



SILVER FERN CHEMICAL

Material Safety Data Sheet

GLYCOL ETHER PM

SECTION 1: IDENTIFICATION

Product Name: GLYCO ETHER PM

Chemical Family: Propylene Glycol Ethers

CAS Number: 107-98-2

Chemical Name: 1-Methoxy-2-propanol

Synonyms: Propylene glycol monomethyl ether

Company

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Business Contact

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SECTION 2: HAZARD IDENTIFICATION

Emergency Overview

Signal Word

WARNING.

Hazards

Flammable liquid. May form reactive peroxides. Inhalation hazard. Skin contact hazard. Skin irritant. Eye irritant. Slight ingestion hazard.

Physical State

Liquid.

Color

Clear, colorless.

Odor

Ether-like odor.

Odor Threshold

10 ppm / Odor is not an adequate warning of potentially hazardous ambient air concentrations.



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Potential Health Effects

Routes of Exposure

Inhalation Skin. Eye

Signs and Symptoms of Acute Exposure

See component summary.

1-Methoxy-2-propanol 107-98-2

Slight inhalation hazard. Slight eye irritant. Slight skin irritant. Slight skin absorption hazard.

2-Methoxy-1-propanol 1589-47-5

Respiratory tract irritant. Skin irritant. Moderate eye irritant.

Skin

May cause slight irritation seen as mild local redness. Extensive/prolonged or repeated exposure to this material can result in significant absorption.

Inhalation

Prolonged overexposure may cause coughing, shortness of breath, dizziness and intoxication.

Eye

May cause minor eye irritation.

Ingestion

Not a likely route of exposure. This material may be a slight health hazard if ingested in large quantities.

Chronic Health Effects

See component summary.

1-Methoxy-2-propanol 107-98-2

No known chronic health effects.

2-Methoxy-1-propanol 1589-47-5

Damages developing fetus. See section 11.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Component Name	CAS #	EU Inventory	Concentration Wt.%*	Risk	Symbol
1-Methoxy-2-propanol	107-98-2	203-539-1	98.0 <= 100.0	R10	None
2-Methoxy-1-propanol	1589-47-5	216-455-5	>= 0.5	R61, R2, R10,	T, Xi



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R37/38,
R41

* Concentration of gaseous products or materials is given in Mole %
Compositions given are typical values not specifications.

SECTION 4: FIRST AID MEASURES

General

After adequate first aid, no further treatment is required unless symptoms reappear.

Skin

Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Seek medical attention if ill effect or irritation develops.

Inhalation

If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain medical attention if breathing difficulty persists.

Eye

Immediately flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower lids. If pain or irritation persists, promptly obtain medical attention.

Ingestion

If large quantity swallowed, give lukewarm water (pint/ 1/2 litre) if victim completely conscious/alert. Do not induce vomiting. Risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

Note to Physician

Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties

Classification

Flammable liquid.

Flash Point:

31.7 °C (89.06 °F) (TCC).

Auto-Ignition Temperature

277.8 °C (532.04 °F)

Lower Flammable Limit

3 vol%



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Upper Flammable Limit

12 vol%

Extinguishing Media

Suitable: Use alcohol foam, water spray or fog Use DRY chemicals, CO₂, water spray

Unsuitable: No additional information available.

Protection of Firefighters

Protective Equipment/Clothing: Wear an approved positive pressure self-contained breathing apparatus and firefighter turnout gear.

Fire Fighting Guidance: Individuals should perform only those fire-fighting procedures for which they have been trained. Fire fighters should wear self-contained breathing apparatus in the positive pressure mode with a full facepiece when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. Cool tanks and containers exposed to fire with water. Water may be ineffective in firefighting due to low flash point. Burning liquid may float on water. Even if material is water soluble, may not be practical to extinguish fire by water dilution. Notify authorities immediately if liquid enters sewer/public waters.

Hazardous Combustion Products: Incomplete combustion may produce carbon monoxide and other toxic gases.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Release Response

Flammable liquid. Release can cause fire or explosion. Vapors may ignite. Equip responders with proper protection extinguish all ignition sources. Blanket with firefighting foam. Contain spill with dike to prevent entry into sewers or waterways. For large spills, dike and pump into properly labeled containers for reclamation or disposal. For small spills, soak up with absorbent material and place in properly labeled containers for disposal. All recovered material should be packaged, labeled, transported and disposed of or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices. Reclaim where possible.

