

# Material Safety Data Sheet



## ETHYLENE GLYCOL

**Infosafe No.** AJ132      **Issue Date** August 2001      **Status** ISSUED by APSSC

Classified as hazardous according to criteria of NOHSC

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### COMPANY DETAILS

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**Company**

**Name** Asia Pacific Specialty Chemicals Limited (ABN 32000316138)

**Address** 15 Park Road SEVEN HILLS  
NSW 2147

**Emergency**

**Tel.** 1800 022 037 (24H)

**Tel/Fax** Tel: (02) 9839 4000 Fax: (02) 9674 6225

**Other Information** New Zealand: Asia Pacific Specialty Chemicals (NZ) Limited  
119 Carbine Road

Mt Wellington, Auckland 6  
Emergency Tel: 0800 243 622 (24H)  
Telephone: (09) 276 4019  
Fax: (09) 276 7231

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## IDENTIFICATION

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**Product Code** TECH 00005372  
**Product Name** ETHYLENE GLYCOL  
**Proper Shipping Name** None Allocated

<b>Other Names</b>	<b>Name</b>	<b>Product Code</b>
	ETHANEDIOL	UL 00000210
	ETHYLENE GLYCOL	RDEH 06033068
	MONOETHYLENE GLYCOL	QCHM 00009288
	1,2-Dihydroxyethane	
	1,2-Ethanediol	
	Ethylene dihydrate	
	Glycol alcohol	
	ETHYLENE GLYCOL	436
	MEG	

**UN Number** None Allocated  
**DG Class** None Allocated  
**Packing Group** None Allocated  
**Hazchem Code** None Allocated

**Poisons Schedule** S6

**Product Use** Coolant and antifreeze; paints; heat transfer agent; low pressure laminates; brake fluids; solvent; preparation of glycol ethers; humectant; ingredient of de-icing fluid; foam stabilizer; leather dyeing and textile processing; solvent extraction.

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## Physical Data

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**Appearance** Clear, colourless, syrupy liquid ODOUR THRESHOLD 25 ppm (method not specified)

**Melting Point** -17 deg C (1.4 deg F)  
**Boiling Point** 198 deg C (388 deg F)  
**Vapour Pressure** 0.05 mm Hg @ 20 deg C  
**Specific Gravity** (SG) 1.1088 (water=1)  
**Flash Point** 111 deg C (232 deg F)  
**Flamm. Limit LEL** No Data  
**Explosion Data** (LEL) 3.2% -

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## Other Properties

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**Autoignition Temp.** 398 deg C (748 deg F)  
**Vapour Density** 2.14 (air=1)  
**Formula** MOLECULAR FORMULA C<sub>2</sub>-H<sub>6</sub>-O<sub>2</sub>  
STRUCTURAL FORMULA HO-CH<sub>2</sub>-CH<sub>2</sub>-OH  
CHEMICAL FAMILY Aliphatic Diol  
**Molecular Weight** 62.07  
**Other Information** CONVERSION FACTOR 1 ppm = 2.5 mg/m<sup>3</sup>  
SOLUBILITY IN WATER Soluble in all proportions.  
SOLUBILITY IN OTHER LIQUIDS Miscible with lower aliphatic alcohols, acetic acid, ketones, aldehydes.

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## Ingredients

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Ingredients	Name	CAS	Proportion
	Ethylene glycol	107-21-1	100 %

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## HEALTH HAZARD INFORMATION

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### Health Effects

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- Acute - Swallowed** The single oral dose lethal for humans has been estimated at 1.6 g/kg. Symptoms include respiratory failure, central nervous depression, cardiovascular collapse, pulmonary oedema, severe acidosis, and death. If death does not occur, acute kidney failure and brain damage may occur. Mild hypocalcemia is a common finding.
- Acute - Eye** Vapour and mist concentrations greater than 137 mg/m<sup>3</sup> cause eye irritation. Concentrations exceeding 200 mg/m<sup>3</sup> were found to be intolerable. Liquid is mildly to moderately irritating to eyes.
- Acute - Skin** Brief exposures are not irritating. Ethylene glycol can be absorbed through the skin in toxic amounts.
- Acute - Inhaled** The low vapour pressure of ethylene glycol virtually precludes excessive exposure to the vapours at room temperature. Irritation of the respiratory tract occurs at mist and vapour concentrations above 137 mg/m<sup>3</sup>.
- Chronic** HEALTH EFFECTS INHALATION: Workers exposed to vapours from an ethylene glycol product heated above 100 deg C suffered from recurrent attacks of unconsciousness and nystagmus (constant involuntary cyclical movement of the eyeball). The product contained 40% ethylene glycol, 55% boric acid, and 5% ammonia. SKIN CONTACT: A slight softening of the skin may result from severe, prolonged exposure. INHALATION: Volunteers exposed continuously (20 to 22 hours/day for 1 month) to ethylene glycol aerosols (3-67 mg/m<sup>3</sup>, particle size 1-5 microns) reported slight headache, low back ache, and irritation of nose and throat. CARCINOGENICITY Not carcinogenic. Not classed as a carcinogen by Worksafe. TERATOGENICITY AND EMBRYOTOXICITY Insufficient data. MUTAGENICITY Not mutagenic in two bacterial strains. POTENTIAL FOR ACCUMULATION Ethylene glycol is metabolized to oxalic acid, which is thought to play a role in some of the toxic effects.

