SAFETY DATA SHEET

PROPYLENE GLYCOL

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name: Propylene Glycol

1.2 Other means of identification

Chemical name: 1,2-Dihydroxypropane; Methylene Glycol; Methyl Glycol; Monopropylene Glycol; 1,2 Propanediol; Propylene Glycol USP

1.3 Recommended use of the chemical and restrictions on use

Manufacture of substances.

1.4 Details of the supplier

Supplier name **ORTHO CHEMICALS AUSTRALIA PTY LTD**
Address 62-74 Rankins Road, Kensington, Victoria, AUSTRALIA, 3031
Telephone (03) 9376 3922
Facsimile (03) 9376 3212
Email ortho@orthochemicals.com
Website www.orthochemicals.com

1.5 Emergency telephone number(s)

Emergency 0430 107 747

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS classification
NOT CLASSIFIED AS HAZARDOUS ACCORDING TO THE CRITERIA OF SAFE WORK AUSTRALIA.

2.3 Other hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances/Mixtures

Ingredient	Identification	Classification		Content
Propylene glycol	CAS: 57-55-6			>99.5%

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Eye
Immediately flush eyes with water; remove contact lenses, if present, after the first 1-2 minutes, then continue flushing eyes for several additional minutes. If effects occur, consult a physician, preferably from an ophthalmologist. Eye wash fountain should be located in immediate work area.

Inhalation
Move person to fresh air; if effects occur, consult a physician.

Skin
Wash off with plenty of water.

Ingestion
Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

4.2 Most important symptoms and effects, both acute and delayed
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Immediate medical attention and special treatment needed
No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 Flammability conditions
Product is a Combustible Liquid.

5.2 Suitable extinguishing media
Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

5.3 Extinguishing media to avoid
Do not use direct water stream. May spread fire.

5.4 Specific hazards arising from the substance or mixture
Hazardous combustion products: during a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

5.5 Unusual fire and explosion hazards
Container may rupture from gas generation in a fire situation. Violent stream generation or eruption may occur upon application of direct water stream to hot liquids.

5.6 Fire fighting procedures
Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

5.7 Special protective equipment and precautions for fire fighters
Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Keep personnel out of low areas. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3 Methods and materials for containment and clean up
Contain spilled material if possible. Small spills: Any absorbent material. Collect in suitable and properly labelled open containers. Wash the spill site with large quantities of water. Large spills: Dike area to contain spill. Pump into suitable and properly labelled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

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. Avoid contact with eyes, skin and clothing. Do not inhale product vapours.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from incompatible materials described in Section 10. Store away from sources of heat and ignition. Avoid temperatures >40°C. Protect from moisture. Nitrogen blanket recommended for large tanks (capacity 100m3 or higher). Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS / PERSONAL PROTECTIONS

8.1 Control parameters

Exposure standards

Component	List	Type	Value
Propylene glycol	AU OEL	TWA Particulate	10 mg/m3
	AU OEL	TWA Total (vapour and particles)	474 mg/m3 150 ppm

Biological limits

To the best of our knowledge, no biological limit values have been entered for this product.

8.2 Engineering controls

Use engineering controls to maintain airborne levels below exposure limit requirements or guidelines. Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids. In industrial situations, use of local exhaust ventilation may be required.

8.3 Personal protective equipment (PPE)

Eye/Face

Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Hands

Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimised.

Other protection

No precautions other than clean body-covering clothing should be needed.

Respiratory

Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapour cartridge with a particulate pre-filter.

Other information

Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:
AS/NZS 1336: Recommended practices for eye protection in the industrial environment.
AS/NZS 1337: Eye protectors for industrial applications.
AS/NZS 1715: Selection, use and maintenance of respiratory protective devices.
AS/NZS 2161: Occupational protective gloves.
AS/NZS 2210: Occupational protective footwear.
AS/NZS 4501: Occupational protective clothing Set.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid
Colour	Colourless
Odour	Odourless
Odour threshold	No test data available
pH	Not applicable
Melting point	-60°C
Boiling point	187.6°C
Flash point - Closed Cup	103°C-104°C
Evaporation rate	<0.01 *Estimated*
Upper flammability/explosive limit	2.6% vol *Estimated*
Lower flammability/explosive limit	12.5% vol *Estimated*
Vapour pressure	20 Pa at 25°C
Relative vapour density (air=1)	2.62
Relative density (water = 1)	1.036 at 20°C/20°C
Solubility in water (by weight)	Miscible (soluble) in all proportions
Partition coefficient: n-octanol/water	No test data available
Auto-ignition temperature	>400°C at 100.01 kPa *EC Method A15*
Decomposition temperature	No test data available
Kinematic viscosity	No test data available
Explosive properties	Formation of explosive mixtures possible with air. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Closed containers may rupture violently and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time.
Oxidizing properties	No
Molecular weight	No data available
Pour point	-57°C *Literature*

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Product is stable under normal conditions of use, storage and temperature. Combustible liquid C2. Hygroscopic.

