1. IDENTIFICATION

Product Name	**Monoethylene glycol**
Other Names	Ethylene glycol; Glycol; MEG
Uses	Cleaning/washing products; brake fluids; anti-freeze agents; corrosion inhibitors.
Chemical Family	No Data Available
Chemical Formula	C2H6O2
Chemical Name	1,2-Ethanediol
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Schedule 6

Globally Harmonised System

Hazard Classification			Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories			Acute Toxicity (Oral) - Category 4
			Specific Target Organ Toxicity (Single Exposure) - Category 3
			Specific Target Organ Toxicity (Repeated Exposure) - Category 2
Pictograms			
Signal Word			Warning
Hazard Statements		**H302**	Harmful if swallowed.
		H335	May cause respiratory irritation.
		H373	May cause damage to organs through prolonged or repeated exposure.
Precautionary Statements	Prevention	**P260**	Do not breathe mist/vapour/spray.
		P264	Wash hands thoroughly after handling.
		P270	Do not eat, drink or smoke when using this product.
		P271	Use only outdoors or in a well-ventilated area.
	Response	**P312**	Call a POISON CENTER or doctor/physician if you feel unwell.
		P330	Rinse mouth.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	Storage	**P403 + P233**	Store in a well-ventilated place. Keep container tightly closed.
		P405	Store locked up.
	Disposal	**P501**	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications	Health Hazards	**6.1D**	Substances that are acutely toxic - Harmful
		6.4A	Substances that are irritating to the eye
		6.9A	Substances that are toxic to human target organs or systems
	Environmental Hazards	**9.3C**	Substances that are harmful to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Ethylene glycol	C2H6O2	107-21-1	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth. Immediately call a Poison Centre or doctor/physician for advice. Urgent hospital treatment is likely to be needed. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for 10 - 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove contaminated clothing and shoes immediately. Flush skin with running water for at least 15 minutes. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult.
Advice to Doctor	Early treatment of ingestion is important - emesis or lavage is effective only in the first few hours. Test and correct for metabolic acidosis and hypocalcaemia. Apply sustained diuresis when possible with hypertonic mannitol. Evaluate renal status and begin haemodialysis if indicated. Correct acidosis, fluid/electrolyte balance and respiratory depression. Ethanol therapy prolongs the half-life of ethylene glycol and reduces the formation of toxic metabolites.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Combustible liquid; Slight fire hazard when exposed to heat or flame.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction - Do not use water jets.
Fire and Explosion Hazard	Containers may explode when heated.
Hazardous Products of Combustion	Fire may produce irritating, toxic and/or corrosive fumes, including Carbon oxides and other pyrolysis products typical of burning organic material.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
Flash Point	111 °C [Closed cup]
Lower Explosion Limit	3.2 %
Upper Explosion Limit	15.3 %
Auto Ignition Temperature	398 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Do not breathe vapours and avoid contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable, properly labelled container for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
Decontamination	Wash area down with excess water.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.

Personal Precautionary Measures	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours/spray and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Ethylene glycol (CAS No. 107-21-1): - Safe Work Australia Exposure Standard (particulate): TWA = 10 mg/m3. - Safe Work Australia Exposure Standard (vapour): TWA = 20 ppm (52 mg/m3); STEL = 40 ppm (104 mg/m3). *Absorption through the skin may be a significant source of exposure (Sk). - New Zealand Workplace Exposure Standard (vapour and mist): Ceiling 50 ppm (127 mg/m3).
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour/particulate (A/P) filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields; Chemical goggles. - Hand protection: Handle with gloves. Recommended: Recommended: Impervious gloves, e.g. PVC. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, PVC apron, safety shoes or boots.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. 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	Liquid
Appearance	Liquid.
Odour	Mild Sweet
Colour	Colourless
pH	No Data Available
Vapour Pressure	0.08 hPa (@ 20 °C)
Relative Vapour Density	2.2 Air = 1
Boiling Point	197 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Completely soluble
Specific Gravity	1.12

Flash Point	111 °C [Closed cup]
Auto Ignition Temp	398 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	21 cP (@ 20 °C)
Volatile Percent	nil
VOC Volume	No Data Available
Additional Characteristics	Material is hygroscopic, i.e. absorbs moisture from the air.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Combustible liquid; Slight fire hazard when exposed to heat or flame.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides and other pyrolysis products typical of burning organic material.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Product is considered stable; Unstable in the presence of incompatible materials.
Conditions to Avoid	Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with oxidisers and oxidising acids, sulfuric acid, chlorosulfonic acid, chromyl chloride, perchloric acid; sodium perchlorate; strong acids and bases, caustics, aliphatic amines, isocyanates, oleum, potassium bichromate, phosphorus pentasulfide, sodium chlorite.
Hazardous Decomposition Products	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides and other pyrolysis products typical of burning organic material.
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	- Acute toxicity: Harmful if swallowed. Mortality has been observed in humans following intentional or accidental ingestion of ethylene glycol. Initial symptoms include central nervous system depression with ataxia, slurred speech, somnolence, convulsions and gastrointestinal upset; metabolic acidosis with reductions in blood pH and

