

SILVER FERN CHEMICAL

Material Safety Data Sheet

DIETHYLENE GLYCOL (DEG)

SECTION 1: IDENTIFICATION

Product Name: Diethylene Glycol

CAS Number: 111-46-6

Chemical Name: Ethanol, 2,2'-oxybis-

Synonyms: DEG

Company

Silver Fern Chemical, Inc.
2226 Queen Anne Avenue North
Suite #C
Seattle WA 98109, USA

Business Contact

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

24 Hour Emergency Contact

Infotrac 800-535-5053
Outside USA & Canada 352-323-3500

SECTION 2: HAZARD IDENTIFICATION

Emergency Overview

The purpose of this MSDS is to transmit important product safety information.

Signal Word

WARNING.

Hazards

Harmful or fatal if swallowed. Swallowing this material will result in serious health hazard, potentially leading to collapse and death. Inhalation or ingestions may cause symptoms of central nervous depression, kidney and liver damage.

Physical State

Viscous liquid.

Color

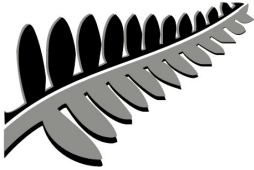
Clear, colorless, slightly viscous liquid.

Odor

Odorless.

Odor Threshold

No Data Available.



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Potential Health Effects

Routes of Exposure

Eye. Inhalation. Skin.

Signs and Symptoms of Acute Exposure

See component summary.

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This substance may cause effects on the central nervous system, liver and kidneys.

Skin

In severe overexposure enough material might be absorbed into the skin to cause systemic injury.

Inhalation

At process temperatures irritating fumes may be produced. May produce symptoms of central nervous system depression including headache, dizziness, nausea, euphoria, loss of equilibrium, drowsiness, visual disturbances, fatigue, unconsciousness and respiratory arrest. Can cause pulmonary edema if aspirated into lungs.

Eye

Non-irritating to the eyes.

Ingestion

Central nervous system symptoms similar to those by inhalation, followed by rapid breathing, increased heart rate, possible toxicity to the kidneys, decreased urine volume and severe metabolic acidosis.

Chronic Health Effects

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Prolonged or repeated inhalation or ingestion may result in kidney and liver changes. May produce symptoms of central nervous system depression including headache, dizziness, nausea, euphoria, loss of equilibrium, drowsiness, visual disturbances, fatigue, unconsciousness and respiratory arrest. Repeated exposure may cause liver and kidney damage.

Conditions Aggravated by Exposure

Pre-existing liver or kidney disorders



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SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component Name</u>	<u>CAS #</u>	<u>EU Inventory</u>	<u>Concentration Wt.%</u>
Diethylene Glycol	111-46-6	203-872-2	99.0 <= 100.0

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 2 of this MSDS.

Skin

Immediately remove excess chemical and contaminated clothing; thoroughly wash contaminated skin with mild soap and water. If irritation persists after washing, seek medical attention. Thoroughly clean contaminated clothing before reuse; discard contaminated leather goods (gloves, shoes, belts, wallets, etc.).

Inhalation

Move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. When breathing is

Inhalation

difficult, properly trained personnel may assist the affected person by administering oxygen. Keep the affected person warm and at rest. Get medical attention immediately.

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 product is ingested, do not induce vomiting and contact a physician or Poison Control Center.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties

Classification

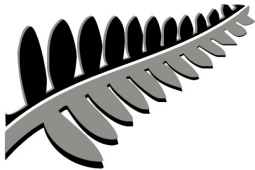
Combustible liquid.

Flash Point

138 °C (280.4 °F) Pensky-Martens Closed Cup

Auto-Ignition Temperature

230 °C (446 °F)



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Lower Flammable Limit

1.6 vol%

Upper Flammable Limit

10.8 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:**

Wear an approved positive pressure self-contained breathing apparatus and firefighter turnout gear. Wear a NIOSH approved respirator following manufacturer's recommendations, where airborne contaminants may occur.

Fire Fighting Guidance:

Airborne mists from this substance are a moderate fire and explosion hazard. Individuals should perform only those firefighting 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. If possible, water should be applied as a spray from a fogging nozzle since this polymer is a surface burning material. Cool containers with flooding quantities of water until well after fire is out.

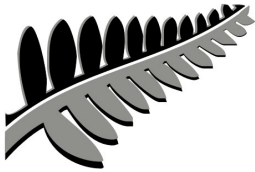
Hazardous Combustion Products:

Burning or excessive heating may produce smoke, carbon monoxide, carbon dioxide, and possibly other harmful gases/vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Release Response

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.



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SECTION 7: HANDLING AND STORAGE

Handling

Containers, even those that have been emptied, will retain product residue and vapor and should be handled as if they were full. Do not eat, drink or smoke in areas where this material is used. After handling, always wash hands thoroughly with soap and water. Do not handle near heat, sparks, or flame. Avoid contact with incompatible agents. Use only with adequate ventilation/personal protection. Avoid contact with eyes, skin and clothing. Do not enter storage area unless adequately ventilated. Metal containers involved in the transfer of this material should be grounded and bonded.

Storage

Store containers in a cool, dry, ventilated, fire resistant area away from sources of ignition and incompatible materials. Keep container tightly closed and properly labeled.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1)

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.

