

Safety Data Sheet **PROPYLENE GLYCOL**

SDS no. EU8BNNGN • Version 1.0 • Date of issue: 2023-04-15

SECTION 1: Identification

GHS Product identifier

Product name PROPYLENE GLYCOL

Recommended use of the chemical and restrictions on use

Organic synthesis, especially polypropylene glycol and polyester resins; cellophane; antifreeze solution; solvent for fats, oils, waxes, resins, flavouring agents, perfumes, colours, soft-drink syrups and antioxidants; hygroscopic agent; coolant in refrigeration systems; plasticisers; as a stabilizer in hydraulic fluids; bactericide; textile conditioners; in food as solvent, wetting agent and humectant (moisture-retaining agent); emulsifier; feed additive; anticaking agent; preservative (retards mold and fungi); cleansing creams; suntan lotions; pharmaceuticals; brake fluids; deicing fluids for airport runways; tobacco and laboratory reagent.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Not classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as non-Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

Not a hazardous substance or mixture.

GHS label elements, including precautionary statements

Safety Data Sheet

PROPYLENE GLYCOL

SDS no. EU8BNNGN • Version 1.0 • Date of issue: 2023-04-15

Not a hazardous substance or mixture.

Other hazards which do not result in classification

Not a hazardous substance or mixture.

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 76.1

Components

Component	Concentration
Propylene glycol (CAS no.: 57-55-6; EC no.: 200-338-0)	<= 100 % (weight)
CLASSIFICATIONS: No data available. HAZARDS: No data available.	

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. First Aid Facilities: Maintain eyewash fountain in work area.
If inhaled	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
In case of skin contact	Wash off with soap and plenty of water.
In case of eye contact	If in eyes wash out immediately with water.
If swallowed	If swallowed, do NOT induce vomiting.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

Treat symptomatically based on judgement of doctor and individual reactions of the patient.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Small fire: Use dry chemical, CO₂, water spray or foam.

Large fire: Use water spray, fog or foam.

If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out.

Specific hazards arising from the chemical

Toxic and/or irritating fumes including carbon monoxide and carbon dioxide. Incomplete combustion may also produce toxic and irritating fumes and acrid smoke. Aldehydes or lactic, pyruvic or acetic acids may also be formed.

Combustible liquid. Vapour may travel a considerable distance to source of ignition and flash back. Runoff may pollute waterways. Fire may produce irritating, poisonous and/or corrosive fumes. Containers may explode when heated.

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Shut off all possible sources of ignition. Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel). Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

Avoid inhalation and skin/eye contact. Keep away from heat and all sources of ignition.

Conditions for safe storage, including any incompatibilities

Store in tightly closed containers, in a cool (<40°C), dry, well-ventilated area, away from incompatible substances. Hygroscopic. Light sensitive.

Not corrosive to the common metals, such as carbon steel (e.g. types 1010 and 1020), cast iron, stainless steel (300 series and 400 series), aluminium (types 3003 and Cast B-356), copper, brass, admiralty brass, naval brass, bronze, naval bronze, silicon bronze, nickel, nickel-base alloys, such as Hastelloy, tantalum and titanium at normal temperatures.

Corrosivity to Non-Metals: Attacks plastics such as chlorinated polyvinyl chloride (CPVC), polyvinyl chloride (PVC) and the polyester fibre Dacron at normal temperatures, and epoxy at temperatures greater than 95 °C; and elastomers (e.g. polyacrylate) at normal temperatures. It does not attack most plastics (e.g. nylon, Teflon, other fluorocarbon plastics, polypropylene, bisphenol-A and isophthalic polyesters), polyethylene and polystyrene; most elastomers (e.g. neoprene, Nitrile Buna-N (NBR), chloroprene, ethylene-propylene, Viton A, other fluorocarbon elastomers, styrene-butadiene (SBR), isoprene, natural rubber, fluorosilicone and silicone) and coatings (e.g. epoxy, phenol, polyester and vinyls).

Recommended Materials: Stainless steel, aluminium, plastite 3066 lined container, 316 stainless steel and opaque HDPE plastic container.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Safety Data Sheet