SECTION 7: HANDLING AND STORAGE

Handling

For industrial use only. Keep container tightly closed when not in use. The potential for peroxide formation is enhanced when these solvents are used in processes such as distillation. Use only non-sparking tools. Properly ground containers before beginning transfer. When transferring propylene glycol ethers with flash points at or below 60 °C (140 °F) into fixed site vessels, the vessel should be purged and inerted prior to transfer. Propylene glycol ethers may be transferred into air atmospheres if the temperature of the product and the ambient temperature within the shipping container are both at least 16.7 °C (30 °F) less than the product's flash point. After loading, nitrogen blanketing is required if the contents of the transportation container could exceed a temperature of 16.7 °C (30 °F) less than the product flash point during any subsequent transportation activities. If the product flash point is less than 16.7 °C (30 °F) above either the ambient temperature of the transportation container or the storage temperature of the product, the container should be purged and inerted with nitrogen prior to loading and nitrogen blanketed after



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loading. Handle empty containers with care. Flammable/combustible residue remains after emptying. The purging of all empty shipping containers, regardless of the flashpoint, is recommended when received with air atmospheres. Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair. Use adequate personal protective equipment. Observe precautions pertaining to confined space entry.

Storage

Store only in tightly closed, properly vented containers away from heat, sparks, open flame and strong oxidizing agents. Storage under nitrogen atmosphere is recommended to minimize possible formation of highly reactive peroxides. Store in properly lined steel/stainless steel to avoid slight discoloration from mild steel/copper. Aluminum (5000 series alloys - U.S. Aluminum Association Standard) showed no corrosion after 30 days contact with Glycol Ether PM Acetate, Glycol Ether DPM, TPM, PTB, or PM at 71 °C (160 °F). Some plastics/rubbers are attacked by Glycol Ethers/Ether Esters. This product will absorb water if exposed to air.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls

General room or local exhaust ventilation is usually required to meet exposure limit(s).

Personal Protection

Skin Wear chemical resistant gloves such as: Neoprene. Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn.

Eye Chemical splash goggles and/or face shield should be worn.

Additional Remarks

Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse.

Occupational Exposure Limits:

<u>Component Name</u>	<u>Source / Date</u>	<u>Value</u>	<u>Type</u>	<u>Notation</u>
1-Methoxy-2-propanol	US (ACGIH) / 2003	100 ppm	8 HRS/TWA	No
	US (ACGIH) / 2003	150 ppm	15 MIN/STEL	No
2-Methoxy-1-propanol	US (ACGIH) / 2003	N/L		

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid. Clear, colorless.



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Odor: Ether-like odor.

Odor Threshold: 10 ppm Odor is not an adequate warning of potentially hazardous ambient air concentrations.

pH: Not applicable.

Boiling Point/Boiling Range: ~ 120 °C (248 °F)

Freezing Point/Melting Point: ~ -95 °C (-139 °F)

Flash Point: 31.7 °C (89.06 °F) (TCC).

Auto-ignition: 277.8 °C (532.04 °F)

Flammability: Flammable liquid.

Lower Flammable Limit: 3 vol%

Upper Flammable Limit: 12 vol%

Explosive Properties: No Data Available.

Oxidizing Properties: No Data Available.

Vapor Pressure: 10.9 mm Hg

Evaporation Rate: 0.7 (butyl acetate = 1)

Relative Density: ~ 0.92 @ 25 °C (77 °F)

Relative Vapor Density: > 3.0 @ 15.5 - 32.2 °C (59.9 - 89.96 °F)

Viscosity: ~ 2.0 mm²/s @ 77 °C (170.6 °F)

Solubility (Water): ~ 200 g/l @ 20 °C (68 °F) Complete

Partition Coefficient (Kow):

Additional Physical and Chemical Properties: Volatile Characteristics: Moderate: 1.0 to 10.0%

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability

Stable.

Conditions to Avoid

Extended contact with air or oxygen. The potential for peroxide formation is enhanced when these solvents are used in processes such as distillation. Heat, sparks, open flame, other ignition sources, and oxidizing conditions. Ignition may occur at temperatures below those published in the literature as autoignition or ignition temperatures.

Substances to Avoid

Strong oxidizing agents.

Decomposition Products

No Data Available.



