

Material Safety Data Sheet

Ethylene glycol monomethyl ether

ACC# 14340

Section 1 - Chemical Product and Company Identification

MSDS Name: Ethylene glycol monomethyl ether

Catalog Numbers: AC168580000, AC168580010, AC168580025, AC180790000, AC180790010, AC180790025, AC180790250, AC610391000, E182-20, E182-4, E182-500

Synonyms: Methyl Cellosolve; Ethylene glycol methyl ether; EGME; 2-Methoxyethanol; 2-ME.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
109-86-4	Ethylene glycol monomethyl ether	>98	203-713-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 38 deg C.

Warning! Flammable liquid and vapor. May impair fertility. May cause harm to the unborn child. Causes eye and respiratory tract irritation. Harmful if inhaled. May be harmful if swallowed or absorbed through the skin. May cause blood abnormalities. May form explosive peroxides. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. May cause central nervous system effects.

Target Organs: Blood, central nervous system, reproductive system, testes.

Potential Health Effects

Eye: May cause transient corneal injury. Causes redness and pain. When EGME was instilled into the eyes of rabbits, it caused immediate pain, conjunctival irritation, and slight corneal cloudiness, which cleared in 24 hours.

Skin: May be harmful if absorbed through the skin. EGME has been demonstrated repeatedly in animal studies and through human data to be readily absorbed through the skin in amounts sufficient to elicit systemic toxicity. Dermal contact with EGME was associated with testicular toxicity, developmental toxicity and teratogenicity in rodents. Both vapor and liquid are absorbed through the skin.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed. May cause effects similar to those of acute inhalation. Ingestion of large amounts may cause CNS depression. A death was reported after ingestion of Methyl Cellosolve with post-mortem findings of hemorrhagic gastritis. Accidental ingestion of 2-methoxyethanol and brandy lead to coma and death within 5 hr. Autopsy revealed kidney damage, acute hemorrhagic gastritis, liver damage, damage to the pancreas, and brain edema.

Inhalation: Causes respiratory tract irritation. May cause liver and kidney damage. May cause anemia. May cause drowsiness, unconsciousness, and central nervous system depression. Central nervous system effects may include confusion, ataxia (failure of muscular coordination), vertigo, tinnitus, weakness, disorientation, lethargy, drowsiness, and finally coma. Vapors may cause dizziness or suffocation. The vapor of EGME can be irritating at high concentrations to mucous membranes.

Chronic: Prolonged or repeated exposure may cause adverse reproductive effects. Chronic exposure may cause effects similar to those of acute exposure. Central nervous system effects (headache, drowsiness, lethargy, incoordination, general weakness, irregular pupils, personality changes and loss of appetite) and blood changes, including decreased number of red blood cells (anemia) and decreased number of white blood cells (leukopenia) were observed in workers exposed repeatedly to significant concentrations of

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Treat symptomatically and supportively. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. May form explosive peroxides. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: 38 deg C (100.40 deg F)

Autoignition Temperature: 285 deg C (545.00 deg F)

Explosion Limits, Lower:1.8 vol %

Upper: 19.8 vol %

NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Keep away from heat, sparks and flame. Avoid breathing vapor.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Keep under a nitrogen blanket. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethylene glycol monomethyl ether	0.1 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous route	0.1 ppm TWA; 0.3 mg/m ³ TWA 200 ppm IDLH	25 ppm TWA; 80 mg/m ³ TWA

OSHA Vacated PELs: Ethylene glycol monomethyl ether: 25 ppm TWA; 80 mg/m³ TWA

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless

Odor: mild odor - ethereal odor

pH: Not available.

Vapor Pressure: 9.5 mm Hg @ 25 deg C

Vapor Density: 2.62 (air=1)

Evaporation Rate: 0.53 (butyl acetate=1)

Viscosity: 1.98 cps @ 20 deg C

Boiling Point: 124 deg C @ 760 mmHg

Freezing/Melting Point: -85 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: .9600 g/ml

Molecular Formula: C₃H₈O₂

Molecular Weight: 76.09

Section 10 - Stability and Reactivity

Chemical 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: Light, ignition sources, exposure to air, heat.

