

2.2. Label elements

Pictogram



Signal word Warning

Hazard statements H302 Harmful if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements P260 Do not breathe vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P314 Get medical advice/ attention if you feel unwell.
P330 Rinse mouth.
P501 Dispose of contents/ container in accordance with national regulations.
P102 Keep out of reach of children.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Contains ETHANEDIOL

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ETHANEDIOL **60-100%**

CAS number: 107-21-1 EC number: 203-473-3 REACH registration number: 01-2119456816-28-XXXX

Classification
Acute Tox. 4 - H302
STOT RE 2 - H373

DISODIUM TETRABORATE PENTAHYDRATE **1-5%**

CAS number: 12179-04-3 EC number: 215-540-4 REACH registration number: 01-2119490790-32-XXXX

Substance included in the Candidate List of Substances of Very High Concern according to article 59 (1,10) of regulation EC No. 1907/2006 ('REACH').

Classification
Eye Irrit. 2 - H319
Repr. 1B - H360FD

SODIUM NITRATE **<1%**

CAS number: 7631-99-4 EC number: 231-554-3 REACH registration number: 01-2119488221-41-XXXX

Classification
Eye Irrit. 2 - H319

SODIUM HYDROXIDE **<1%**

CAS number: 1310-73-2 EC number: 215-185-5 REACH registration number: 01-2119457892-27-XXXX

Classification
Met. Corr. 1 - H290
Skin Corr. 1A - H314
Eye Dam. 1 - H318

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

TOLYLTRIAZOLE		<1%
CAS number: 29385-43-1	EC number: 249-596-6	REACH registration number: 01-2119979081-35-XXXX

Classification
Acute Tox. 4 - H302
Eye Irrit. 2 - H319
Aquatic Chronic 2 - H411

DENATONIUM BENZOATE		<1%
CAS number: 3734-33-6	EC number: 223-095-2	

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Aquatic Chronic 3 - H412

The full text for all hazard statements is displayed in Section 16.

Composition comments The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation Move affected person to fresh air at once. Get medical attention. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.

Ingestion Do not induce vomiting. Remove affected person from source of contamination. Get medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].

Skin contact Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands.

Eye contact Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

4.2. Most important symptoms and effects, both acute and delayed

General information Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

4.3. Indication of any immediate medical attention and special treatment needed

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Notes for the doctor

Check section 3.2 to obtain percentage of ethylene glycol in this product, the following is based on 100% ethylene glycol content. If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Combustible Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Hazardous combustion products

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides.

5.3. Advice for firefighters

Protective actions during firefighting

Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Fight advanced or massive fires from safe distance or protected location. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Do not use water jet as an extinguisher, as this will spread the fire. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak. Extinguishing waters may present a risk of damage to the environmental, collect and dispose of as hazardous waste, in accordance with local legislation.

Special protective equipment for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. No smoking, sparks, flames or other sources of ignition near spillage. Avoid inhalation of vapours and contact with skin and eyes.

6.2. Environmental precautions

Environmental precautions Avoid from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Contain spilled material if possible. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Small Spillages: Absorb with materials such as: Cat litter. Sand. Sawdust. Zorb-all®. Hazorb®. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid spilling. Do not swallow. Do not handle broken packages without protective equipment. Good personal hygiene procedures should be implemented. Wash hands and any other contaminated areas of the body with soap and water before leaving the work site. Avoid contact with skin and eyes.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Keep away from food, drink and animal feeding stuffs. Keep only in the original container.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

ETHANEDIOL

Long-term exposure limit (8-hour TWA): WEL 52 mg/m³ 20 ppm
Short-term exposure limit (15-minute): WEL 104 mg/m3 40 ppm vapour
Sk
Long-term exposure limit (8-hour TWA): WEL 10 mg/m³ particulate

DISODIUM TETRABORATE PENTAHYDRATE

Long-term exposure limit (8-hour TWA): 1 mg/m³

SODIUM NITRATE

No exposure limit value known.

