1. IDENTIFICATION

Product Name	**Propylene Glycol**
Other Names	1,2-PROPANEDIOL; 1,2-Propylene glycol; Isopropylene glycol; Methyl Ethyl Glycol (MEG); Methylethylene Glycol
Uses	Monopropylene Glycol USP - Generally accepted for use in food, animal feed, flavours and cosmetics and as a exipient (inactive carrier) for pharmaceuticals. Restrictions or limitations set by local regulations have to be followed. Monopropylene Glycol Industrial - Generally accepted for use as a component in the manufacture of unsaturated polyester resins, functional fluids, paints and coatings and plasticisers.
Chemical Family	No Data Available
Chemical Formula	C3H8O2
Chemical Name	Propylene Glycol
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

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Not scheduled

Globally Harmonised System

Hazard Classification NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Signal Word None

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)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Propane-1,2-Diol	No Data Available	57-55-6	99.94 - 100 %
Water	No Data Available	7732-18-5	0 - 0.05 %
1-1'-oxydipropan-2-ol	No Data Available	110-98-5	0 - 0.01 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	No treatment necessary unless large quantities are swallowed. Rinse mouth with water. Give water to drink. Do NOT induce vomiting. If symptoms develop, seek medical attention.
Eye	Immediately flush eyes with plenty of water for 15 minutes, holding eyelids open. If irritation persists, seek medical attention.
Skin	Remove contaminated clothing. Wash affected area with soap and plenty of water. If irritation persists, seek medical advice.
Inhaled	Remove victim from exposure to fresh air. If rapid recovery does not occur, seek medical advice.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of patient. Following cases of gross over-exposure, investigation of liver, kidney and eye function may be advisable. Records of such incidents should be maintained for future reference.
Medical Conditions Aggravated by Exposure	Indication of any immediate medical attention and special treatment needed : Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. It is only slightly irritating to mucous membranes and skin. It is also of low toxicity following acute ingestion After absorption of high doses, systemic effects like CNS depression may occur. Hot vapours may cause lung damage.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, remove containers from the path of fire.
Flammability Conditions	Combustible. Will only burn if enveloped in a pre-existing fire. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Extinguishing Media	Suitable extinguishing media: Dry chemical, alcohol resistant foam, carbon dioxide, water spray. Unsuitable extinguishing media: Solid water stream.
Fire and Explosion Hazard	Heat from fire can generate flammable vapour. When mixed with air and exposed to ignition source, vapours can burn in open or explode if confined. Vapours may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapour source. Fine sprays/mists may be combustible at temperatures below normal flash point. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/steam explosion. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Notify authorities immediately if liquid enters sewer/public waters.
Hazardous Products of Combustion	CO2, H2O and CO (in the absence of oxygen). At high temperatures the product decomposes producing toxic and irritant fumes.
Special Fire Fighting Instructions	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.

Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.
Flash Point	99 °C
Lower Explosion Limit	2.6 %
Upper Explosion Limit	12.6 %
Auto Ignition Temperature	400 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Eliminate all sources of ignition. Increase ventilation. Avoid walking through spilled product as it may be slippery. Use clean, non-sparking tools and equipment.
Clean Up Procedures	Extinguish all ignition sources. Stop release; prevent flow to sewers/public waters. Notify fire and environmental authorities. Impound/recover large land spill; soak up small spill with inert solids. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Use local exhaust extraction over processing area. For lines and fittings, avoid copper, copper alloys, zinc. Air-dry contaminated clothing in a well-ventilated area before laundering. Handling Temperature: Ambient. Prevent all contact with water and moist atmosphere. Drums should be stacked to a maximum of 3 high. Lines should be purged with nitrogen before and after product transfer. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Storage	Store in a cool, dry, diked (bunded), well-ventilated area. Store away from heat. Do not store together with oxidizing and self-igniting products. Protect from moisture. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Protect from direct sunlight, heat and static discharges. Prevent all contact with water and moist atmosphere. Prevent ingress of water. Nitrogen blanket recommended for large tanks (capacity 100m3 or higher). Storage temperature: 40 Deg C Maximum. This product is classified as a 'C1' Combustible Liquid for the purpose of storage and handling in accordance with the requirements of AS1940.
Container	Store in original packaging as approved by manufacturer. Advice on common storage: Carbon/Mild Steel, with suitable internal coating, or stainless steel.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	The following exposure standard has been established by the Safe Work Australia (SWA); Propane-1,2-diol: Total (vapour and particulates) CAS 57-55-6: TWA = 150 ppm (474 mg/m3) NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. 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.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
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. Adequate ventilation should be provided so that exposure limits are not exceeded.
Personal Protection Equipment	RESPIRATOR: No respiratory protection is ordinarily required under normal conditions of use (AS1715/1716). EYES: Chemical splash goggles (AS1336/1337). HANDS: Use gloves approve to relevant standard made from neoprene, PVC (AS2161). CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).
Work Hygienic Practices	Good work practices and the adoption of good personal hygiene measures reduce unnecessary exposures. Hot showers should be used. Use soap and no other solvents. Grossly contaminated clothing and tools should be changed immediately and dry cleaned. Grossly contaminated clothing should be changed immediately. Gloves should be reviewed to prevent internal contamination. Use skin reconditioning cream after work.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Odourless
Colour	Colourless
pH	No Data Available
Vapour Pressure	0.07 mmHg Pa (@ 20 °C)
Relative Vapour Density	2.62 Air = 1
Boiling Point	189 °C
Melting Point	-60 °C
Freezing Point	-60 °C
Solubility	Soluble in water 25°C
Specific Gravity	No Data Available
Flash Point	99 °C
Auto Ignition Temp	400 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	1.0361 g/cm3
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	-0.92
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	20 °C
Viscosity	0.581 Poise (@ 20 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Surface tension: 40.1 dynes/cm at 25°C Water solubility: Soluble. Molecular weight: 76.11 g/mol Vaporization heat: 168.6 cal/g
Potential for Dust Explosion	Product is a liquid.

Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	No Data Available
Release of Invisible Flammable Vapours and Gases	No Data Available

10. STABILITY AND REACTIVITY

General Information	Combustible liquid. Hygroscopic.
Chemical Stability	Product is stable under normal conditions of use, storage and temperature.
Conditions to Avoid	Avoid excessive heat, flame, sparks and temperatures above 40 Deg C.
Materials to Avoid	Material can attack some forms of plastics. Do not store together with oxidizing and self-igniting products.
Hazardous Decomposition Products	Hazardous decomposition products may include noxious and toxic fumes of oxides of carbon, carbonyl and dioxolane derivatives may also be formed.
Hazardous Polymerisation	Hazardous polymerization has not been reported.

11. TOXICOLOGICAL INFORMATION

General Information	Information given is based on product testing, and/or similar products, and/or components: Oral LD50 Rat: >2000mg/Kg Dermal LD50 Rabbit : >2000mg/Kg Inhalation Toxicity: LC50 greater than near saturated vapour concentration. SKIN: Not Irritating to skin. EYES: Essentially non-irritating to eyes. RESPIRATORY: Not expected to be a respiratory irritant. SENSITISATION: Not a skin sensitiser. REPEATED DOSE: Low systemic toxicity on repeated exposure. Cats given high doses of MPG in diet showed a decrease in red blood cell survival. MUTAGENICITY: Not mutagenic. CARCINOGENICITY: Not carcinogenic in animal studies. REPRODUCTIVE/DEVELOPMENTAL: Not a developmental toxicant.
Ingestion	Ingestion/Aspiration: May cause adverse effects on central nervous system. Other effects may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma and even death by respiratory arrest. May also cause kidney damage and blood changes (hemoglobinuric nephrosis). Reduces intraocular pressure by raising osmotic pressure of blood. LD50: 20 g/kg (oral-rat).
SkinIrritant	In contact with skin may cause irritation, probably due dehydration; reddening, itching and inflammation. May be absorbed through the skin. In some cases repeated contact may result in allergic skin reactions and severe irritation with appearance of vesicles and mild oedema, probably due to sweat retention. May cause slight irritation, tearing and a burning sensation in the eyes. LD50: 20.8 g/kg (skin-rabbit).
EyeIrritant	In some cases repeated contact may result in allergic skin reactions and severe irritation with appearance of vesicles and mild oedema, probably due to sweat retention. Mildly irritating when in contact with the eyes. May cause slight irritation, tearing and a burning sensation in the eyes. LD50: 20.8 g/kg (skin-rabbit).
Inhalation	It is unlikely due its low volatility, though prolonged exposures to saturated atmospheres may cause irritation of respiratory system.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	Acute Toxicity Fish: Low toxicity: LC/EC/IC50 >100 mg/L Aquatic Invertibrates: Low toxicity: LC/EC/IC50 >100 mg/L Algae: Low toxicity: LC/EC/IC50 >100 mg/L Microorganisms: Expected to have low toxicity: LC/EC/IC50 >100 mg/L
Persistence/Degradability	This product is considered ready biodegradable.
Mobility	If the product enters soil, it will be highly mobile and may contaminate ground water.
Environmental Fate	Avoid contaminating waterways, drains and sewers.
Bioaccumulation Potential	In accordance with column 2 of REACH Annex IX, the bioaccumulation study does not need to be conducted as the substance can be expected to have a low potential for bioaccumulation. Results of PBT and vPvB assessment: The substance do not meet all the specific criteria detailed in Annex XIII or do not allow a direct comparison with all the criteria in Annex XIII but nevertheless indicate that the substance would not have all these properties and the substance is not considereda PBT/vPvB."The overall conclusions, based on the present available data, of the preliminary PBT assessment are that the (screening) criteria for PBT/vPvB are not met and that further testing in the scope of the final PBT assessment is not considered to be required.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Recover or recycle if possible. Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Send to drum recoverer or metal reclaimer.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	PROPYLENE GLYCOL
Class	C2 Combustible Liquids - Flash point > 150 °C
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

