# SAFETY DATA SHEET

## XTRA COOL GREEN CORROSION INHIBITOR CONCENTRATE

Infosafe No.: MTJUC
ISSUED Date : 19/05/2017
ISSUED by: ITW AAMTECH

## 1. IDENTIFICATION

**GHS Product Identifier**
XTRA COOL GREEN CORROSION INHIBITOR CONCENTRATE

**Product Code**
TEX500, TEX20L

**Company Name**
ITW AAMTECH (ABN 63 004 235 063)

**Address**
1-9 NINA LINK DANDENONG SOUTH
VIC 3175 Australia

**Telephone/Fax Number**
Tel: 1800 177 989
Fax: +61 2 9725 4698; 1800 308 556

**Emergency phone number**
1800 638 556

**E-mail Address**
info@aamtech.com.au

**Recommended use of the chemical and restrictions on use**
Corrosion inhibitor concentrate for automotive use. Diluted with water in use.

**Additional Information**
Chemical Name: Not Applicable

## 2. HAZARD IDENTIFICATION

**GHS classification of the substance/mixture**
Acute Toxicity - Oral: Category 4

**Signal Word (s)**
WARNING

**Hazard Statement (s)**
H302 Harmful if swallowed.

**Pictogram (s)**
Exclamation mark

**Precautionary statement – Prevention**
P264 Wash all exposed external body areas thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

**Precautionary statement – Response**
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.

P330 Rinse mouth.

**Precautionary statement – Disposal**
P501 Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration

**Other Information**
Classification of the substance or mixture:
HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the Model WHS Regulations and the ADG Code.

GHS Classification [1]: Acute Toxicity (Oral) Category 4

Legend: 2. Classification drawn from HSIS ; 3. Classification drawn from EC Regolamento 1272/2008 - Annex VI

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Ingredients**

| Name | CAS | Proportion |
|---|---|---|
| Ethylene glycol | 107-21-1 | 30-60 % |
| Corrosion inhibitor | Not available | 10-29 % |
| BITTERING AGENT | Not Available | <1 % |
| Water | 7732-18-8 | 30-60 % |

**Other Information**
Synonyms: TEX500, TEX20L
CAS number: Not Applicable

Substances:
See section below for composition of Mixtures

## 4. FIRST-AID MEASURES

**Inhalation**
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.
Transport to hospital, or doctor.

**Ingestion**
For advice, contact a Poisons Information Centre or a doctor at once.
Urgent hospital treatment is likely to be needed.
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.
Transport to hospital or doctor without delay.

**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.

**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.

**Indication of immediate medical attention and special treatment needed if necessary**
Treat symptomatically.
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. [I.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.
Laitinen J., et al: Occupational & Environmental Medicine 1996; 53, 595-600

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Water spray or fog.
Foam.
Dry chemical powder.
BCF (where regulations permit).
Carbon dioxide.

**Specific Methods**
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 courses.
Use water delivered as a fine spray to control fire and cool adjacent area.
DO NOT approach containers suspected to be hot.
Cool fire exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

**Specific Hazards Arising From The Chemical**
Fire Incompatibility: Avoid contamination with strong oxidising agents as ignition may result

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 may produce toxic fumes of carbon monoxide (CO).
May emit acrid smoke.
Decomposes on heating and produces toxic fumes of:
Carbon dioxide ($CO_2$)

**Hazchem Code**
None

**Decomposition Temperature**
Not Available

## 6. ACCIDENTAL RELEASE MEASURES

**Clean-up Methods - Small Spillages**
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.
Wipe up.
Place in a suitable, labelled container for waste disposal.

**Clean-up Methods - Large Spillages**
Slippery when spilt.
Minor hazard.
Clear area of personnel.
Alert Fire Brigade and tell them location and nature of hazard.
Control personal contact with the substance, by using protective equipment as required.
Prevent spillage from entering drains or water ways.
Contain spill with sand, earth or vermiculite.
Collect recoverable product into labelled containers for recycling.
Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.
Wash area and prevent runoff into drains or waterways.
If contamination of drains or waterways occurs, advise emergency services.