SODIUM HYDROXIDE

Short-term exposure limit (15-minute): WEL 2 mg/m³

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

TOLYLTRIAZOLE

No exposure limit value known.

DENATONIUM BENZOATE

No exposure limit value known.

WEL = Workplace Exposure Limit
Sk = Can be absorbed through skin.

Ingredient comments WEL = Workplace Exposure Limits

ETHANEDIOL (CAS: 107-21-1)

DNEL

Industry - Dermal; Long term systemic effects: 106 mg/kg bw/day
Industry - Inhalation; Long term local effects: 35 mg/m³
Consumer - Dermal; Long term systemic effects: 53 mg/kg bw/day
Consumer - Inhalation; Long term local effects: 7 mg/m³

PNEC

- Fresh water; 10 mg/l
- Marine water; 1 mg/l
- Sediment (Freshwater); 37 mg/kg sediment dw
- Intermittent release; 10 mg/l
- Soil; 1.53 mg/kg
- STP; 199.5 mg/l
- Sediment (Marinewater); 3.7 mg/kg sediment dw
- Soil; 1.53 mg/kg soil dw

DISODIUM TETRABORATE PENTAHYDRATE (CAS: 12179-04-3)

DNEL

Workers - Inhalation; Long term, Short term local effects, Acute: 11.7 mg/m³
Workers - Inhalation; Long term systemic effects: 6.7 mg/m³
General population - Oral; Long term, Short term systemic effects, Acute: 0.79 mg/kg bw/day
General population - Inhalation; Long term, Short term local effects, Acute: 11.7 mg/m³
General population - Dermal; Long term systemic effects: 159.5 mg/kg bw/day
Workers - Dermal; Long term systemic effects: 316.4 mg/kg bw/day
General population - Inhalation; Long term systemic effects: 3.4 mg/m³

PNEC

- Fresh water; 2.9 mg/l
- Marine water; 2.9 mg/l
- Intermittent release; 13.7 mg/l
- STP; 10 mg/l
- Soil; 5.7 mg/kg soil dw

SODIUM NITRATE (CAS: 7631-99-4)

DNEL

Workers - Inhalation; Long term systemic effects: 36.7 mg/m³
Workers - Dermal; Long term systemic effects: 20.8 mg/kg bw/day
General population - Inhalation; Long term systemic effects: 10.9 mg/m³
General population - Oral, Dermal; Long term systemic effects: 12.5 mg/kg bw/day

PNEC

- Fresh water; 0.45 mg/l
- Marine water; 0.045 mg/l
- Intermittent release; 4.5 mg/l
- STP; 18 mg/l

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

SODIUM SILICATE SOLUTION (CAS: 1344-09-8)

DNEL

Industry - Inhalation; Long term systemic effects: 5.61 mg/m³
Industry - Dermal; Long term systemic effects: 1.59 mg/kg bw/day
Consumer - Oral; Long term systemic effects: 0.80 mg/kg bw/day
Consumer - Inhalation; Long term systemic effects: 1.38 mg/m³
Consumer - Dermal; Long term systemic effects: 0.80 mg/kg bw/day

PNEC

- Fresh water; 7.5 mg/l
- Marine water; 1 mg/l
- Intermittent release; 7.5 mg/l
- STP; 348 mg/l

SODIUM HYDROXIDE (CAS: 1310-73-2)

DNEL

Consumer - Inhalation; local effects: 1 mg/m³
Industry - Inhalation; Long term local effects: 1 mg/m³

TOLYLTRIAZOLE (CAS: 29385-43-1)

DNEL

Workers - Inhalation; Long term systemic effects: 8.8 mg/m³
Workers - Dermal; Long term systemic effects: 0.5 mg/kg bw/day
General population - Inhalation; Long term systemic effects: 4.4 mg/m³
General population - Dermal; Long term, Short term systemic effects, Acute: 0.25 mg/kg bw/day