Sea Transport
IMDG Code

Proper Shipping Name	PROPYLENE GLYCOL
Class	C1 Combustible Liquids - Flash point 61 - 150 °C
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

Air Transport
IATA DGR

Proper Shipping Name	PROPYLENE 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

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)	Not scheduled

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	200-338-0
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
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

PRGLYC1000, PRGLYC1001, PRGLYC1020, PRGLYC1100, PRGLYC1101, PRGLYC1200, PRGLYC1300, PRGLYC1800, PRGLYC1900, PRGLYC2000, PRGLYC2800, PRGLYC2900, PRGLYC3000, PRGLYC3001, PRGLYC3002, PRGLYC3100, PRGLYC3101, PRGLYC3102, PRGLYC3200, PRGLYC3201, PRGLYC3202, PRGLYC3300, PRGLYC3400, PRGLYC3500, PRGLYC3501, PRGLYC3800, PRGLYC4000, PRGLYC4001, PRGLYC4002, PRGLYC4003, PRGLYC4500, PRGLYC5000, PRGLYC5001, PRGLYC5002, PRGLYC5100, PRGLYC5200, PRGLYC5300, PRGLYC6000, PRGLYC6001, PRGLYC6002, PRGLYC6100, PRGLYC7000, PRGLYC7001, PRGLYC7500, PRGLYC8000, PRGLYC8400, PRGLYC8401, PRGLYC8402, PRGLYC8403, PRGLYC8404, PRGLYC8405, PRGLYC8406, PRGLYC8407, PRGLYC8408, PRGLYC8409, PRGLYC8410, PRGLYC8411, PRGLYC8412, PRGLYC8413, PRGLYC8414, PRGLYC8415, PRGLYC8416, PRGLYC8417, PRGLYC8418, PRGLYC8419, PRGLYC8420, PRGLYC8421, PRGLYC8422, PRGLYC8423, PRGLYC8424, PRGLYC8425, PRGLYC8426, PRGLYC8500, PRGLYC8501, PRGLYC8502, PRGLYC8503, PRGLYC8504, PRGLYC8505, PRGLYC8506, PRGLYC8507, PRGLYC8508, PRGLYC8509, PRGLYC8510, PRGLYC8511, PRGLYC8512, PRGLYI0600, PRGLYI0700, PRGLYI0800, PRGLYI0900, PRGLYI1000, PRGLYI1001, PRGLYI1002, PRGLYI1003, PRGLYI1004, PRGLYI1005, PRGLYI1006, PRGLYI1007, PRGLYI1008, PRGLYI1009, PRGLYI1010, PRGLYI1011, PRGLYI1100, PRGLYI1200, PRGLYI1300, PRGLYI1400, PRGLYI1900, PRGLYI2000, PRGLYI2100, PRGLYI3000, PRGLYI3001, PRGLYI3002, PRGLYI7000, PRGLYI7001, PRGLYC1003, PRGLYC1002, PRGLYC1801, PRGLYC1802, PRGLYC1803, PRGLYC1804, PRGLYC1805, PRGLYC1806, PRGLYC1807, PRGLYC1808, PRGLYC1809, PRGLYC1810, PRGLYC1811, PRGLYC1812, PRGLYC1813, PRGLYC1814, PRGLYC1815, PRGLYC1816, PRGLYC1817, PRGLYC1818, PRGLYC1819, PRGLYC1820, PRGLYC1821, PRGLYC1822, PRGLYC1823, PRGLYC1824, PRGLYC1825, PRGLYC1004, PRGLYC1005, PRGLYC3010, PRGLYC3011, PRGLYC3020, PRGLYC3030, PRGLYI1800, PRGLYC1700, PRGLYI0500, PRGLYI6000, PRGLYI6030, PRGLYC1950, PRGLYC3035, PRGLYC3203, PRGLYC1009, PRGLYC5400, PRGLYC3036, PRGLYC3037, PRGLYC3038, PRGLYC2600

Revision 3

Revision Date 02 Feb 2016

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