

MATERIAL SAFETY DATA SHEET

PROPYLENE GLYCOL INDUSTRIAL

MSDS No P000029-001-OSHA-AE
Ver. No 3
Ver Date DEC 7 98



Lyondell Chemical Worldwide, Inc.
One Houston Center
1221 McKinney Street
Houston, TX 77101

IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information on to the employees, customers, and users of this product. This product is covered by the OSHA Hazard Communication Rule and this document has been prepared in accord with the MSDS requirements of this rule.

1. General			
Trade Name	PROPYLENE GLYCOL INDUSTRIAL		Telephone Numbers:
Other Company Names	PG	EMERGENCY (800) 424-9300 CHEMTREC (610) 353-8300 LYONDELL	
Synonyms	None	CUSTOMER SERVICE (800) 321-7000 INFO ONLY	
Other Industry Names	1,2-Propanediol; 1,2-Dihydroxypropane		
Chemical Family	Glycols		
Generic Name	Monopropylene Glycol		
DOT Hazardous Material Proper Shipping Name Not regulated			
DOT Hazard Class Not regulated	DOT Packing Group Not regulated	DOT Reportable Quantity (Based on Material) Not applicable	UN/NA ID No. Not regulated
CAS No. (See Section 9 - Components)	Company Material ID	BE130	MSDS Class F
2. Summary of Hazards			
Signal Word	CAUTION		
Physical Hazards	Aqueous solutions may produce flammable vapors Slightly combustible liquid		
Acute Health Effects (Short-Term)	No inhalation hazard identified from data available; Slight eye irritant; No ingestion hazard identified from data available; No skin irritation hazard identified from data available; No skin absorption hazard identified from data available		
Chronic Health Effects (Long-Term)	No chronic health hazards are expected to occur from anticipated conditions of normal use of this material		
3. Fire and Explosion			
Flash Point AP 228°F (PMCC)	Autoignition Temperature AP 700°F	Flammable Limits (at Normal Atmospheric Temp and Pressure) Lower: AP 2.4 (% vol in air) Upper: AP 17.4 (% vol in air)	
Fire and Explosion Hazards	Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Aqueous solutions containing less than 95% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapors. Only aqueous solutions of propylene glycol less than 22% should be used in sprinkler systems or other fire-fighting equipment. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.		
Extinguishing Media	Alcohol type foam CO ₂ Dry chemical		



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3. Fire and Explosion (Cont'd)

Extinguishing Media Use Comment	Use waterspray/waterfog for cooling
Special Firefighting Procedures	Do not enter fire area without proper protection. 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.

4. Health Hazards

Summary of Acute Hazards	Not expected to present a significant acute health hazard upon short term exposure.	
ROUTE OF EXPOSURE	SIGNS AND SYMPTOMS	PRIMARY ROUTE(S)
Inhalation	No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of inhalation exposure.	No
Eye Contact	May cause minor eye irritation.	Yes
Skin Absorption	No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure.	No
Skin Irritation	No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.	No
Ingestion	No significant signs or symptoms indicative of any health hazard are expected to occur as a result of ingestion.	No
Summary of Chronic Hazards	No adverse chronic health effects are expected from anticipated conditions of normal use of this material, unless aerosol is generated.	
Special Health Effects	This material or its emissions may aggravate pre-existing eye disease.	

5. Protective Equipment and Other Control Measures

Respiratory	No special respiratory protection is recommended under anticipated conditions of normal use with adequate ventilation.
Eye	Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses must not be worn.
Skin	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, and when leaving work.
Engineering Controls	No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.
Other Hygienic Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.
Other Work Practices	No special work practices are needed beyond the above recommendations under anticipated conditions of normal use.

6. Occupational Exposure Limits

Substance	Source	Date	Type	Value/Units	Time	Skin
No occupational exposure limit(s) have been established for this material or its components						
Exposure Limit Comments	No additional Occupational Exposure Limit information available					

7. Emergency and First Aid

Inhalation	Not expected to present a significant inhalation hazard under anticipated conditions of normal use.
Eye Contact	In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.
Skin Contact	Not expected to present a significant skin hazard under anticipated conditions of normal use.
Ingestion	Not expected to present a significant ingestion hazard under anticipated conditions of normal use.



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7. Emergency and First Aid (Cont'd)

Physician's Emergency Medical Treatment Procedures	Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. After adequate first aid, no further treatment is required unless symptoms reappear.
Physician's Detoxification Procedures	No detoxification information available.