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## First Aid

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- Swallowed** Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. Rinse mouth thoroughly with water. If swallowed, and if more than 15 minutes from a hospital, induce vomiting preferably using Ipecac Syrup APF.
- Eye** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes, by the clock, holding the eyelid(s) open. If irritation persists, repeat flushing. Obtain medical advice immediately.
- Skin** If large area contaminated, as quickly as possible, flush contaminated area with lukewarm, gently running water for at least 10 minutes, by the clock. Under running water, remove contaminated clothing, shoes, and leather goods (e.g. watchbands, belts). Obtain medical advice immediately. Decontaminate clothing, shoes and leather goods before re-use or discard.
- Inhaled** Remove source of contamination or move victim to fresh air. Obtain medical advice immediately.
- Other Information** Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Control Centre for all exposures except minor instances of inhalation or skin contact.

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## Advice to Doctor

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## Other Health Hazard Information

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## PRECAUTIONS FOR USE

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<b>Exposure Limits</b>	<b>Name</b>	<b>STEL (mgm3)</b>	<b>STEL (ppm)</b>	<b>TWA (mgm3)</b>	<b>TWA (ppm)</b>	<b>FootNote</b>
	Ethylene glycol	120		60		
<b>Other Exposure Info.</b>	Ethylene glycol (vapour) TLV/TWA: 60 mg/m3, STEL: 120 mg/m3, Worksafe Aust. SAMPLING & ANALYSIS Use appropriate instrumentation and sampling strategy (location, timing, duration, frequency, and number of samples). Interpretation of the sampling results is related to these variables and the analytical method. EXPOSURE CONTROL Note: Exposure to this material can be controlled in many ways. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Use this general information to help develop specific control measures. Ensure that control systems are properly designed and maintained. Comply with occupational, environmental, fire, and other applicable regulations.					
<b>Eng. Controls</b>	ENGINEERING CONTROLS Provide adequate local exhaust and dilution (general) ventilation, particularly when material is heated or mists may be formed. Provide sufficient replacement air for air removed by exhaust ventilation systems. Other engineering control methods include substitution, enclosure, isolation, control of process conditions, and process modification.					

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## Personal Protection

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**Protective Equip.** RESPIRATORY PROTECTION If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have appropriate equipment available for use in emergencies such as spills or fire. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

RESPIRATORY PROTECT. GUIDELINES No specific guidelines are available.

EYE/FACE PROTECTION Chemical safety goggles suitable for mist and splash protection, and/or a face shield, as required.

SKIN PROTECTION Impervious gloves, coveralls, pants, jackets, aprons, and/or boots, as required.

RESIST. FOR PROTECTIVE CLOTHING VERY GOOD: Natural rubber; neoprene; nitrile; polyvinyl chloride (PVC). GOOD: Butyl rubber; Neoprene/natural rubber; polyurethane; polyvinyl alcohol (PVA); Viton; styrene-butadiene rubber (SBR); nitrile/PVC; chlorinated polyethylene (CPE). FAIR/POOR: neoprene/styrene-butadiene rubber (SBR); polyethylene. NOTE: Resistance can vary from product to product. Evaluate resistance of materials under conditions of use and maintain clothing carefully.

PERSONAL PROTECTION COMMENTS Do not eat, drink, or smoke in areas where this material is handled. Wash hands thoroughly after handling. Remove contaminated clothing promptly and launder before reuse. A safety shower and eyewash fountain should be available in the work area for emergency use.

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## Flammability

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**Fire Hazards** Will burn if involved in a fire. See Safe Handling Information.

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## SAFE HANDLING INFORMATION

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### Storage and Transport

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<b>Storage Precautions</b>	<p>STORAGE CONDITIONS Review regulatory requirements related to safe storage and handling of this material. Do not store near oxidizers or heat sources. Store in a cool, dry, well-ventilated area out of direct sunlight and away from areas of fire hazard. Store in appropriate, labelled containers isolated from incompatible materials.</p> <p>HANDLING Suitable emergency equipment should be readily available. Avoid generating mist. Avoid high temperature processes. Class 6 products are not to be loaded with class 1, 3 (when class 3 is nitromethane), 5 (when class 6 is capable of being ignited and burning), 8 (when class 6 is a cyanide and class 8 is an acid), or foodstuffs or foodstuff empties</p>
<b>Proper Shipping Name</b>	None Allocated

