

## SAFETY DATA SHEET

### QUANTUM ANTI-FREEZE RED - LONG LIFE

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

##### 1.1. Product identifier

<b>Product name</b>	QUANTUM ANTI-FREEZE RED - LONG LIFE
<b>Product number</b>	ZGBQAFRLL01L, ZGBQAFRLL005L, ZGBQAFRLL020L, ZGBQAFRLL205L
<b>Internal identification</b>	B16911, 16655, 16660, 16663, 16670

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

<b>Identified uses</b>	Antifreeze liquid.
<b>Uses advised against</b>	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

<b>Supplier</b>	Volkswagen Group United Kingdom Ltd Yeomans Drive Blakelands Milton Keynes
	MK14 5AN 01908 601601

##### 1.4. Emergency telephone number

<b>Emergency telephone</b>	Tel: +44 1604 701111 (Office Hours Monday - Friday (0900 Hrs - 1700 Hrs))
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#### SECTION 2: Hazards identification

##### 2.1. Classification of the substance or mixture

###### Classification (EC 1272/2008)

<b>Physical hazards</b>	Not Classified
<b>Health hazards</b>	Acute Tox. 4 - H302 STOT RE 2 - H373
<b>Environmental hazards</b>	Not Classified

##### 2.2. Label elements

###### Pictogram



<b>Signal word</b>	Warning
<b>Hazard statements</b>	H302 Harmful if swallowed. H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
<b>Precautionary statements</b>	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.

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**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

<b>ETHANEDIOL</b>	<b>60-100%</b>
CAS number: 107-21-1	EC number: 203-473-3
	REACH registration number: 01-2119456816-28-XXXX
<b>Classification</b>	
Acute Tox. 4 - H302	
STOT RE 2 - H373	
<b>SODIUM BENZOATE</b>	<b>&lt;1%</b>
CAS number: 532-32-1	EC number: 208-534-8
	REACH registration number: 01-2119460683-35-XXXX
<b>Classification</b>	
Eye Irrit. 2 - H319	
<b>TOLYLTRIAZOLE</b>	<b>&lt;1%</b>
CAS number: 29385-43-1	EC number: 249-596-6
	REACH registration number: 01-2119979081-35-XXXX
<b>Classification</b>	
Acute Tox. 4 - H302	
Eye Irrit. 2 - H319	
Aquatic Chronic 2 - H411	
<b>DISODIUM MONOMOLYBDATE DIHYDRATE</b>	<b>&lt;1%</b>
CAS number: 10102-40-6	EC number: 231-551-7
	REACH registration number: 05-2116507364-51-XXXX
<b>Classification</b>	
Not Classified	
<b>DENATONIUM BENZOATE</b>	<b>&lt;1%</b>
CAS number: 3734-33-6	EC number: 223-095-2
<b>Classification</b>	
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.

## QUANTUM ANTI-FREEZE RED - LONG LIFE

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

<b>General information</b>	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.
<b>Inhalation</b>	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.
<b>Ingestion</b>	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].
<b>Skin contact</b>	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.
<b>Eye contact</b>	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

<b>General information</b>	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.
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#### 4.3. Indication of any immediate medical attention and special treatment needed

<b>Notes for the doctor</b>	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.
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### 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.

### 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

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### 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/m<sup>3</sup> 20 ppm

Short-term exposure limit (15-minute): WEL 104 mg/m<sup>3</sup> 40 ppm vapour

Sk

Long-term exposure limit (8-hour TWA): WEL 10 mg/m<sup>3</sup> particulate

##### **SODIUM BENZOATE**

No exposure limit value known.

##### **TOLYLTRIAZOLE**

No exposure limit value known.

