SILVER FERN CHEMICAL

Material Safety Data Sheet

GLYCOL ETHER PM ACETATE

SECTION 1: IDENTIFICATION

Product Name: GLYCOL ETHER PM ACETATE

Chemical Family: Propylene Glycol Ether Esters

CAS Number: 108-65-6 Mixture

Chemical Name: 1-Methoxy-2-Propanol Acetate

Synonyms: 1-Methoxy-2-Propanol Acetate, PM Acetate

Company
Silver Fern Chemical, Inc.
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Seattle WA 98109, USA

Business Contact
Customer Service: 206-282-3376
info@silverfernchemical.com

24 Hour Emergency Contact
Infotrac 800-535-5053
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SECTION 2: HAZARD IDENTIFICATION

Emergency Overview
This material is HAZARDOUS by OSHA Hazard Communication definition.

Hazards
Moderately combustible liquid. May form reactive peroxides. May be irritating to the eyes, skin, and respiratory system.

HMIS (U.S.A.):
Health Hazard: 2
Fire Hazard: 2
Reactivity: 0
Personal Protection: E

National Fire Protection Association (U.S.A.):
Health: 1
Flammability: 2
Reactivity: 0

Physical State

Liquid.

Color
Colorless.
Odor
Aromatic, fruity odor.

Odor Threshold
No Data Available.

Potential Health Effects

Routes of Exposure
Eye. Inhalation. Skin.

Signs and Symptoms of Acute Exposure
Moderate health hazard. Moderate eye irritant. Mucous membrane irritant. Slight inhalation hazard. Slight ingestion hazard. Slight skin absorption hazard.

1-Methoxy-2-propanol acetate 108-65-6
Moderate eye irritant. Mucous membrane irritant.

2-Methoxy-1-propanol acetate 70657-70-4
Moderate eye irritant. Mucous membrane irritant.

Skin
No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin contact. Possible systemic toxicity by skin absorption.

Inhalation
Prolonged overexposure to either vapor or mist may cause coughing, shortness of breath, dizziness and drunkenness.

Eye
May cause moderate irritation, including burning sensation, tearing, redness or swelling.

Ingestion
Ingestion may cause gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy, or diarrhea.

Chronic Health Effects
Repeated or prolonged exposure may irritate the mucous membranes.

1-Methoxy-2-propanol acetate 108-65-6
Repeated or prolonged exposure may irritate the mucous membranes.

2-Methoxy-1-propanol acetate 70657-70-4
Damages developing fetus. See section 11.

Conditions Aggravated by Exposure
Any pre-existing disorders or diseases of the eye. This material may affect mucous tissue and/or aggravate mucous membrane dysfunction.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Component Name	CAS #	EU Inventory	Concentration Wt.%*		Risk	Symbol
1-Methoxy-2-propanol acetate	108-65-6	203-603-9	99.0	<= 100.0	R10, R36	Xi
2-Methoxy-1-propanol acetate	70657-70-4	274-724-2		< 0.5	R61, R10, R37	T

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

SECTION 4: FIRST AID MEASURES

General
Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. For specific information refer to the Emergency Overview in Section 3 of this MSDS., After adequate first aid, no further treatment is required unless symptoms reappear.

Skin
Remove contaminated clothing as needed. Wash thoroughly with soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Seek medical attention if discomfort persists.

Inhalation
If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

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 burns or allergic reactions conventionally after decontamination. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. If pain, blinking, tears, or redness continue, patient

should contact ophthalmologist.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties

Classification
OSHA/NFPA Class II combustible liquid.

Flash Point:
~ 47 ℃ (116.6 ℉) (TCC)
Auto-Ignition Temperature
~ 272 ℃ (521.6 ℉)

Lower Flammable Limit
~ 1.5 vol%

Upper Flammable Limit
~ 10 vol%

Extinguishing Media

Suitable: SMALL FIRE: Use dry chemicals, CO2, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable: Do not use solid water stream.

Protection of Firefighters

Protective Equipment/Clothing: Do not enter fire area without proper protection. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters protective clothing will only provide limited protection.

Fire Fighting Guidance: When heated above the flash point, releases flammable vapors. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. 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. 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 Combustion Products: Carbon Monoxide and other toxic vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Release Response

Flammable liquid. Release can cause fire or explosion. Liquids/vapors may ignite. Evacuate/limit access. Equip responders with proper protection. Extinguish all ignition sources. Stop leak if you can do it without risk. Slippery walking/spread granular cover or soak up. Prevent flow to sewer/public waters. Notify fire and environmental authorities. 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.

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 ºC (140 ºF) 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 ºC (30 ºF) 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 ºC (30 ºF) less than the product flash point during any subsequent transportation activities. If the product flash point is less than 16.7 ºC (30 ºF) 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 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
Local exhaust and general ventilation must be adequate to meet exposure limit(s).

Personal Protection
Inhalation A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. No occupational exposure limits have been developed for this material. Where exposure through inhalation may occur from use, approved respiratory protection equipment is recommended.