Skin

Wear chemical resistant gloves such as rubber, neoprene or vinyl.

Eye

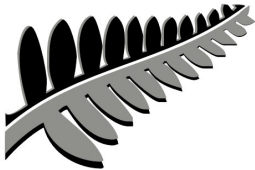
Wear chemical safety goggles plus full face shield to protect against splashing when appropriate (ANSI Z87.1).

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. Shower after work using plenty of soap and water.

Occupational Exposure Limits

Consult local authorities for acceptable exposure limits.



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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Viscous liquid. Clear, colorless, slightly viscous liquid.

Odor: Odorless.

Odor Threshold: No Data Available.

pH: Not applicable.

Boiling Point/Boiling Range: 245 °C (473 °F)

Freezing Point/Melting Point: -8 °C (17.6 °F)

Flash Point: 138 °C (280.4 °F) Pensky-Martens Closed Cup

Auto-ignition: 230 °C (446 °F)

Flammability: Combustible liquid.

Lower Flammable Limit: 1.6 vol%

Upper Flammable Limit: 10.8 vol%

Explosive Properties: No Data Available.

Oxidizing Properties: No Data Available.

Vapor Pressure: < 0.01 mm Hg @ 20 °C (68 °F)

Evaporation Rate: No Data Available.

Relative Density: 9.3 @ 20 °C (68 °F) (lbs./gal)

Relative Vapor Density: 3.66 (Air = 1.0)

Viscosity: 38 mPa.s @ 20 °C (68 °F)

Solubility (Water): Miscible

Partition Coefficient (Kow): -1.4 - -1.9

Additional Physical and Chemical Properties: No additional information available.

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability

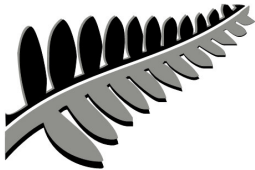
The product is stable.

Conditions to Avoid

Avoid contact with strong oxidizers, excessive heat, sparks or open flame.

Substances to Avoid

Oxidizers, Acids, Alkalis



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Decomposition Products

Carbon Monoxide and Carbon dioxide.

Hazardous Polymerization

Will not occur.

Reactions with Air and Water

None expected.

SECTION 11: TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION

Product Summary

See component summary.

COMPONENT INFORMATION

Diethylene Glycol 111-46-6

Acute Toxicity - Lethal Doses

LD50 (Oral) Rat 12,565 MG/KG BWT

Mouse 23,700 MG/KG BWT

LD50 (Skin) Rabbit 11,900 MG/KG

Acute Toxicity - Effects

Inhalation

None expected.

Irritation

Skin

Slight skin irritant. Not expected to be a sensitizer.

Eye

May cause minor eye irritation.

Repeated Dose Toxicity

Diethylene glycol given to rats in the diet for two years caused bladder stones, tumors, and kidney and liver damage. These effects were probably due to contaminating ethylene glycol, and the bladder stones were formed from oxalate crystals.

Reproductive Effects

Reproductive and developmental effects have been noted in animals following very large (> 3000 mg/kg bw/day) oral doses. However, comparable internal dose levels are not possible with dermal or inhalation exposures under normal



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conditions of use. Therefore, diethylene glycol is not considered a possible reproductive or developmental hazard except during very large oral doses.

Carcinogenicity

Not listed by IARC, NTP, OSHA or EPA. No evidence for carcinogenicity was found with a chronic skin-painting study in mice. No carcinogenic or tumor promoting effects in rats exposed up to 2.5% solutions in drinking water for 108 weeks. Older feed studies utilizing limited number of tissues but very high doses also provide no evidence of carcinogenicity. Therefore, this substance should not be considered a concern for carcinogenicity.

SECTION 12: ECOLOGICAL INFORMATION

PRODUCT INFORMATION

Ecotoxicity

See component summary.

Environmental Fate and Pathway

See component summary.

COMPONENT INFORMATION

Diethylene Glycol 111-46-6

Ecotoxicity

Diethylene glycol (DEG) is highly soluble in water. Laboratory tests indicate that DEG is not significantly toxic to fish or aquatic invertebrates. While there is no wildlife toxicity data available on DEG, laboratory tests on rats would indicate that it should not be highly toxic to mammals.

Environmental Fate and Pathway

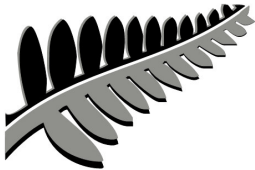
This material is volatile and water soluble. It is not expected to adsorb onto soils or sediments. Expected to have high mobility in soils. This material is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase is degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. Particulate-phase of this material may be physically removed from the air by wet and dry deposition. This material is not expected to persist in the environment.

Persistence and Degradability

Stability in Water: Diethylene glycol (DEG) is highly soluble in water.

Biodegradation: This material is expected to be readily biodegradable.

Bioaccumulation: BCF < 1.0 This material is not expected to bioaccumulate.



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SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations. Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. The materials resulting from clean-up operations may be hazardous wastes and therefore, subject to specific 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 DIETHYLENE GLYCOL

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:

<u>Country</u>	<u>Inventory</u>
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS
Korea	ECL
Philippines	PICCS
United States	TSCA
New Zealand	NZIoC

SECTION 16: OTHER INFORMATION

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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