##### **DISODIUM MONOMOLYBDATE DIHYDRATE**

Long-term exposure limit (8-hour TWA): WEL 5 mg/m<sup>3</sup>, as Mo. inhalable dust

Short-term exposure limit (15-minute): WEL 10 mg/m<sup>3</sup> inhalable dust

as Mo

##### **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)

<b>DNEL</b>	Industry - Dermal; Long term systemic effects: 106 mg/kg bw/day Industry - Inhalation; Long term local effects: 35 mg/m <sup>3</sup> Consumer - Dermal; Long term systemic effects: 53 mg/kg bw/day Consumer - Inhalation; Long term local effects: 7 mg/m <sup>3</sup>
<b>PNEC</b>	- 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

**QUANTUM ANTI-FREEZE RED - LONG LIFE****SODIUM BENZOATE (CAS: 532-32-1)**

**DNEL** Workers - Inhalation; Long term systemic effects: 3 mg/m<sup>3</sup>  
 Workers - Dermal; Long term systemic effects: 62.5 mg/kg bw/day  
 Workers - Inhalation; Long term local effects: 0.1 mg/m<sup>3</sup>  
 General population - Inhalation; Long term systemic effects: 1.5 mg/m<sup>3</sup>  
 General population - Inhalation; Long term local effects: 0.06 mg/m<sup>3</sup>  
 General population - Dermal; Long term systemic effects: 31.25 mg/kg bw/day  
 General population - Oral; Long term systemic effects: 16.6 mg/kg bw/day

**PNEC** - Fresh water; 0.13 mg/l  
 - Marine water; 0.013 mg/l  
 - Intermittent release; 0.305 mg/l  
 - STP; 10 mg/l  
 - Sediment (Freshwater); 1.76 mg/kg sediment dw  
 - Sediment (Marinewater); 0.176 mg/kg sediment dw  
 - Soil; 0.000265 mg/kg soil dw

**TOLYLTRIAZOLE (CAS: 29385-43-1)**

**DNEL** Workers - Inhalation; Long term systemic effects: 8.8 mg/m<sup>3</sup>  
 Workers - Dermal; Long term systemic effects: 0.5 mg/kg bw/day  
 General population - Inhalation; Long term systemic effects: 4.4 mg/m<sup>3</sup>  
 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

**DISODIUM MONOMOLYBDATE DIHYDRATE (CAS: 10102-40-6)**

**DNEL** Workers - Inhalation; Long term systemic effects: 28 mg/m<sup>3</sup>

**PNEC** - Fresh water; 32.0 mg/l  
 - Marine water; 4.8 mg/l  
 - Sediment (Freshwater); 57000 mg/kg sediment dw  
 - Sediment (Marinewater); 4995 mg/kg sediment dw  
 - Soil; from 29.8 to 474 mg/kg soil dw  
 - STP; 54.7 mg/l

**DENATONIUM BENZOATE (CAS: 3734-33-6)**

**DNEL** Workers - Inhalation; Long term systemic effects: 15.748 mg/m<sup>3</sup>  
 Workers - Dermal; Long term systemic effects: 8.932 mg/kg bw/day  
 General population - Inhalation; Long term systemic effects: 3.883 mg/m<sup>3</sup>  
 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

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### 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

### 8.2. Exposure controls

#### 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.

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<b>Environmental exposure controls</b>	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.
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### SECTION 9: Physical and Chemical Properties

#### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	Clear liquid.
<b>Colour</b>	Reddish. Pink.
<b>Odour</b>	Almost odourless. Characteristic.
<b>pH</b>	pH (diluted solution): 8.0 to 8.6 @ 50% water solution
<b>Initial boiling point and range</b>	>160°C @ 760 mm Hg
<b>Flash point</b>	117°C Closed cup.
<b>Relative density</b>	1.12 to 1.14 @ 20°C

#### 9.2. Other information

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

<b>Reactivity</b>	Stable at normal ambient temperatures and when used as recommended.
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#### 10.2. Chemical stability

<b>Stability</b>	Stable at normal ambient temperatures.
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#### 10.3. Possibility of hazardous reactions

<b>Possibility of hazardous reactions</b>	Will not polymerise.
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#### 10.4. Conditions to avoid

<b>Conditions to avoid</b>	Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.
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#### 10.5. Incompatible materials

<b>Materials to avoid</b>	Strong acids. Strong oxidising agents. Strong alkalis.
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#### 10.6. Hazardous decomposition products

<b>Hazardous decomposition products</b>	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.
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### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<b>Toxicological effects</b>	The product is not expected to be toxic to aquatic organisms.
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<b>Other health effects</b>	There is no evidence that the product can cause cancer.
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#### Acute toxicity - oral