**Other Information**
Personal Protective Equipment advice is contained in Section 8 - Exposure controls/personal protection of the MSDS.

## 7. HANDLING AND STORAGE

**Precautions for Safe Handling**
Safe handling:
DO NOT allow clothing wet with material to stay in contact with skin
Limit all unnecessary personal contact.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area.
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use.
Avoid physical damage to containers.
Always wash hands with soap and water after handling.
Work clothes should be laundered separately.
Use good occupational work practice.
Observe manufacturer's storage and handling recommendations contained within this MSDS.
Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

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.
Protect containers against physical damage and check regularly for leaks.
Observe manufacturer's storage and handling recommendations contained within this MSDS.

**Conditions for safe storage, including any incompatibilities**
Suitable container:
Polyethylene or polypropylene container.
Packing as recommended by manufacturer.

Check all containers are clearly labelled and free from leaks.

Storage incompatibility:
Avoid storage with oxidisers
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 chlorite
Avoid strong acids, bases.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Occupational exposure limit values**
INGREDIENT DATA:
Source: Australia Exposure Standards
Ingredient: ethylene glycol
Material name: Ethylene glycol (particulate) / Ethylene glycol (vapour)
TWA: 10 (mgm³) / 52 (mgm³) / 20 (ppm)
STEL: 104 (mgm³) / 40 (ppm)
Peak: Not Available
Notes: Not Available

EMERGENCY LIMITS
Ingredient: ethylene glycol
TEEL-0: 10(ppm)
TEEL-1: 39.4(ppm)
TEEL-2: 40(ppm)
TEEL-3: 60(ppm)

Ingredient: water
TEEL-0: 500(ppm)
TEEL-1: 500(ppm)
TEEL-2: 500(ppm)
TEEL-3: 500(ppm)

Ingredient: Xtra Cool GREEN Corrosion Inhibitor Concentrate
Original IDLH: Not Available
Revised IDLH: Not Available

**Appropriate Engineering Controls**
General exhaust is adequate under normal operating conditions.

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

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.

Required Minimum Protection Factor: up to 5 x ES
Half-Face Respirator: A-AUS / Class 1 P2
Powered Air Respirator: A-PAPR-AUS / Class 1 P2

Required Minimum Protection Factor: up to 25 x ES
Half-Face Respirator: Air-line*
Full-Face Respirator: A-2 P2
Powered Air Respirator: A-PAPR-2 P2

Required Minimum Protection Factor: up to 50 x ES
Full-Face Respirator: A-3 P2

Required Minimum Protection Factor: 50+ x ES
Full-Face Respirator: Air-line**

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 °C)

**Eye Protection**
Safety glasses with side shields; or as required,
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 lens 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 1336 or national equivalent]

**Hand Protection**
Wear chemical protective gloves, e.g. PVC.
Wear safety footwear or safety gumboots, e.g. Rubber

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:
Xtra Cool GREEN Corrosion Inhibitor Concentrate

NEOPRENE: A
NATURAL RUBBER: B
PVA: C

A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as 'feel' or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

**Personal Protective Equipment**
Other protection:
Overalls.
P.V.C. apron.
Barrier cream.
Skin cleansing cream.
Eye wash unit.