8. Spill and Disposal

Precautions if Material is Spilled or Released

May contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Restrict water use for cleanup. Slippery walking. Spread granular cover. Impound/recover large land spill. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. May biodegrade. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

Waste Disposal Methods

Landfill solids at permitted sites. Use registered transporters. Burn concentrated liquids, diluting with clean, low viscosity fuel. Avoid flame-outs. Assure emissions comply with applicable regulations. Dilute aqueous waste may biodegrade. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations. Contaminated product, soil, water, container residues and spill cleanup materials should not be designated as hazardous wastes.

9. Components

(This may not be a complete list of components.)

(Compositions given are typical values, not specifications.)

<u>Component Name</u>	<u>CAS No.</u>	<u>Composition Amount (Wt.)</u>	<u>Carcinogen ###</u>
Propylene Glycol	57-55-6	GT 99 %	N/P

###1=U.S. National Toxicological Program 2=International Agency for Research on Cancer 3=U.S. Occupational Health and Safety Administration 4=American Conference of Governmental Industrial Hygienists 9=Other N/P=No Applicable Information Found

10. Component Health Hazards

<u>Component</u>	<u>Component Health Hazards</u>
Propylene Glycol	Slight eye irritant

11. Additional Toxicological Information

Component Name/Comments

Propylene Glycol
High concentrations of Propylene Glycol in water when held in contact with human skin under closed conditions have been reported to cause skin irritation (Cosmetics and Toiletries 99:83-91,1984). The authors attribute the observations to a sweat retention reaction by skin. No reactions were observed in open patch tests with human subjects. One literature report indicates rare eczematous skin reactions and even more rarely an allergic skin reaction from exposure to Propylene Glycol (Anderson and Starr, Hautzart 33 (1) 1982).

Material
No additional toxicology information is available for this material.

12. Physical and Chemical Data

Boiling Point AP 370°F (at 760 mm Hg)	Viscosity AP 46 CPS (at 77°F) (Brookfield)	Dry Point AP 374°F
Freezing Point AP -76°F	Vapor Pressure AP 0 mm Hg (at 68°F)	Volatile Characteristics Slight
Specific Gravity AP 1.04 (H ₂ O = 1.0 at 39.2°F)	Vapor Specific Gravity AP 2.6 (Air = 1.0 at 60-90°F)	Solubility in Water Complete (In All Proportions)
pH Not applicable	Hazardous Polymerization Not expected to occur	Stability Stable

Other Chemical Reactivity Reacts with strong oxidizing agents

ASTRO PRODUCT CODE # 10093



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12. Physical and Chemical Data (Cont'd)

Other Physical and Chemical Properties	Hygroscopic
Appearance and Odor	Clear, colorless; Slightly viscous liquid; Little or no odor
Conditions to Avoid	High temperatures, oxidizing conditions
Materials to Avoid	Strong oxidizing agents
Hazardous Decomposition Products	Incomplete combustion may produce carbon monoxide and other toxic gases

13. Hazards Rating Information

National Fire Protection Association
 Health = 0 Flammability = 1 Reactivity = 0 Special Hazard - None
 Ratings have been based on available component information from the National Fire Protection Association.

National Paint and Coatings Association

Hazardous Material Information System (HMIS)
 Health = 0 Flammability = 1 Reactivity = 0
 Ratings have been generated according to criteria specified in the National Paint and Coatings Association Implementation Manual based on component information available.

14. Additional Precautions

Handling and Storage Procedures
 Hygroscopic. Use dry nitrogen or low dew point air for tank padding. Keep drums tightly closed to prevent contamination. Store at 65-90°F.

Decontamination Procedures
 Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair. Wear recommended personal protective equipment. Observe precautions pertaining to confined space entry.



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15. Regulatory Information

Federal

Toxic Substance Control Act (TSCA)

The following is the Toxic Substances Control Act (TSCA) Chemical Substance Inventory Status of the components of this material listed in Section 9 - Components:

CHEMICAL	CAS NO.	STATUS
Propylene Glycol	57-55-6	Listed - Non Confidential

Superfund Amendments and Reauthorization of 1988 (SARA), Title III

-Section 302/304

Requires emergency planning based on 'Threshold Planning Quantities' (TPQs), and release reporting based on Reportable Quantities (RQs) of 'Extremely Hazardous Substances' (EHS) listed in Appendix A of 40 CFR 355. There are no components of this material with known CAS numbers which are on the EHS list.