<b>Notes (oral LD<sub>50</sub>)</b>	Harmful if swallowed.
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<b>ATE oral (mg/kg)</b>	540.31
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#### Specific target organ toxicity - repeated exposure



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<b>STOT - repeated exposure</b>	May cause damage to organs through prolonged or repeated exposure.
<b>General information</b>	To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated.
<b>Inhalation</b>	Unlikely to be hazardous by inhalation because of the low vapour pressure of the product at ambient temperature. Vapour may irritate respiratory system/lungs.
<b>Ingestion</b>	Harmful: possible risk of irreversible effects if swallowed. Headache. Nausea, vomiting. There may be soreness and redness of the mouth and throat.
<b>Skin contact</b>	Prolonged and frequent contact may cause redness and irritation. Not a skin sensitiser.
<b>Eye contact</b>	May cause eye irritation.
<b>Acute and chronic health hazards</b>	May cause damage to kidneys and liver through prolonged or repeated exposure (oral).
<b>Route of exposure</b>	Ingestion.
<b>Medical symptoms</b>	Headache. Nausea, vomiting.

### Toxicological information on ingredients.

#### ETHANEDIOL

##### Acute toxicity - oral

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 7,712.0

**Species** Rat

**Notes (oral LD<sub>50</sub>)** 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<sub>50</sub> mg/kg)** 3,501.0

**Species** Mouse

**ATE dermal (mg/kg)** 3,501.0

##### Acute toxicity - inhalation

**Acute toxicity inhalation (LC<sub>50</sub> vapours mg/l)** 2.6

**Species** Rat

**Notes (inhalation LC<sub>50</sub>)** 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

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<b>Animal data</b>	Not irritating. Rabbit
<b><u>Serious eye damage/irritation</u></b>	
<b>Serious eye damage/irritation</b>	Not irritating. Rabbit
<b><u>Respiratory sensitisation</u></b>	
<b>Respiratory sensitisation</b>	Guinea pig: Not sensitising.
<b><u>Skin sensitisation</u></b>	
<b>Skin sensitisation</b>	- Guinea pig: Not sensitising.
<b><u>Germ cell mutagenicity</u></b>	
<b>Genotoxicity - in vitro</b>	Negative.
<b>Genotoxicity - in vivo</b>	Negative.
<b><u>Carcinogenicity</u></b>	
<b>Carcinogenicity</b>	The current toxicological knowledge allows to not classify the product as a carcinogen.
<b><u>Reproductive toxicity</u></b>	
<b>Reproductive toxicity - fertility</b>	Ingestion of large amounts has been shown to interfere with reproduction in animals.
<b><u>Specific target organ toxicity - repeated exposure</u></b>	
<b>STOT - repeated exposure</b>	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
<b>Target organs</b>	Kidneys
<b><u>Inhalation</u></b>	
<b>Inhalation</b>	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.
<b><u>Ingestion</u></b>	
<b>Ingestion</b>	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.
<b><u>Skin contact</u></b>	
<b>Skin contact</b>	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.
<b><u>Eye contact</u></b>	
<b>Eye contact</b>	May cause temporary eye irritation.
<b><u>Route of exposure</u></b>	
<b>Route of exposure</b>	Ingestion.
<b><u>Target organs</u></b>	
<b>Target organs</b>	Kidneys Liver