**Body Protection**
See Hand protection below

See Other protection below

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Form**
Liquid

**Appearance**
Strong fluorescent green liquid; mixes with water.

**Odour**
Not Available

**Decomposition Temperature**
Not Available

**Solubility in Water**
Miscible

**pH**
11.5 (as supplied)
Not Available as a solution(1%)

**Vapour Pressure**
Not Available

**Vapour Density (Air=1)**
Not Available

**Evaporation Rate**
Not Available

**Odour Threshold**
Not Available

**Viscosity**
Not Applicable

**Volatile Component**
Not available.

**Partition Coefficient: n-octanol/water**
Not Available

**Surface tension**
Not Available

**Flash Point**
Not Available

**Flammability**
Not Available

**Auto-Ignition Temperature**
Not Available

**Explosion Limit - Upper**
Not Available

**Explosion Limit - Lower**
Not Available

**Explosion Properties**
Not Available

**Molecular Weight**
Not Applicable

**Oxidising Properties**
Not Available

**Initial boiling point and boiling range**
105°C approx.

**Relative density**
1.118 (Water = 1)

**Melting/Freezing Point**
-35°C approx.

**Other Information**

Taste: Not Available
Gas group: Not Available

## 10. STABILITY AND REACTIVITY

**Reactivity**
See section 7 - Handling and storage

**Chemical Stability**
Presence of incompatible materials.
Product is considered stable.
Hazardous polymerisation will not occur.

**Conditions to Avoid**
See section 7 - Handling and storage

**Incompatible materials**
See section 7 - Handling and storage

**Hazardous Decomposition Products**
See section 5 - Fire-fighting measures

**Possibility of hazardous reactions**
See section 7 - Handling and storage

## 11. TOXICOLOGICAL INFORMATION

**Toxicology Information**
Xtra Cool GREEN Corrosion Inhibitor Concentrate
TOXICITY: Not Available
IRRITATION: Not Available

Ethylene glycol
TOXICITY:
Dermal (rabbit) LD50: 9530 mg/kg
Inhalation (rat) LC50: 50100 mg/m3/8 hr
Oral (rat) LD50: 4700 mg/kg
Not Available

IRRITATION:
Eye (rabbit): 100 mg/1h - mild
Eye (rabbit): 12 mg/m³/3D
Eye (rabbit): 1440mg/6h-moderate
Eye (rabbit): 500 mg/24h - mild
Skin (rabbit): 555 mg(open)-mild
Not Available

Water
TOXICITY: Not Available
IRRITATION: Not Available

Not available. Refer to individual constituents.

ETHYLENE GLYCOL
For ethylene glycol:
Ethylene glycol is quickly and extensively absorbed through the gastrointestinal tract. Limited information suggests that it is also absorbed through the respiratory tract; dermal absorption is apparently slow. Following absorption, ethylene glycol is distributed throughout the body according to total body water. In most mammalian species, including humans, ethylene glycol is initially metabolised by alcohol.
dehydrogenase to form glycolaldehyde, which is rapidly converted to glycolic acid and glyoxal by aldehyde oxidase and aldehyde dehydrogenase. These metabolites are oxidised to glyoxylate; glyoxylate may be further metabolised to formic acid, oxalic acid, and glycine.

Breakdown of both glycine and formic acid can generate CO2, which is one of the major elimination products of ethylene glycol. In addition to exhaled CO2, ethylene glycol is eliminated in the urine as both the parent compound and glycolic acid. Elimination of ethylene glycol from the plasma in both humans and laboratory animals is rapid after oral exposure; elimination half-lives are in the range of 1-4 hours in most species tested.

Respiratory Effects. Respiratory system involvement occurs 12-24 hours after ingestion of sufficient amounts of ethylene glycol and is considered to be part of a second stage in ethylene glycol poisoning The symptoms include hyperventilation, shallow rapid breathing, and generalized pulmonary edema with calcium oxalate crystals occasionally present in the lung parenchyma. Respiratory system involvement appears to be dose-dependent and occurs concomitantly with cardiovascular changes. Pulmonary infiltrates and other changes compatible with adult respiratory distress syndrome (ARDS) may characterise the second stage of ethylene glycol poisoning Pulmonary oedema can be secondary to cardiac failure, ARDS, or aspiration of gastric contents. Symptoms related to acidosis such as hyperpnea and tachypnea are frequently observed; however, major respiratory morbidities such as pulmonary edema and bronchopneumonia are relatively rare and usually only observed with extreme poisoning (e.g., in only 5 of 36 severely poisoned cases).

Cardiovascular Effects. Cardiovascular system involvement in humans occurs at the same time as respiratory system involvement, during the second phase of oral ethylene glycol poisoning, which is 12- 24 hours after acute exposure. The symptoms of cardiac involvement include tachycardia, ventricular gallop and cardiac enlargement. Ingestion of ethylene glycol may also cause hypertension or hypotension, which may progress to cardiogenic shock. Myocarditis has been observed at autopsy in cases of people who died following acute ingestion of ethylene glycol. As in the case of respiratory effects, cardiovascular involvement occurs with ingestion of relatively high doses of ethylene glycol.

Nevertheless, circulatory disturbances are a rare occurrence, having been reported in only 8 of 36 severely poisoned cases. Therefore, it appears that acute exposure to high levels of ethylene glycol can cause serious cardiovascular effects in humans. The effects of a long-term, low-dose exposure are unknown.

Gastrointestinal Effects. Nausea, vomiting with or without blood, pyrosis, and abdominal cramping and pain are common early effects of acute ethylene glycol ingestion. Acute effects of ethylene glycol ingestion in one patient included intermittent diarrhea and abdominal pain, which were attributed to mild colonic ischaemia; severe abdominal pain secondary to colonic stricture and perforation developed 3 months after ingestion, and histology of the resected colon showed birefringent crystals highly suggestive of oxalate deposition.

Musculoskeletal Effects. Reported musculoskeletal effects in cases of acute ethylene glycol poisoning have included diffuse muscle tenderness and myalgias associated with elevated serum creatinine phosphokinase levels, and myoclonic jerks and tetanic contractions associated with hypocalcaemia.

Hepatic Effects. Central hydropic or fatty degeneration, parenchymal necrosis, and calcium oxalate crystals in the liver have been observed at autopsy in cases of people who died following acute ingestion of ethylene glycol.

Renal Effects. Adverse renal effects after ethylene glycol ingestion in humans can be observed during the third stage of ethylene glycol toxicity 24-72 hours after acute exposure. The hallmark of renal toxicity is the presence of birefringent calcium oxalate monohydrate crystals deposited in renal tubules and their presence in urine after ingestion of relatively high amounts of ethylene glycol. Other signs of nephrotoxicity can include tubular cell degeneration and necrosis and tubular interstitial inflammation. If untreated, the degree of renal damage caused by high doses of ethylene glycol progresses and leads to haematuria, proteinuria, decreased renal function, oliguria, anuria, and ultimately renal failure. These changes in the kidney are linked to acute tubular necrosis but normal or near normal renal function can return with adequate supportive therapy.

Metabolic Effects. One of the major adverse effects following acute oral exposure of humans to ethylene glycol involves metabolic changes.

These changes occur as early as 12 hours after ethylene glycol exposure. Ethylene glycol intoxication is accompanied by metabolic acidosis which is manifested by decreased pH and bicarbonate content of serum and other bodily fluids caused by accumulation of excess glycolic acid. Other characteristic metabolic effects of ethylene glycol poisoning are increased serum anion gap, increased osmolal gap, and hypocalcaemia. Serum anion gap is calculated from concentrations of sodium, chloride, and bicarbonate, is normally 12-16 mM, and is typically elevated after ethylene glycol ingestion due to increases in unmeasured metabolite anions (mainly glycolate).

Neurological Effects: Adverse neurological reactions are among the first symptoms to appear in humans after ethylene glycol ingestion.