PROPYLENE GLYCOL

SDS no. EU8BNNGN • Version 1.0 • Date of issue: 2023-04-15

Hand Protection: Normally not required but if in doubt ensure hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Liquid
Appearance	Clear, colourless, viscous liquid.
Color	Colourless
Odor	Practically odourless; characteristic odour.
Odor threshold	No data available.
Melting point/freezing point	-60 °C; supercools.
Boiling point or initial boiling point and boiling range	187.6 °C.
Flammability	Must be preheated before ignition can occur.
Lower and upper explosion limit/flammability limit	Flammable Limits - Lower: 2.6 vol% Flammable Limits - Upper: 17.4 vol%
Flash point	103-104 °C (closed cup).
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.
Auto-ignition temperature	421 °C.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	6 - 8 (100 g/l H ₂ O, 20 °C). Very weak acid.
Kinematic viscosity	Kinematic Viscosity: 54.05 mm ² /s (54.05 centistokes) at 20 °C; 47.09 mm ² /s (47.09 centistokes) at 25 °C (calculated). [88] Dynamic Viscosity: 56 mPa.s (56 centipoises) at 20 °C; 48.6 mPa.s (48.6 centipoises) at 25 °C.
Solubility	Solubility in Water: Miscible (soluble) in all proportions. Solubility in Organic Solvents: Soluble in all proportions in ethanol, acetone and chloroform; soluble in diethyl ether and benzene; sparingly soluble in petroleum ethers and carbon tetrachloride. Will dissolve many essential oils, but is immiscible with fixed oils. Good solvent for rosin.
Partition coefficient n-octanol/water (log value)	Log P(oct) = -0.92 (experimental).
Vapor pressure	20 Pa @25°C
Evaporation rate	0.01 (n-butyl acetate = 1).
Density and/or relative density	Specific Gravity: 1.036 at 20 °C; 1.033 at 25 °C (water = 1).
Relative vapor density	2.62 (air=1).

Particle characteristics

No data available.

Supplemental information regarding physical hazard classes

Surface Tension: 38 mN/m (38 dynes/cm) at 20 °C; 36.51 mN/m (36.51 dynes/cm) at 25 °C.

Further safety characteristics (supplemental)

Saturated Vapour Concentration: ~ 105 ppm (0.01%) at 20 °C; ~ 170 ppm (0.02%) at 25 °C (calculated).

Other Information: Refractive index: (n 20 °C/D) 1.4324.

Taste: Practically tasteless.

SECTION 10: Stability and reactivity

Reactivity

None under normal use conditions.

Chemical stability

Stable under ordinary temperatures, pressures and conditions of use and storage. Hygroscopic: absorbs moisture or water from the air.

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 and explosion. Reaction with approximately 70% perchloric acid can cause propylene glycol to undergo violent decomposition, probably due to the formation of the unstable glycol perchlorate ester. Mixture with hydrofluoric acid, nitric acid and silver nitrate can explode, probably due to the formation of the explosive salt, silver fulminate. Reactive with reducing agents, acids, and alkalis.

Conditions to avoid

High temperatures (above 99 °C), excess heat, direct sunlight, open flames or other sources of ignition and incompatible materials, exposure to moist air, moisture or water.

Incompatible materials

Strong oxidizing materials (e.g. chromium trioxide, calcium hypochlorite, nitric acid, potassium permanganate, peroxides); perchloric acid; mixture of hydrofluoric acid, nitric acid and silver nitrate; reducing agents; strong acids and alkalis; acid chlorides; acid anhydrides; aliphatic amines; isocyanates; and chloroformates.

Hazardous decomposition products

Toxic and/or irritating fumes, including carbon monoxide, carbon dioxide, acrid smoke, aldehydes (propionaldehyde), alcohols, ethers and organic acids (lactic, pyruvic or acetic acids).

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Typical occupational exposure is unlikely to lead to harmful effects. Small oral doses have shown minor changes in blood and clinical chemistry parameters. Large oral doses (over 100ml) may cause some gastrointestinal irritation with nausea, vomiting and diarrhoea and affect behaviour/central nervous system (CNS depression, general anesthetic, convulsions, seizures, somnolence, stupor, muscle contraction or spasticity, coma), brain (changes in surface EEG), metabolism, blood (intravascular haemolysis, white blood cells - decreased neutrophil function), respiration (respiratory stimulation, chronic pulmonary edema, cyanosis), cardiovascular system

Safety Data Sheet

PROPYLENE GLYCOL

SDS no. EU8BNNGN • Version 1.0 • Date of issue: 2023-04-15

(hypotension, bradycardia, arrhythmias, cardiac arrest), endocrine system (hypoglycaemia), urinary system (kidneys), and liver. Individuals with kidney problems may show more severe effects.

Material does not readily form a vapour at room temperature. It must be heated or misted before inhalation exposure would occur. Inhalation of vapours or mist may cause irritation of the nose, throat and respiratory system. Significant adverse effects are expected to be unlikely. Inhalation of high aerosol concentrations has caused minor effects (nasal bleeding and irritation of the nasal cavity), probably related to the dehydrating effects of propylene glycol.

[8P] Respiratory Irritation: Rabbits were exposed to 10% propylene glycol aerosol for 20 and 120 minutes. Signs of irritation (alteration of ciliary cells) were observed at 120 minutes. Alterations in goblet cells in the tracheal lining were observed at both exposure durations. (Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological profile for ethylene glycol and propylene glycol. US Department of Health and Human Services, 1997).