**QUANTUM ANTI-FREEZE RED - LONG LIFE****DISODIUM MONOMOLYBDATE DIHYDRATE****Acute toxicity - oral**

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 2,733.0

**Species** Rat

**ATE oral (mg/kg)** 2,733.0

**Acute toxicity - dermal**

**Acute toxicity dermal (LD<sub>50</sub> mg/kg)** 2,001.0

**Species** Rat

**ATE dermal (mg/kg)** 2,001.0

**Skin corrosion/irritation**

**Animal data** Not irritating.

**Serious eye damage/irritation**

**Serious eye damage/irritation** Not irritating.

**Respiratory sensitisation**

**Respiratory sensitisation** Data lacking.

**Skin sensitisation**

**Skin sensitisation** Not sensitising.

**Germ cell mutagenicity**

**Genotoxicity - in vitro** Negative.

**Genotoxicity - in vivo** Negative.

**Carcinogenicity**

**Carcinogenicity** Based on available data the classification criteria are not met.

**Reproductive toxicity**

**Reproductive toxicity - fertility** Data lacking.

**Specific target organ toxicity - single exposure**

**STOT - single exposure** Based on available data the classification criteria are not met.

**Specific target organ toxicity - repeated exposure**

**STOT - repeated exposure** Data lacking.

**Aspiration hazard**

**Aspiration hazard** Not considered an aspiration hazard.

**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 RED - LONG LIFE

### 12.1. Toxicity

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

#### Ecological information on ingredients.

##### ETHANEDIOL

<b>Toxicity</b>	Product not classified as dangerous to aquatic organisms.
<b><u>Acute aquatic toxicity</u></b>	
<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 96 hours: 72860 mg/l, Pimephales promelas (Fat-head Minnow)
<b>Acute toxicity - aquatic invertebrates</b>	EC <sub>50</sub> , 48 hours: > 100 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , 96 hours: 6500 - 13000 mg/l, Selenastrum capricornutum
<b>Acute toxicity - microorganisms</b>	EC <sub>20</sub> , 30 minutes: > 1995 mg/l, Activated sludge
<b><u>Chronic aquatic toxicity</u></b>	
<b>Chronic toxicity - fish early life stage</b>	NOEC, 7 days: 15380 mg/l, Pimephales promelas (Fat-head Minnow)
<b>Chronic toxicity - aquatic invertebrates</b>	NOEC, 7 days: 8590 mg/l, Ceriodaphnia Sp.

##### DISODIUM MONOMOLYBDATE DIHYDRATE

<b><u>Acute aquatic toxicity</u></b>	
<b>Acute toxicity - fish</b>	LC <sub>50</sub> , 96 hours: 1536-1718 mg/l, Pimephales promelas (Fat-head Minnow)
<b>Acute toxicity - aquatic invertebrates</b>	LC <sub>50</sub> , 48 hours: 330.1 mg/l, Daphnia magna
<b>Acute toxicity - aquatic plants</b>	EC <sub>50</sub> , Effect on growth., 72 hours: 840 mg/l, Pseudokirchneriella subcapitata
<b>Acute toxicity - microorganisms</b>	EC <sub>50</sub> , 3 hours: 216.5 mg/l, as Mo, Activated sludge

### 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.

#### Ecological information on ingredients.

##### ETHANEDIOL

<b>Persistence and degradability</b>	The product is biodegradable.
<b>Biodegradation</b>	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 MONOMOLYBDATE DIHYDRATE

## QUANTUM ANTI-FREEZE RED - LONG LIFE

**Persistence and degradability** Not applicable.

### 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 MONOMOLYBDATE DIHYDRATE

**Bioaccumulative potential** Low potential.

### 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 m<sup>3</sup>/mol @ 25°C

#### DISODIUM MONOMOLYBDATE DIHYDRATE

**Mobility** Mobile in soils.

### 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.

#### ETHANEDIOL

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

#### DISODIUM MONOMOLYBDATE DIHYDRATE

**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

## QUANTUM ANTI-FREEZE RED - LONG LIFE

### 13.1. Waste treatment methods

<b>General information</b>	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.
<b>Disposal methods</b>	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

<b>General</b>	The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).
<b>Road transport notes</b>	Not classified.
<b>Rail transport notes</b>	Not classified.
<b>Sea transport notes</b>	Not classified.
<b>Air transport notes</b>	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.

#### 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.

Annex II of MARPOL 73/78 and the IBC Code

### SECTION 15: Regulatory information

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

<b>National regulations</b>	Control of Pollution (Special Waste) Regulations 1980 (as amended). The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
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## QUANTUM ANTI-FREEZE RED - LONG LIFE

<b>EU legislation</b>	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).
<b>Guidance</b>	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

<b>Revision comments</b>	NOTE: Lines within the margin indicate significant changes from the previous revision.
<b>Issued by</b>	HS&E Manager.
<b>Revision date</b>	29/06/2018
<b>Revision</b>	7
<b>Supersedes date</b>	14/02/2017
<b>SDS status</b>	Approved.
<b>Hazard statements in full</b>	H302 Harmful if swallowed. H315 Causes skin irritation. H319 Causes serious eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation. H373 May cause damage to organs through prolonged or repeated exposure if swallowed. 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.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.