These early neurotoxic effects are also the only symptoms attributed to unmetabolised ethylene glycol. Together with metabolic changes, they occur during the period of 30 minutes to 12 hours after exposure and are considered to be part of the first stage in ethylene glycol intoxication. In cases of acute intoxication, in which a large amount of ethylene glycol is ingested over a very short time period, there is a progression of neurological manifestations which, if not treated, may lead to generalized seizures and coma. Ataxia, slurred speech, confusion, and somnolence are common during the initial phase of ethylene glycol intoxication as are irritation, restlessness, and disorientation. Cerebral edema and crystalline deposits of calcium oxalate in the walls of small blood vessels in the brain were found at autopsy in people who died after acute ethylene glycol ingestion.

Effects on cranial nerves appear late (generally 5-20 days post-ingestion), are relatively rare, and according to some investigators constitute a fourth, late cerebral phase in ethylene glycol intoxication. Clinical manifestations of the cranial neuropathy commonly involve lower motor neurons of the facial and bulbar nerves and are reversible over many months.

Reproductive Effects: Reproductive function after intermediate-duration oral exposure to ethylene glycol has been tested in three

multigeneration studies (one in rats and two in mice) and several shorter studies (15-20 days in rats and mice). In these studies, effects on fertility, foetal viability, and male reproductive organs were observed in mice, while the only effect in rats was an increase in gestational duration.
Developmental Effects: The developmental toxicity of ethylene glycol has been assessed in several acute-duration studies using mice, rats, and rabbits. Available studies indicate that malformations, especially skeletal malformations occur in both mice and rats exposed during gestation; mice are apparently more sensitive to the developmental effects of ethylene glycol. Other evidence of embyrotoxicity in laboratory animals exposed to ethylene glycol exposure includes reduction in foetal body weight.
Cancer: No studies were located regarding cancer effects in humans or animals after dermal exposure to ethylene glycol.
Genotoxic Effects: Studies in humans have not addressed the genotoxic effects of ethylene glycol. However, available in vivo and in vitro laboratory studies provide consistently negative genotoxicity results for ethylene glycol.
[Estimated Lethal Dose (human) 100 ml; RTECS quoted by Orica] Substance is reproductive effector in rats (birth defects). Mutagenic to rat cells.

WATER:
No significant acute toxicological data identified in literature search.

Acute Toxicity: Acute Toxicity (Oral) Category 4

**Ingestion**
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:
Ingestion symptoms include respiratory failure, central nervous depression, cardiovascular collapse, pulmonary oedema, acute kidney failure, and even brain damage. Ingestion of 100 ml has caused death. (ChemInfo)
Toxicity of ethylene glycol to human (KB) cell cultures has been reported as less than that of ethanol. (NIOSHTIC)
Ethylene glycol produces a three-stage response with the severity of each stage dependent on the amount of ingestion. Hepatic damage is usually minimal. Central nervous system depression characterise the first 12 hours post ingestion.
Transient exhilaration occurs without the odour of ethanol.
Gastrointestinal complaints include nausea and vomiting. Acidosis, coma, convulsions and myoclonic jerks may also be evident. The optic fundus is usually normal although the presence of papilloedema may confuse the presentation with that produced by methanol. Nystagmus and opthalmoplegias may appear.
Cardiopulmonary effects are seen 12-24 hours post-ingestion and are characterised by tachycardia, tachypnea, and mild hypertension.
Congestive heart failure and circulatory collapse may occur in severe intoxications.
Renal effects are seen 24-72 hours post-ingestion and are characterised by oliguria, flank pain, acute tubular necrosis, renal failure, and rarely, bone marrow arrest. Renal damage may be permanent.
Toxic effects of ethylene glycol are similar to those produced by ethanol but ethylene glycol produces toxic metabolites. Metabolic acidosis and anion gap result primarily from glycolic acid formation and some lactic acid formation. The citric acid cycle is inhibited as a result of reduced NAD/NADH ratios and to a limited extent, the formation of oxalic acid, and to metabolic acidosis. Oxalate formation produces myocardial depression and acute tubular necrosis. Glycoaldehyde, glycolic acid and glyoxylic acid may contribute to CNS depression and may also produce renal toxicity by producing renal oedema. Hypocalcaemia may result from chelation by oxalate. Oxalic acid, glycoxalic acid, glycoaldehyde and formic acid appear to form to only a limited degree during intoxication.
Oral administration to pregnant mice and rats produced birth defects amongst the off-spring.

