

SAFETY DATA SHEET



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DIETHYLENE GLYCOL DIMETHYL ETHER

SDS No. M0068

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Diethylene Glycol Dimethyl Ether

Synonyms: 2-Methoxyethyl Ether; Ethane, 1-1'-oxybis[2-methoxy-; Diglyme; Bis(2-methoxyethyl)ether

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Skin Irritation: GHS Category 3

Label Elements

Signal Word: DANGER!

Hazard Statements:

- H226 – Flammable liquid and vapor.
- H336 – May cause drowsiness and dizziness.
- H360 – May damage fertility or the unborn child.

Precautionary Statements:

- P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P280 – Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304+P341 – IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P308+P313 – IF exposed or concerned: Get medical advice/ attention.
- P403+P233 – Store in a well-ventilated place. Keep container tightly closed.
- P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

Clear focus. Consistent results. Complete confidence.

Causes skin and eye irritation. May cause irritation of the digestive tract and respiratory tract. May cause central nervous system depression. Possible risk of impaired fertility and damage to the unborn child. Flammable liquid and vapor. May form explosive peroxides. Target Organs: skin and eyes.

HMIS Rating:

Health – 2 Flammability – 2 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Diethylene Glycol Dimethyl Ether	111-96-6	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward. Get medical aid.

Skin Contact: Remove any contaminated clothing. Flush skin with water for at least 15 minutes. Get medical attention in irritation develops and persists.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Flammable liquid and vapor (GHS Category 3).

Auto-ignition Temperature: Not Available

Flash Point: 54° C

Flammable Limits: Lower Limit – 1.5%, Upper Limit – 17.4%

Products of Combustion: May decompose into irritating and toxic gases under fire conditions (carbon monoxide, carbon dioxide).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Containers may explode in heat of fire. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Liquid floats on water and may travel to a source of ignition and spread the fire.

Fire Fighting Media: In case of fire, use water spray, dry chemical, chemical foam, or alcohol-resistant foam.

National Fire Protective Association: Health - 2, Flammability - 2, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. A vapor suppressing foam may be used to reduce vapors. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Ground or bond containers before transferring material. Empty containers contain product residue (liquid and vapor) and can be dangerous. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Store away from ignition sources. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits: None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Ethereal odor

Molecular Formula: $(\text{CH}_3\text{OCH}_2\text{CH}_2)_2\text{O}$

Molecular Weight: 134.18

Auto-ignition Temperature: Not Available

Flash Point: 54° C

Flammable Limits: Lower Limit – 1.5%, Upper Limit – 17.4%

pH: Not available

Boiling Point: 162° C @ 760 mm Hg

Freezing/Melting Point: -64° C

Decomposition Temperature: Not available.

Specific Gravity: 0.937 g/cm³

Vapor Density (Air=1): 4.63

Vapor Pressure: 3.0 mm Hg at 20° C

Evaporation Rate (Butyl acetate = 1): 0.36.

Viscosity: 1.14 mPa s 20° C.

Solubility: Soluble.

10. STABILITY AND REACTIVITY

Stability: Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation.

Conditions to Avoid: High temperatures, light, ignition sources, exposure to air, exposure to moist air or water.

Incompatibility with Various Substances: Strong oxidizing agents, sulfuric acid, isocyanates, perchloric acid, metal halides.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: May cause respiratory tract irritation. Exposure produces central nervous system depression. Subchronic toxicity was evaluated in rats exposed nose-only by inhalation to diglyme 5 days/week for 2 weeks.

Testicular atrophy and exfoliated degenerative germ cells were observed among the rats exposed to 98 ppm.

INGESTION HAZARD: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression.

SKIN CONTACT HAZARD: Brief contact is not irritating. Prolonged skin contact causes mild to moderate local redness and swelling.

EYE CONTACT HAZARD: Causes mild irritation, redness, and pain.

Chronic Exposure Hazards: May cause reproductive and fetal effects. Chronic exposures may cause dryness, cracking, and defatting of skin.

Animal Toxicity:

Oral mouse LD50: 6 g/kg;

Oral rat LD50: 5400 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: Experiments in mice showed diglyme capable of producing birth defects, particularly involving the paws but also affecting many major organ systems. These effects were noted in the absence of maternal toxicity with doses as low as 125 mg/kg/day.

Reproductive Effects: As is the case for some other glycol ethers, diglyme produces testicular toxicity in rats, producing degeneration of spermatocytes. This effect, which is mediated by the methoxyacetic acid metabolite, appears to be reversible.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Environmental Fate: This compound is unbiodegradable or biodegrades very slowly in the environment.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION**US DOT, IATA, IMO**

Proper Shipping Name: Ethers, n.o.s. (Bis(2-methoxyethyl)ether)

Hazard Class: 3

UN Number: UN3271

Packing Group: III

Canada TDG

Additional Information: Flashpoint 54 C.

15. REGULATORY INFORMATION**US Federal Regulations:**

TSCA: CAS# 111-96-6 is listed on the TSCA Inventory.

Health and Safety Reporting List: Not listed.

Chemical Test Rules: Not listed.

Section 12b: : Not listed.

TSCA Significant New Use Rule: Not listed.

CERCLA Hazardous Substances: CAS# 111-96-6: Not listed

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 111-96-6 – acute, chronic, fire

Section 313: Diethylene glycol dimethyl ether, listed as glycol ethers (CAS# 111-96-6) is subject to SARA Title III Section 313 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 111-96-6 (listed as glycol ethers) is listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 111-96-6 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 111-96-6 is on the following state right-to-know lists: California, New Jersey, and Pennsylvania (listed as Bis(2-methoxyethyl)ether).

California Prop 65: No Significant Risk Level: Not listed

Canada:

DSL/NDSL: CAS# 111-96-6 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B3, D2A. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 111-96-6 is not listed on Canada's Ingredient Disclosure list.

DSCL (EEC):

Hazard Symbols: Xi

Risk Phrases: R10 - Flammable; R19 – May form explosive peroxides; R60 – May impair fertility; R61 – May cause harm to the unborn child.

Safety Phrases: S45 – In case of accident or if you feel unwell, seek medical help immediately (show label when possible); S53 – Avoid exposure, obtain special instructions before use.

WGK (Water Danger/protection): CAS# 111-96-6: 1

16. OTHER INFORMATION

Originally Prepared: 6/30/2006

Last Revised: 5/09/2019 – Updated precautionary statements, and proper shipping name.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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