Humans exposed to saturated and supersaturated atmospheres have not reported harmful effects. (Cavender, F.L., et al. Propylene glycol. In Patty's industrial hygiene and toxicology. 4th ed. Edited by G.D. Clayton, et al. Vol. II. Toxicology. Part F. John Wiley & Sons, 1994. p. 4646-4647, 4672-4679, unconfirmed).

Skin corrosion/irritation

Prolonged contact is essentially non-irritating to skin. A single prolonged skin exposure is unlikely to result in the material being absorbed through skin in harmful amounts. May be absorbed in potentially harmful amounts when applied in large quantities to severely damaged skin (e.g. severe burns (second or third degree)) over large areas of the body as part of a cream or other topical applications. Absorption under such circumstances can cause systemic effects similar to those of ingestion. Repeated exposures may cause adverse effects. May cause allergic reactions, mild irritation, defatting, redness, and itching.

Draize test, rabbit, skin, dose: 0.5 mL, applied to intact and abraded skin, Results: minimal irritation (scored 0.1/8).

A detailed review has examined numerous studies of humans dermally exposed to propylene glycol. Irritant contact dermatitis was determined to be the most commonly observed effect, although it appears to be related to prolonged exposure to very high concentrations of propylene glycol. The possibility of an allergic reaction or hives developing is considered rare. Subjective or sensory irritation, with itching, burning or stinging sensations, but no signs of inflammation, is considered to be a fairly common reaction among users of cosmetics containing propylene glycol or in volunteers following application of propylene glycol. (Funk, J.O., et al. Propylene glycol dermatitis: re-evaluation of an old problem. Contact Dermatitis. Vol. 31, no. 4 (1994). p. 236-241).

Serious eye damage/irritation

May cause mild eye irritation with some immediate, transitory stinging, lacrimation, blurred vision, redness, blepharospasm, and mild transient conjunctival hyperaemia. Effects are expected to be temporary.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

There is no human information available. The available animal information indicates that propylene glycol is not mutagenic.

Carcinogenicity

No data available.

Reproductive toxicity

There is no human information available. The available animal information indicates that propylene glycol does not cause reproductive effects.

Specific target organ toxicity (STOT) - single exposure

No data available.

Specific target organ toxicity (STOT) - repeated exposure

No data available.

Aspiration hazard

Not expected to be an aspiration hazard.

Additional information

Chronic Effects: Prolonged or repeated aerosol exposure may cause signs of physical irritation of the nasal cavity and reversible nasal bleeding. Prolonged or repeated inhalation may affect behaviour/CNS (with symptoms similar to ingestion), and spleen. Prolonged or repeated vapour exposure is unlikely to pose a health hazard. Prolonged or repeated ingestion may cause hyperglycemia and may affect behaviour/central nervous system (symptoms similar to that of acute ingestion). Chronic ingestion may cause lactic acidosis, stupor and possible seizures. Ingestion of very large oral doses for up to 2 years has produced minimal effects (e.g. minor blood effects, slight liver damage) in animals. Prolonged or repeated skin exposures may cause flaking and softening of skin, drying and irritation and may cause allergic contact dermatitis.

SECTION 12: Ecological information

Toxicity

When introduced properly, no impairments in the function of adapted biological waste-water-treatment plants are to be expected.

Acute Toxicity - Fish: *Onchorhynchus mykiss* LC50: 51600 mg/l /96 h.
Acute Toxicity - Daphnia: *Daphnia magna* EC50: 34400 mg/l /48 h.
Acute Toxicity - Algae: *Selenastrum capricornutum* IC50: 19000 mg/l /96 h.
Acute Toxicity - Bacteria: *Photobacterium phosphoreum* EC50: 26800 mg/l /30 min.
Acute Toxicity - Other Organisms: Activated sludge EC50: > 1000 mg/l /3 h.

Persistence and degradability

Biodegradation 87 - 92 % /28 d. Readily biodegradable.

Bioaccumulative potential

No bioaccumulation is to be expected ($\log P(o/w) < 1$).
BCF: < 1 (calculated). Not bioaccumulative (BCF < 1).

Mobility in soil

Distribution: $\log P(o/w)$: -0.92 (experimental).

Results of PBT and vPvB assessment

No data available.

Endocrine disrupting properties

No data available.

Other adverse effects

Henry constant: 0.0012 Pa·m³/mol. This Henry constant indicates that propylene glycol is expected to be essentially nonvolatile from water surfaces.

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Sewage disposal

No bioaccumulation is to be expected ($\log P(o/w) < 1$).

BCF: < 1 (calculated). Not bioaccumulative (BCF<1).

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP

Poison Schedule: NS

SECTION 16: Other information

Further information/disclaimer

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Preparation information

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia

National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'

Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.

Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.

Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants, December 2019

Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au

IATA, Dangerous Goods Regulations (DGR)

IMO, International Maritime Dangerous Goods Code (IMDG)