-Section 311 & 312

Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

-Section 313

The material does not contain any chemical components with known CAS numbers that exceed the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

OSHA Regulations

'Chemical-specific' U.S. Occupational Safety and Health Administration (OSHA) regulations (1910.1002 to 1910.1050) presented under 29 U.S. Code of Federal Regulations (CFR) 1910 do not apply to this material or its components.

Other EPA Regulations

No additional information available

Department of Transportation (DOT)

Other than the normal shipping instructions and information given in this MSDS, there are no other specific U.S. Department of Transportation (DOT) regulations governing the shipment of this material.

State Regulations:

California Safe Drinking Water and Toxic Enforcement Act of 1988 - Proposition 65

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.

California South Coast Air Quality Management District (SCAQMD) Rule 443.1 (VOC's)

A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114), and (CFC-115). By this definition, this is a VOC material.

Massachusetts Right to Know Substance List (MSL) [105 CMR 670.000]

Extraordinarily Hazardous Substances (MSL-EHS) must be identified when present in materials at levels greater than state specified criterion. The criterion is >= 0.0001%. Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is >= 1%. Components with CAS numbers present in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

New Jersey Registration

The New Jersey, Registry 3, Registration law does not apply to this material, as none of its components are trade secrets.

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15. Regulatory Information (Cont'd)

Pennsylvania Right to Know Hazardous Substance List

Hazardous Substances (PA-HS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers in this material at a level which could require reporting under the statute are:

CHEMICAL	CAS NO.
Propylene Glycol	57-55-6

Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 0.01\%$. Environmental Hazards (PA-EH) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 0.01\%$. Components with CAS numbers in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

Regulatory Advisory

If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in this sheet.



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16. Label Information

Source	Lyondell Chemical Worldwide, Inc. One Houston Center 1221 McKinney Street Houston, TX 77101	Telephone Numbers:	
		EMERGENCY	
		(800) 424-9300	CHEMTREC
		(610) 353-8300	LYONDELL
		CUSTOMER SERVICE	
		(800) 321-7000	INFO ONLY
Other Company Names	PG	Signal Word	CAUTION
Use Statement	For industrial use only Keep out of reach of children		
Physical Hazards		Health Hazards	
Combustible		Eye irritant	
Aqueous solutions may produce flammable vapors			
Precautionary Measures			
Do not handle near heat, sparks, or open flame			
Avoid contact with eyes			
DOT Information:	UN/NA ID No.	DOT Hazard Class	DOT Packing Group
	Not regulated	Not regulated	Not regulated
			DOT RQ (Based on Material)
			Not applicable
DOT Hazardous Material Proper Shipping Name	Not regulated		
Component Name	CAS No.	Composition Amount (Wt.)	RQ
Propylene Glycol	57-55-6	GT 99 %	Not applicable
Instructions:	In case of fire, use: Alcohol type foam; CO ₂ ; Dry chemical		
First Aid:			
Inhalation	Not expected to present a significant inhalation hazard under anticipated conditions of normal use.		
Eye Contact	In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.		
Skin Contact	Not expected to present a significant skin hazard under anticipated conditions of normal use.		
Ingestion	Not expected to present a significant ingestion hazard under anticipated conditions of normal use.		
In case of spill:	May contaminate water supplies/pollute public waters. Slippery walking/spread granular cover or soak up. On water, may biodegrade. Contain/collect rapidly to minimize dispersion. Report per regulatory requirements.		
Protective Equipment			
Respiratory	No special respiratory protection is recommended under anticipated conditions of normal use with adequate ventilation.		
Eye	Chemical splash goggles and/or face shield should be worn.		
Skin	No special clothing normally required. Where use can result in skin contact, wash thoroughly before eating, drinking, smoking, or leaving work.		
Label No.:	LP000029	Version No.:	2
		Date:	1 January 1999



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17. General Comments

General Comments
This document is generated for the purpose of distributing health, safety, and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification.

Other Comments
No additional information available.

Note	EQ=Equal	AP=Approximately	N/P=No Applicable Information Found
Qualifications:	LT=Less Than	UK=Unknown	N/AP=Not Applicable
	GT=Greater Than	TR=Trace	N/DA=No Data Available

DISCLAIMER OF LIABILITY:

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Document Status APPROVED