cardiopulmonary effects, such as pulmonary oedema and cardiac failure (after 12 - 72 hrs); renal toxicity (after 24 - 72 hrs); possible deafness, facial paralysis and other neurological effects (after 6 or more days).
- Skin corrosion/irritation: May cause mild skin irritation.
- Eye damage/irritation: Causes mild eye irritation.
- Respiratory/skin sensitisation: Not found to induce dermal sensitisation.
- Germ cell mutagenicity: Not considered to be genotoxic.
- Carcinogenicity: Not considered to be a carcinogen.
- Reproductive toxicity: Not toxic to reproduction.
- STOT (single exposure): May cause respiratory irritation.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure.
- Aspiration toxicity: No information available.

Acute

Ingestion Acute toxicity (Oral):
- LD50, Rats: >2,000 mg/kg bw. [NICNAS].
- Lethal dose in humans (estimated): 1,400 - 1,600 mg/kg bw. [NICNAS].

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
Persistence/Degradability	Readily biodegradable.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	Low bioaccumulation potential.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container through a licensed waste contractor and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Normally suitable for incineration by an approved agent.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Monoethylene glycol
Class	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	Monoethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Monoethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)
US DOT

Proper Shipping Name	Monoethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport
IMDG Code

Proper Shipping Name	Monoethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport
IATA DGR

Proper Shipping Name	Monoethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Schedule 6

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR001534

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Not Determined
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined

Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes

MOETGB1000, MOETGB2000, MOETGB3000, MOETGB3500, MOETGB4000, MOETGB5000, MOETGB6000, MOETGB7500, MOETGB8000, MOETGB9000, MOETGL0600, MOETGL0700, MOETGL0800, MOETGL0900, MOETGL0910, MOETGL0920, MOETGL0930, MOETGL1000, MOETGL1001, MOETGL1002, MOETGL1003, MOETGL1004, MOETGL1005, MOETGL1006, MOETGL1007, MOETGL1008, MOETGL1009, MOETGL1010, MOETGL1011, MOETGL1012, MOETGL1013, MOETGL1014, MOETGL1015, MOETGL1016, MOETGL1017, MOETGL1018, MOETGL1019, MOETGL1020, MOETGL1021, MOETGL1022, MOETGL1023, MOETGL1024, MOETGL1025, MOETGL1026, MOETGL1027, MOETGL1028, MOETGL1029, MOETGL1049, MOETGL1050, MOETGL1055, MOETGL1056, MOETGL1100, MOETGL1101, MOETGL1200, MOETGL1300, MOETGL1400, MOETGL1500, MOETGL1501, MOETGL1502, MOETGL1600, MOETGL1601, MOETGL1610, MOETGL1625, MOETGL1650, MOETGL1700, MOETGL1800, MOETGL1801, MOETGL1802, MOETGL1803, MOETGL1900, MOETGL1901, MOETGL2000, MOETGL2001, MOETGL2010, MOETGL2020, MOETGL2030, MOETGL2100, MOETGL2200, MOETGL2300, MOETGL2301, MOETGL2350, MOETGL2400, MOETGL2401, MOETGL2402, MOETGL2500, MOETGL2501, MOETGL2502, MOETGL2503, MOETGL2504, MOETGL2505, MOETGL2510, MOETGL2520, MOETGL2550, MOETGL2600, MOETGL2601, MOETGL2700, MOETGL2701, MOETGL2702, MOETGL2800, MOETGL2900, MOETGL3000, MOETGL3001, MOETGL3010, MOETGL3011, MOETGL3012, MOETGL3013, MOETGL3020, MOETGL3030, MOETGL3040, MOETGL3041, MOETGL3100, MOETGL3150, MOETGL3200, MOETGL3201, MOETGL3300, MOETGL3400, MOETGL3401, MOETGL3500, MOETGL3600, MOETGL3700, MOETGL3710, MOETGL3720, MOETGL3730, MOETGL4000, MOETGL4200, MOETGL4400, MOETGL4500, MOETGL4700, MOETGL4800, MOETGL4810, MOETGL4900, MOETGL5000, MOETGL5001, MOETGL5002, MOETGL5003, MOETGL5004, MOETGL5050, MOETGL5500, MOETGL5700, MOETGL5800, MOETGL5805, MOETGL5810, MOETGL5820, MOETGL5830, MOETGL5840, MOETGL6000, MOETGL6100, MOETGL6150, MOETGL6200, MOETGL6500, MOETGL6700, MOETGL6800, MOETGL7000, MOETGL7200, MOETGL7210, MOETGL7215, MOETGL7400, MOETGL7500, MOETGL7600, MOETGL8000, MOETGL8001, MOETGL8500, MOETGL9000, MOETGL9800, MOETGL9900

Revision

4

Revision Date

26 Nov 2018

Key/Legend

< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight