Material Safety Data Sheet

Hazardous Substance according to criteria of NOHSC

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	**Ethylene Glycol**
Other name(s):	1,2-Ethanediol; glycol; Monoethylene glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate, MEG
Recommended Use:	Coolant and antifreeze; heat transfer agent; brake fluids; solvent; humectant
Supplier:	PSE Refrigeration & Air Conditioning
ABN:	48 005 815 770
Street Address:	4/5 Kearney St, Bayswater Victoria, Australia, 3153
Telephone Number:	+61 3 9729 8224
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2. HAZARDS IDENTIFICATION

This material is hazardous according to the criteria of NOHSC; HAZARDOUS SUBSTANCE.

Not Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) NON-DANGEROUS GOODS.

Risk Phrases:	Harmful if Swallowed
Safety Phrases	Keep out of the reach of children. Keep away from food, drink and animal foodstuffs. Wear suitable protective clothing.
Poisons Schedule:	S6 Poison

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	**Code**	**CAS Number**	**Proportion**	**Risk Phrases**
Ethylene Glycol	**N/A**	**107-21-1**	**100%**	**R22**

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (Phone eg. Australia 131 126; New Zealand 0 800 764766) or a doctor.	
Inhalation:	Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.
Skin Contact:	If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.
Eye Contact:	If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.
Ingestion:	Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek medical assistance. Seek immediate medical assistance.
Notes to Physicians	Treat symptomatically. Ethylene glycol can cause central nervous system depression and metabolic acidosis. Consider removal by gastric lavage. Blockade of the diacid/hydroxyacid metabolites may follow competitive inhibition of alcohol dehydrogenase with ethanol or 4-methyl pyrazole. Consider maintenance of a plasma ethanol level of 100 mg/dL to 150 mg/dL.

5. FIRE FIGHTING MEASURES

Hazards from Combustion products	Combustible liquid.
Precautions for fire fighters and special protective equipment:	On burning will emit toxic fumes, including those of oxides of carbon . Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.
Suitable Extinguishing Media:	Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures:	If safe, cut off source of leak. If release is large, cut off all ignition sources and evacuate all non-essential personnel from the area. If possible, ventilate the area. If the incident is significant seek immediate assistance from local fire authorities and police.

	If contamination of sewers or waterways has occurred advise local emergency services.
Methods and materials for containment and clean up:	Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact and breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. Wash area down with excess water.

7. HANDLING AND STORAGE

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

Conditions for safe storage:	Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.
Precautions for safe handling:	Avoid skin and eye contact and breathing in vapour. Keep out of reach of children.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	Ethylene glycol (vapour): 8hr TWA = 52 mg/m3 (20 ppm), 15 min STEL = 104 mg/m3 (40 ppm), Sk Ethylene glycol (particulate): 8hr TWA = 10 mg/m3, Sk **As published by the National Occupational Health and Safety Commission.*
TWA (Time Weighted Average)	The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers. `Sk' Notice - absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Engineering	Ensure ventilation is adequate to maintain air concentrations below Exposure

controls:	Standards. Use with local exhaust ventilation or while wearing appropriate respirator. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Natural ventilation should be adequate under normal use conditions. Keep containers closed when not in use.
Personal Protective Equipment	OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, RESPIRATOR The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors. Wear overalls, safety glasses and impervious gloves. Use with adequate ventilation. If inhalation risk exists wear organic vapour respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Slightly Viscous Liquid
Colour:	Colourless
Odour:	Mild
Odour Threshold:	N/A
Molecular Formula:	CH2OHCH2OH
Solubility in water:	Miscible in water
General Solubility	N/A
Specific Gravity:	1.12 @20 ^{o}C
Density	1.11 kg/m^{3}
Relative Vapour Density (air=1):	2.2 kg/m^{3}
Vapour Pressure (20 °C):	0.01 kPa
Flash Point (°C):	110 ^{o}C
Flammability Limits (%):	3.2 – 12.8 ^{o}C
pH:	N/A
Boiling Point/Range (°C):	+197 ^{o}C
Freezing Point/Range (°C):	-13 ^{o}C
Decomposition Temp. (°C):	N/A
Autoignition Temp. (°C):	412 ^{o}C

10. STABILITY AND REACTIVITY

Chemical stability:	This material is thermally stable when stored and used as directed.
Conditions to avoid:	Avoid contact with food stuff
Incompatible materials:	Strong Oxidising agents.

Hazardous decomposition products:	Oxides of carbon, smoke and other toxic fumes.
Hazardous reactions:	No known hazardous reactions.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion:	Initial symptoms following a large dose (>100ml) are those of alcohol intoxication progressing to vomiting, headache, stupor, convulsions and unconsciousness. Respiratory system involvement may occur 12 - 24 hours after ingestion. Symptoms may include hyperventilation and rapid shallow breathing. Death may occur from respiratory failure or pulmonary oedema.
Eye contact:	A mild eye irritant
Skin contact:	Contact with skin may result in irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis.
Inhalation:	Breathing in vapour can result in headaches, dizziness, drowsiness, and possible nausea.
Long Term Effects:	Available evidence from animal studies indicate that repeated or prolonged exposure to this material could result in effects on the kidneys .
Toxicological Data:	Oral LD50 (rat): 4700 mg/kg, SKIN: Mild irritant (rabbit). EYES: Mild irritant (rabbit).

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available. Avoid contaminating drains, waterways or sewers.
Persistence/degradability and mobility	No information available.
Aquatic toxicity:	No information available.
Terrestrial toxicity:	No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods:	Refer to local government authority for disposal recommendations. Dispose of material through a licensed waste contractor. Normally suitable for incineration by an approved agent

14. TRANSPORT INFORMATION

Road and Rail Transport:

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Marine Transport:

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

Air Transport:

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

Classification:	This material is hazardous according to criteria of Safe Work Australia; HAZARDOUS SUBSTANCE.
Hazard Category:	Xn: Harmful
Risk Phrase(s):	R22: Harmful if swallowed.
Safety Phrase(s):	S2: Keep out of the reach of children. S13: Keep away from food, drink and animal foodstuffs. S36: Wear suitable protective clothing.
Poisons Schedule:	S6 Poison
This material is listed on the Australian Inventory of Chemical Substances (AICS).	

16. OTHER INFORMATION

Whist PSE Refrigeration & Air Conditioning has made best endeavors to ensure that the information contained in this publication is accurate at the date of publication, PSE does not accept liability for any inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.

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