Incompatibilities with Other Materials: Strong oxidizing agents, alkalis.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 109-86-4: KL5775000

LD50/LC50:

CAS# 109-86-4:

- Draize test, rabbit, eye: 97 mg;
- Draize test, rabbit, eye: 500 mg/24H Mild;
- Draize test, rabbit, skin: 483 mg/24H Mild;
- Inhalation, mouse: LC50 = 1480 ppm/7H;
- Inhalation, rat: LC50 = 1500 ppm/7H;
- Oral, mouse: LD50 = 2560 mg/kg;
- Oral, mouse: LD50 = 2800 mg/kg;
- Oral, rabbit: LD50 = 890 mg/kg;
- Oral, rat: LD50 = 2370 mg/kg;
- Oral, rat: LD50 = 2460 mg/kg;
- Skin, rabbit: LD50 = 1280 mg/kg;
- Skin, rabbit: LD50 = 2000 mg/kg;

Inhalation, rat: LC50 = 1500 ppm/7H = 1984 ppm/4H (calculated).; Human, oral LDLo: 143 mg/kg (RTECS).; Human, oral LDLo: 3380 mg/kg (RTECS).

Carcinogenicity:

CAS# 109-86-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Chronic industrial exposure to EGME at relatively high concentrations (50-100 ppm) in workplace air (with unknown but likely substantial skin contact) has been associated with pancytopenia (deficiency of all cellular elements in the blood), headache, dizziness, lethargy, weakness, hyperreflexia, disorientation, unequal pupil size, and visual and/or auditory disturbances. Of particular note is the bone marrow depression, granulocytopenia, and macrocytic anemia (with excessive circulating leukocytes).

Teratogenicity: Numerous animal studies have shown that 2-methoxyethanol can cause toxic effects, death and serious malformations in the fetus at doses which are not maternally toxic or cause minimal maternal toxicity.

Reproductive Effects: 2-ME has had serious adverse effects (abnormal sperm & decreased fertility) on male reproductive system in animal studies. Human studies have not conclusively proven that it causes reproductive effects in man, but results are compatible with animal data.

Mutagenicity: See RTECS# KL5775000.

Neurotoxicity: Effects noted with chronic exposure to ethylene glycol monomethyl ether (2-ME) include toxic encephalopathy.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 15,520 mg/L; 96 Hr.; 12 degrees C
Fish: Bluegill/Sunfish: LC50 = 10,000 mg/L; 96 Hr.; Static Condition, 23 degrees C

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ETHYLENE GLYCOL MONOMETHYL ETHER	ETHYLENE GLYCOL MONOMETHYL ETHER
Hazard Class:	3	3
UN Number:	UN1188	UN1188
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 109-86-4 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 109-86-4: Section 5

TSCA Significant New Use Rule

CAS# 109-86-4: This product is for research and development use only. It is subject to a SNUR which has specific requirements and restrictions. The specific citation for this product is 4040 CFR 721.10001.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 109-86-4: immediate, delayed, fire.

Section 313

This material contains Ethylene glycol monomethyl eth (CAS# 109-86-4, >98%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR

Clean Air Act:

CAS# 109-86-4 (listed as Glycol ethers (except for EGBE)) is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 109-86-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65**The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**

WARNING: This product contains Ethylene glycol monomethyl eth, a chemical known to the state of California to cause male reproductive toxicity.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

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Risk Phrases:

- R 10 Flammable.
- R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
- R 60 May impair fertility.
- R 61 May cause harm to the unborn child.

Safety Phrases:

- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)

CAS# 109-86-4: 1

Canada - DSL/NDSL

CAS# 109-86-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2A, D1B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 109-86-4 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/01/1999

Revision #9 Date: 9/14/2006

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.