PNEC

- Fresh water; 0.008 mg/l
- Marine water; 0.008 mg/l
- Intermittent release; 0.086 mg/l
- STP; 39.4 mg/l
- Sediment (Freshwater); 0.0025 mg/kg sediment dw
- Sediment (Marinewater); 0.0025 mg/kg sediment dw
- Soil; 0.0024 mg/kg soil dw

DENATONIUM BENZOATE (CAS: 3734-33-6)

DNEL

Workers - Inhalation; Long term systemic effects: 15.748 mg/m³
Workers - Dermal; Long term systemic effects: 8.932 mg/kg bw/day
General population - Inhalation; Long term systemic effects: 3.883 mg/m³
General population - Dermal; Long term systemic effects: 4.466 mg/kg bw/day
General population - Oral; Long term systemic effects: 2.233 mg/kg bw/day

PNEC

- Fresh water; 0.1 mg/l
- Marine water; 0.01 mg/l
- Intermittent release; 1 mg/l
- STP; 51.158 mg/l
- Sediment (Freshwater); 33.692 mg/kg sediment dw
- Sediment (Marinewater); 3.369 mg/kg sediment dw
- Soil; 16.127 mg/kg soil dw

BENZYL VIOLET 4B (CAS: 1694-09-3)

DNEL

No DNEL available.

PNEC

No PNEC available.

8.2. Exposure controls

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Protective equipment

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

Use safety glasses (with side shields), consistent with EN 166 or equivalent. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles (goggles consistent with EN 166 or equivalent). If exposure causes eye discomfort, use a full-face respirator.

Hand protection

Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Use gloves with insulation for thermal protection (EN 407), when needed. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact. Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. When handling hot material, protect skin from thermal burns as well as from skin absorption.

Hygiene measures

Do not smoke in work area. Wash at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes contaminated. Wash promptly with soap and water if skin becomes contaminated. Use appropriate skin cream to prevent drying of skin. Do not eat, drink or smoke when using this product.

Respiratory protection

Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. Use CE approved air-purifying respirator with combination filter type A1P2 minimum.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance

Clear liquid.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Colour	Blue.
Odour	Mild. Characteristic.
pH	pH (diluted solution): 7.2-8.0 @ 50% water solution
Initial boiling point and range	>150°C @ 760 mm Hg
Flash point	120°C Closed cup.
Relative density	1.12-1.15 @ 20°C
Solubility(ies)	Completely soluble in water.

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Stable at normal ambient temperatures and when used as recommended.

10.2. Chemical stability

Stability Stable at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Will not polymerise.

10.4. Conditions to avoid

Conditions to avoid Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

10.5. Incompatible materials

Materials to avoid Strong acids. Strong oxidising agents. Strong alkalis.

10.6. Hazardous decomposition products

Hazardous decomposition products Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ethers. Alcohols.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects The product is not expected to be toxic to aquatic organisms.

Other health effects There is no evidence that the product can cause cancer.

Acute toxicity - oral

Notes (oral LD_{50}) Harmful if swallowed.

ATE oral (mg/kg) 542.75

Specific target organ toxicity - repeated exposure

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

General information To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated.

Inhalation Unlikely to be hazardous by inhalation because of the low vapour pressure of the product at ambient temperature. Vapour may irritate respiratory system/lungs.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Ingestion	Harmful: possible risk of irreversible effects if swallowed. Headache. Nausea, vomiting. There may be soreness and redness of the mouth and throat.
Skin contact	Prolonged and frequent contact may cause redness and irritation. Not a skin sensitiser.
Eye contact	May cause eye irritation.
Acute and chronic health hazards	May cause damage to kidneys and liver through prolonged or repeated exposure (oral).
Route of exposure	Ingestion.
Medical symptoms	Headache. Nausea, vomiting.

Toxicological information on ingredients.