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### Spills and Disposal

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<b>Spills &amp; Disposal</b>	<p>PRECAUTIONS Restrict access to the area. Provide adequate personal protective equipment and ventilation. Only trained personnel should be involved in cleanup operations. Do not allow material to enter sewers or confined spaces.</p> <p>CLEANUP Eliminate all ignition sources. Stop or reduce leak if safe to do so. Small spills: Take up with inert absorbent material. Place in suitable, covered containers. Flush area with water. Large spills: Contain spill by diking with earth, sand, or inert absorbing material. Remove material with pumps or vacuum equipment and place in suitable containers. Take up residual with inert absorbent material and place in suitable containers. Flush area with water.</p> <p>DISPOSAL Review federal, state, and local government requirements prior to disposal.</p>
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## Fire/Explosion Hazard

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**Fire/Explos. Hazard** FIRE EXTINGUISHING AGENTS Dry chemical, 'alcohol' foam, carbon dioxide.  
FIRE FIGHTING PROCEDURES Water is not generally suitable for fighting fires involving this material. Water spray can be used to absorb heat, keep containers cool and protect exposed material.  
COMBUSTION PRODUCTS Carbon dioxide, carbon monoxide.  
Firefighters to wear breathing apparatus.

**Hazardous Reaction** STABILITY Normally stable to heat, light, air, and water.  
INCOMPATIBILITY -MAT'LS TO AVOID STRONG OXIDIZING AGENTS (perchlorates, nitrates) can increase the risk of fire and explosion. STRONG ACIDS (e.g. oleum, chlorosulfonic acid). PHOSPHORUS PENTASULFIDE. STRONG BASES (e.g. sodium hydroxide).  
HAZARDOUS POLYMERIZATION Does not occur REACTIVITY COMMENTS Mixing ethylene glycol and strong acids in a closed container can cause increased temperature and pressure.  
CORROSIVITY TO METALS Not corrosive

**Hazchem Code** None Allocated

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## OTHER INFORMATION

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**Toxicology** ANIMAL TOXICITY DATA LD50 (rat, oral): 6140-8540 mg/kg LD50 (mouse, oral): 7500-15280 mg/kg LD50 (guinea pig, oral): 6610-11060 mg/kg LD50 (rabbit, oral): 5000 g/kg LD50 (rabbit, skin): 19530 mg/kg IRRITANT DOSE (rabbit, eyes): 1440 mg, 6 hours duration -- moderate eye irritant INHALATION: Exposure of rats, guinea pigs, rabbits, dogs, and monkeys at 10 and 57 mg/m<sup>3</sup>, eight hours/day, five days/week for 30 days produced no adverse effects. INGESTION: Diets containing 1 and 2% of ethylene glycol consumed by rats for two years produced shortening of life span, calcium oxalate bladder stones, severe kidney injury, and liver damage. More detailed information about the effects of chemicals on health can be obtained from Worksafe Australia. Sydney (02) 265.7555  
Toll free (008) 25.2226

### Environment

**Protection** Pollutant. CONTAIN.

### Risk

**Statement** R22 Harmful if swallowed.

### Safety

**Statement** S2 Keep out of reach of children.

### Pkg. &

**Labelling** As required by the ADG Code.

### Hazard

**Category** Harmful

### References

\*\*\* BIBLIOGRAPHY Rowe, V.K.; Wolf, M.A.; Glycols. In: Clayton, G.D.; Clayton, F.E., eds. Patty's industrial hygiene and toxicology. 3rd revised edition. Vol. 2C: toxicology. New York; Toronto: John Wiley and Sons, Inc., 1982. p. 3817-3832. Gosselin, R.E.; Smith, R.P.; Hodge, H.C. Clinical toxicology of commercial products. Fifth edition. Baltimore/London: Williams and Wilkins, 1984. p. III-172 - III-179. Ethylene glycol. In: Documentation of the threshold limit values. 4th edition. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists Inc., 1980. p. 183

### Empirical

### Formula &

MOLECULAR FORMULA C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>

### Structural

STRUCTURAL FORMULA HO-CH<sub>2</sub>-CH<sub>2</sub>-OH

### Formula

CHEMICAL FAMILY Aliphatic Diol

### User

### Codes

### User Code

Field 5	00000210
Field 5	00005372
Field 5	06033068
Field 5	00009288

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## CONTACT POINT

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**Contact** Australia: Business Hours: Mr Paul Verren  
Telephone: (02) 9839 4024  
After Hours: 1800 022 037  
New Zealand: Business Hours: Mr Lloyd Williams  
Telephone: (09) 276 4019  
Emergency Tel: 0800 243 622

**IMPORTANT ADVICE:**

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact Asia Pacific Speciality Chemicals. Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

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End of MSDS