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Hazardous Polymerization

Not expected to occur.

Reactions with Air and Water

May react with oxygen to form peroxides. However, there is no known evidence that it has nearly the peroxide forming potential as, for example, diethyl ether, etc.

SECTION 11: TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION

Product Summary

No adverse chronic health effects are expected from anticipated conditions of normal use of this material, based on animal test data. (See Component Toxicity Information).

Acute Toxicity - Lethal Doses

LC50 (Inhl) Rat 15,000 PPM

LD50 (Oral) Rat 6600 MG/KG

Reproductive Effects

No reproductive toxicity was demonstrated in relevant studies for this commercial material.

COMPONENT INFORMATION

1-Methoxy-2-propanol 107-98-2

Acute Toxicity - Lethal Doses

LD50 (Oral) Rat 5,660 MG/KG

Mouse 11,700 MG/KG

2-Methoxy-1-propanol 1589-47-5

Repeated Dose Toxicity

2-Methoxy-1-propanol has been shown to cause developmental effects in offspring of female rabbits exposed to 0, 145, 225, 350, and 545 ppm by inhalation during pregnancy. 145 ppm was the no observed effect level (NOEL) in this study. The acetate of 2-methoxy-1-propanol also has been tested for developmental effects. Information for the acetate is pertinent since the acetate portion of this molecule is quickly removed in a living organism to yield 2-methoxy-1-propanol. The offspring of rats exposed to concentrations of 0, 110, 550, or 2,700 ppm developed vertebral incisions at the highest exposure level, in the presence of maternal toxicity. Rabbits exposed to 0, 36, 145, or 550 ppm of 2-methoxy-1-propanol acetate bore offspring that showed malformations of sternum, paws, major blood vessels and the heart at the highest exposure level. A concentration of 145 ppm was the no observed effect level (NOEL) for adverse developmental effects from the acetate of 2-methoxy-1-propanol.

Reproductive Effects



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Damages developing fetus.

Carcinogenicity

Not listed by IARC, NTP, or OSHA.

SECTION 12: ECOLOGICAL INFORMATION

PRODUCT INFORMATION

Ecotoxicity

Generally non-toxic to aquatic organisms.

Acute toxicity to fish

LC50 / 96 HOURS fathead minnow ~ 28,000 mg/l

Acute toxicity to aquatic invertebrates

EC50 / 48 HOURS Daphnia magna. ~ 23,300 mg/l

Toxicity to aquatic plants

EC50 / 168 HOURS Freshwater Algae. > 1,000 mg/l

Environmental Fate and Pathway

Vapors will photodegrade. Photochemical degradation of vapors in 3.1 hours.

Persistence and Degradability

Biodegradation: Biodegradable under aerobic and anaerobic conditions. Aerobic biodegradation of 96% after 28 days. Anaerobic biodegradation of 38% after 81 days (30 day lag period).

Bioaccumulation: Not expected to bioaccumulate in aquatic organisms. log Kow (calculated) -0.437

COMPONENT INFORMATION

1-Methoxy-2-propanol 107-98-2

Ecotoxicity

No Data Available.

Environmental Fate and Pathway

No Data Available.

2-Methoxy-1-propanol 1589-47-5



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Ecotoxicity

No Data Available.

Environmental Fate and Pathway

No Data Available.

SECTION 13: DISPOSAL CONSIDERATIONS

Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Comply with applicable local, state or international regulations concerning solid or hazardous waste disposal and/or container disposal. Use only licensed transporters and permitted facilities for waste disposal.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name	IMDG	1-METHOXY-2-PROPANOL
Proper Shipping Name	JAPAN_ROAD	1-METHOXY-2-PROPANOL
ID No.	IMDG	UN3092
ID No.	JAPAN_ROAD	UN3092
Hazard Class	IMDG	3
Hazard Class	JAPAN_ROAD	4
PG	IMDG	III
PG	JAPAN_ROAD	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

Regulatory Status:

Country	Inventory
Australia	AICS X
Canada	DSL X
Canada	NDSL
China	IECS X
European Union	EINECS X
European Union	ELINCS
European Union	NLP
Japan	ENCS X
Korea	ECL X
Philippines	PICCS X
United States	TSCA X

X = All components are included or are otherwise



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exempt from inclusion on this inventory.

SECTION 16: OTHER INFORMATION

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