ETHANEDIOL

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	7,712.0
Species	Rat
Notes (oral LD_{50})	Acute oral toxicity is expected to be moderate in humans eventhough animals test results would suggest a low toxicity. Ingestion of approximately 100ml has caused death in humans. Ingestion may cause nausea, vomiting, abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects and kidney failure.
ATE oral (mg/kg)	500.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	3,501.0
Species	Mouse
ATE dermal (mg/kg)	3,501.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	2.6
Species	Rat
Notes (inhalation LC_{50})	At room temperature exposure to vapour is minimal due to low volatility. With good ventilation single exposure is not expected to cause adverse effect. If the product is heated or the working area has poor ventilation, vapour/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

Skin corrosion/irritation

Animal data	Not irritating. Rabbit

Serious eye damage/irritation

Serious eye damage/irritation	Not irritating. Rabbit

Respiratory sensitisation

Respiratory sensitisation	Guinea pig: Not sensitising.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Skin sensitisation

Skin sensitisation - Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro Negative.

Genotoxicity - in vivo Negative.

Carcinogenicity

Carcinogenicity The current toxicological kowledge allows to not classify the product as a carcinogen.

Reproductive toxicity

Reproductive toxicity - fertility Ingestion of large amounts has been shown to interfere with reproduction in animals.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Observations in humans include: Nystagmus (involuntary eye movement). In animals effects have been reported on the following organs: kidneys and liver. NOAEL 150 mg/kg/day, Oral, Rat

Target organs Kidneys

Inhalation At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

Ingestion Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. For Ethylene glycol: Lethal Dose, Human, adult 100 ml LD50, rat, male and female 7,712 mg/kg.

Skin contact Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.

Eye contact May cause temporary eye irritation.

Route of exposure Ingestion.

Target organs Kidneys Liver

DISODIUM TETRABORATE PENTAHYDRATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 3,305.0

Species Rat

Notes (oral LD_{50}) Low acute oral toxicity.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

ATE oral (mg/kg)	3,305.0
Acute toxicity - dermal	
Acute toxicity dermal (LD_{50} mg/kg)	2,001.0
Species	Rabbit
Notes (dermal LD_{50})	The substance is poorly absorbed through intact skin. Low acute dermal toxicity.
ATE dermal (mg/kg)	2,001.0
Acute toxicity - inhalation	
Notes (inhalation LC_{50})	Low acute inhalation toxicity.
Skin corrosion/irritation	
Animal data	Not irritating.
Serious eye damage/irritation	
Serious eye damage/irritation	Moderately irritating.
Respiratory sensitisation	
Respiratory sensitisation	Data lacking.
Skin sensitisation	
Skin sensitisation	Not sensitising.
Carcinogenicity	
Carcinogenicity	No evidence of carcinogenicity in animal studies.
Reproductive toxicity	
Reproductive toxicity - fertility	Known reproductive toxicant based on animal evidence.
Reproductive toxicity - development	Known reproductive toxicant based on animal evidence.
Specific target organ toxicity - single exposure	
STOT - single exposure	Conclusive data but not sufficient for classification.
Specific target organ toxicity - repeated exposure	
STOT - repeated exposure	Conclusive data but not sufficient for classification.
Aspiration hazard	
Aspiration hazard	Conclusive data but not sufficient for classification.
Skin contact	Not irritating. Not a skin sensitiser.
Eye contact	Mild eye irritant in rabbits.

SECTION 12: Ecological Information

Ecotoxicity The product is not expected to be hazardous to the environment. The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Ecological information on ingredients.

DISODIUM TETRABORATE PENTAHYDRATE

Ecotoxicity Boron occurs naturally in sea water at an average concentration of 5 mg B/l and fresh water at 1 mg B/l or less. In dilute aqueous solutions the predominant boron species present is undissociated boric acid.

12.1. Toxicity

Toxicity The product is not expected to be toxic to aquatic organisms.

Ecological information on ingredients.

ETHANEDIOL

Toxicity Product not classified as dangerous to aquatic organisms.