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. The equipment must be cleaned thoroughly after each use.

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.

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:

Component Name	Source / Date	Value	Type	Notation
1-Methoxy-2-propanol acetate	US (ACGIH) / 2004	N/L		
	US (OSHA) / 2003	N/L		
	WEEL / 2006	100 ppm	8 HRS/TWA	
2-Methoxy-1-propanol acetate	US (ACGIH) / 2004	N/L		
	US (OSHA) / 2003	N/L		

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid. Colorless.

Odor: Aromatic, fruity odor.

Odor Threshold: No Data Available.

pH: Not applicable.

Boiling Point/Boiling Range: ~ 140 °C (284 °F) @ 760 mm Hg

Freezing Point/Melting Point: No Data Available.

Flash Point: ~ 47 °C (116.6 °F) (TCC)

Auto-ignition: ~ 272 °C (521.6 °F)

Flammability: OSHA/NFPA Class II combustible liquid.

Lower Flammable Limit: ~ 1.5 vol%

Upper Flammable Limit: ~ 10 vol%

Explosive Properties: No Data Available.

Oxidizing Properties: No Data Available.

Vapor Pressure: ~ 3.8 mm Hg @ 25 °C (77 °F)

Evaporation Rate: ~ 0.3 (butyl acetate = 1)

Relative Density: ~ 0.96 @ 25 °C (77 °F)

Relative Vapor Density: ~ 4.6 @ 15 - 32 °C (59 - 89.6 °F) (Air = 1.0)

Viscosity: ~ 1 mPa.s @ 25 ℃ (77 ℉) (Brookfield).

Solubility (Water): Appreciable (10 Percent or more).

Partition Coefficient (Kow): No Data Available.

Additional Physical and Chemical Properties: Hygroscopic. Additional properties may be listed in Sections 3 and 5.

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability
This material is stable when properly handled and stored.

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. Moisture and humidity. 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.

Decomposition Products
Carbon Monoxide and other toxic vapors.

Hazardous Polymerization
Not expected to occur.

Reactions with Air and Water
May react with oxygen to form peroxides.

SECTION 11: TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION
Product Summary
See component summary.

COMPONENT INFORMATION

1-Methoxy-2-propanol acetate 108-65-6

Acute Toxicity - Lethal Doses
LD50 (Oral) Rat 8,532 MG/KG BWT
LD50 (Skin) Rat > 5,000 MG/KG

Target Organ Effects
Eye. Skin.

Repeated Dose Toxicity
No known chronic health effects.

2-Methoxy-1-propanol acetate 70657-70-4

Target Organ Effects
Eye. Damages developing fetus.

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
Damages developing fetus.

Carcinogenicity
Not listed by IARC, NTP, or OSHA.

SECTION 12: ECOLOGICAL INFORMATION

PRODUCT INFORMATION

Ecotoxicity
See component summary.

Environmental Fate and Pathway
See component summary.

COMPONENT INFORMATION

1-Methoxy-2-propanol acetate 108-65-6

Ecotoxicity
No Data Available.

Acute toxicity to fish
LC50 / 96 HOURS fish. 161 mg/l
NOEC / 96 HOURS fish. 100 mg/l

Acute toxicity to aquatic invertebrates
EC0 / 48 HOURS Daphnia magna. 500 mg/l
EC50 / 48 HOURS Daphnia magna. > 500 mg/l

Environmental Fate and Pathway
It may enter soil and may contaminate water.

Persistance and Degradability
Biodegradation: This material is expected to be inherently biodegradable.

2-Methoxy-1-propanol acetate 70657-70-4

Ecotoxicity
No Data Available.

Environmental Fate and Pathway
No Data Available.

SECTION 13: DISPOSAL CONSIDERATIONS

Contaminated product, soil, or water may be hazardous waste. (See 40 U.S. Code of Federal Regulations (CFR) 261 and 29 CFR 1910). Landfill solids at permitted sites. Use registered transporters. Burn concentrated liquids. 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.

SECTION 14: TRANSPORT INFORMATION

Special Requirements
If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in the composition section of this sheet, based on final composition of your product.

Proper Shipping Name Esters, n.o.s. (1-Methoxy-2-Propanol Acetate)

ID No. UN3272

Hazard Class 3

PG 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 exempt from inclusion on this inventory.

All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA 302/304
No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

SARA 311/312
Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:
Immediate (Acute) Health Hazard.
Fire Hazard.

SARA 313
This 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.
State Reporting

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.

Massachusetts Substances List (MSL) - Extraordinarily hazardous substances 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 2 - Composition do not require reporting under the statute.

Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 0.01%. Hazardous Substances (PA-HS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 1%. Environmental Hazards (PA-EH)

must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 0.01%. Components with CAS numbers present in this material, at levels specified in Section 2 - Composition, do not require reporting under the statute.

SECTION 16: OTHER INFORMATION

Effective Date: 10/13/2006

DISCLAIMER OF RESPONSIBILITY

The information on this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable.

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