**Inhalation**
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 narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
Inhalation of vapour is more likely at higher than normal temperatures.

**Skin**
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.

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

**Skin corrosion/irritation**
Not Applicable

**Serious eye damage/irritation**
Not Applicable

**Mutagenicity**
Not Applicable

**Respiratory sensitisation**
Not Applicable

**Carcinogenicity**
Not Applicable

**Reproductive Toxicity**
Not Applicable

**STOT-single exposure**
Not Applicable

**STOT-repeated exposure**
Not Applicable

**Aspiration Hazard**
Not Applicable

**Chronic Effects**
Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

**Other Information**
CMR STATUS:
SKIN: ethylene glycol
Australia Exposure Standards - Skin: Sk

## 12. ECOLOGICAL INFORMATION

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

**Persistence and degradability**
Ingredient: Not Available
Persistence: Water/Soil: Not Available
Persistence: Air: Not Available

**Mobility**
Not Available in soil

**Bioaccumulative Potential**
Not Available

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal**
Consult manufacturer for recycling options and recycle where possible.
Consult State Land Waste Management Authority for disposal.
Incinerate residue at an approved site.
Recycle containers if possible, or dispose of in an authorised landfill.

## 14. TRANSPORT INFORMATION

**Transport Information**
Labels Required
Marine Pollutant: NO

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 73 / 78 and the IBC code
Source: IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances
Ingredient: ethylene glycol
Pollution Category: Not Available
Residual Concentration - Outside Special Area (% w/w): Not Available
Residual Concentration: Not Available

**U.N. Number**
None Allocated

**UN proper shipping name**
None Allocated

**Transport hazard class(es)**
None Allocated

**Hazchem Code**
None

## 15. REGULATORY INFORMATION

**Regulatory information**
Ethylene glycol(107-21-1) is found on the following regulatory lists:
"International Fragrance Association (IFRA) Survey: Transparency List","Australia Inventory of Chemical Substances (AICS)", "International Council of Chemical Associations (ICCA) - High Production Volume List","OECD List of High Production Volume (HPV) Chemicals","Australia High Volume Industrial Chemical List (HVICL)","GESAMP/EHS Composite List - GESAMP Hazard Profiles","IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk","IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO","Sigma-AldrichTransport Information","FisherTransport Information","IMO IBC Code Chapter 17: Summary of minimum requirements","Australia Hazardous Substances Information System - Consolidated Lists","Australia National Pollutant Inventory","Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5","Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6","Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix C", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)","Australia Exposure Standards","Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions","IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances","Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2","OSPAR National List of Candidates for Substitution – Norway","International Numbering System for Food Additives"

Water(7732-18-5) is found on the following regulatory lists:
"International Fragrance Association (IFRA) Survey: Transparency List","Australia Inventory of Chemical Substances (AICS)","OECD List of High Production Volume (HPV) Chemicals","Australia High Volume Industrial Chemical List (HVICL)","IMO IBC Code Chapter 18: List of products to which the Code does not apply","Sigma-AldrichTransport Information","OSPAR National List of Candidates for Substitution – Norway"

**Poisons Schedule**
S5

## 16. OTHER INFORMATION

**Empirical Formula & Structural Formula**
Not Applicable

**Other Information**
Version No: 6.1.1.1
Safety Data Sheet according to WHS and ADG requirements

S.GHS.AUS.EN

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. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

This SDS has been transcribed into Infosafe GHS format from an original, issued by the manufacturer on the date shown.
Any disclaimer by the manufacturer may not be included in the transcription.

## END OF SDS