10.3 Possibility of hazardous reactions

Explosive peroxides may form in material stored for several years. It is recommended that product should not be stored longer than 3 years. Hygroscopic; keep container tightly closed. Reaction with strong oxidizing materials (e.g. chromium trioxide, calcium hypochlorite, nitric acid, potassium permanganate, peroxides) is violently. Can increase the risk of fire or explosion. Reactive with reducing agents, acids, and alkalis. Hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid excessive heat, direct sunlight, moisture, freezing, static discharges, open flame and temperatures above 40'C.

10.5 Incompatible materials

Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

10.6 Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include are not limited to: Aldehydes. Alcohols. Ethers. Organic acids.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
LD50, Rat, >20,000 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.
LD50, Rabbit, >2,000 mg/kg No deaths occurred at this concentration

Acute inhalation toxicity
At room temperature, exposure to vapour is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat). LC50, Rabbit, 2 Hour, Aerosol, 317.042 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged contact is essentially non irritating to skin. Repeated contact may cause flaking and softening of skin.

Serious eye damage/eye irritation
May cause slight temporary eye irritation. Corneal injury is unlikely. Mist may cause eye irritation.

Sensitization
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Carcinogenicity
Did not cause cancer in laboratory animals.

Teratogenicity
Did not cause birth defects or any other foetal effects in laboratory animals.

Reproductive toxicity
In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity to fish
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species.
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l OECD Test Guideline 201

Toxicity to bacteria
NOEC, Pseudomonas putida, 18 Hour, >20,000 mg/l, Method Not Specified

Chronic aquatic toxicity
Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

12.2 Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen). 10-day Window: Pass
Biodegradation: 81%
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96%
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

12.3 Bio accumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow <3).
Partition coefficient, n-octanol/water (log Pow): -1.07 Measured
Bio concentration Factor (BCF): 0.09 Estimated

12.4 Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process. Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): <1 Estimated

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

This substance is not in Annex 1 of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

13. DISPOSAL CONSIDERATIONS

Any disposal practice must be in compliance with all local and national laws and regulations. Do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN number	None Allocated	None Allocated	None Allocated
14.2 UN proper shipping name	None Allocated	None Allocated	None Allocated
14.3 Transport hazard classes			
DG class	None Allocated	None Allocated	None Allocated
Subsidiary risk(s)	None Allocated	None Allocated	None Allocated
14.4 Packing group	None Allocated	None Allocated	None Allocated
14.5 Environmental hazards		None Allocated	
14.6 Special precautions for user			
Hazchem code	None Allocated	None Allocated	None Allocated

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organisation to follow all applicable laws, regulations and rules relating to the transportation of this material.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Inventory listing(s)
AUSTRALIA: Industrial Chemical (Notification and Assessment) Act
The principal components and additives of this product are included in the Australian Inventory of Chemical Substances (AICS).

Carcinogen schedule (Australia)
None allocated.

Poison schedule
A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

16. OTHER INFORMATION

Abbreviations and acronyms:
CAS # - Chemical Abstracts Service Number (or CAS Registry Number; CAS RN).

IARC - International Agency for Research on Cancer.
IERG - Initial Emergency Response Guide.
GHS - Globally Harmonised System.
IATA-DGR – Dangerous Goods Regulations by the International Air Transport Association.
ICAO – International Civil Aviation Authority.
IMDG – International Maritime Code for Dangerous Goods.
Kgs – Kilograms.
LD50 – Lethal dose, 50%.
LC50 – Lethal Concentration 50%.
LEL - Lower Explosive Limit
UEL - Upper Explosive Limit
lt - Litre
ml - Millilitre
mg - Milligram
mg/m^3 - Milligrams per Cubic Metre
mm - Millimetre
N/A - Not available
NLP – No Longer Polymers (European Commission).
NOEL – No Effect Level.
N.O.S – Not otherwise specified.
PBT – Persistent, Bio accumulative, Toxic
PEL - Permissible Exposure Limit
pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm - Parts Per Million
STEL - Short Term Exposure Limit
STOT-RE - Specific target organ toxicity (repeated exposure)
STOT-SE - Specific target organ toxicity (single exposure)
SUSMP - Standard for the Uniform Scheduling of Medicines and Poisons.
TLV - Threshold Limit value
TWA/OEL - Time Weighted Average or Occupational Exposure Limit
vPvB – Very Persistent, Very Bio accumulative.
WEEL - Workplace Environmental Exposure Level
W/W - Weight/Weight

Date of MSDS preparation:	24/08/2023
Edition, Revision:	Edition 2, Revision 2
Reason(s) for Issue:	Hazards Identification incorrect
Change(s):	C1 Combustible removed from Section 2 Hazards Identification

Prepared in accordance to the GHS (Globally Harmonised System)

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. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. It should be read taking into account how the product is handled in your particular situation and how it is used in conjunction with other products.