Acute aquatic toxicity

Acute toxicity - fish LC50, 96 hours: 72860 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic invertebrates EC_{50}, 48 hours: > 100 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC_{50}, 96 hours: 6500 - 13000 mg/l, Selenastrum capricornutum

Acute toxicity - microorganisms EC20, 30 minutes: > 1995 mg/l, Activated sludge

Chronic aquatic toxicity

Chronic toxicity - fish early life stage NOEC, 7 days: 15380 mg/l, Pimephales promelas (Fat-head Minnow)

Chronic toxicity - aquatic invertebrates NOEC, 7 days: 8590 mg/l, Ceriodaphnia Sp.

DISODIUM TETRABORATE PENTAHYDRATE

Toxicity All toxicity values relate to Boron (Boron = Disodium Tetraborate Pentahydrate multiplied by 0.1484).

Acute aquatic toxicity

Acute toxicity - fish LC_{50}, 96 hours: 79.7 mg B/L, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic invertebrates LC_{50}, 48 hours: 133 mg B/L, Daphnia magna

Acute toxicity - aquatic plants EC_{50}, 72 hours: 40 mg B/L, Selenastrum capricornutum

Chronic aquatic toxicity

Toxicity to terrestrial plants Boron is an essential micronutrient for healthy growth of plants, however, it can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimise the amount of borate product released to the environment.

12.2. Persistence and degradability

Persistence and degradability The product is biodegradable but it must not be discharged into drains without permission from the authorities. The product is degraded completely by photochemical oxidation.

QUANTUM ANTI-FREEZE BLUE (Summer Coolant)

Ecological information on ingredients.

ETHANEDIOL

Persistence and degradability The product is biodegradable.

Biodegradation Water - Degradation (%) 90 - 100%: 10 days
Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

DISODIUM TETRABORATE PENTAHYDRATE

Persistence and degradability Boron is naturally occurring and ubiquitous in the environment. Borax pentahydrate decomposes in the environment to natural borate.

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Ecological information on ingredients.

ETHANEDIOL

Bioaccumulative potential Not potentially bioaccumulative

Partition coefficient log Pow: -1.36

DISODIUM TETRABORATE PENTAHYDRATE

Bioaccumulative potential The product is not bioaccumulating.

12.4. Mobility in soil

Mobility The product is soluble in water. Volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Ecological information on ingredients.

ETHANEDIOL

Mobility The product is soluble in water. Volatilization from natural bodies of water or moist soil is not expected to be an important fate process. Potential for mobility in soil is very high.

Adsorption/desorption coefficient Water - Koc: ~ 1 @ °C

Henry's law constant ~ 8.05E-09 atm m3/mol @ 25°C

DISODIUM TETRABORATE PENTAHYDRATE

Mobility The product is soluble in water. Potential for mobility in soil is very high.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

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ETHANEDIOL

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

DISODIUM TETRABORATE PENTAHYDRATE

Results of PBT and vPvB assessment PBT assessment does not apply.

12.6. Other adverse effects

Other adverse effects Not applicable.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

Disposal methods Residues and empty containers should be taken care of as hazardous waste according to local and national provisions. Avoid the spillage or runoff entering drains, sewers or watercourses.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

Road transport notes Not classified.

Rail transport notes Not classified.

Sea transport notes Not classified.

Air transport notes Not classified.

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

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14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

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

National regulations Control of Pollution (Special Waste) Regulations 1980 (as amended).
The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).

EU legislation Dangerous Substances Directive 67/548/EEC.
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

Guidance Workplace Exposure Limits EH40.
CHIP for everyone HSG228.
Introduction to Local Exhaust Ventilation HS(G)37.
Approved Classification and Labelling Guide (Sixth edition) L131.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision comments NOTE: Lines within the margin indicate significant changes from the previous revision.

Issued by HS&E Manager.

Revision date 29/06/2018

Revision 3

Supersedes date 14/02/2017

SDS status Approved.

Hazard statements in full H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360FD May damage fertility if swallowed. May damage the unborn child if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs (Kidneys) through prolonged or repeated exposure if swallowed.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

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