SAFETY DATA SHEET

According to US Regulation 29 CFR 1910.1200 (HazCom 2012)

1. Identification

Product identifier: Ethylene Glycol

Other means of identification

Synonyms: 1,2-Ethanediol
Product No.: 5001, 5003, 5387, 9300, 9310, 9346, 9356, 37805, 37810

Recommended restrictions

Recommended use: For Laboratory, Research or Manufacturing Use.
Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Company Name:	Avantor Performance Materials, LLC
Address:	100 Matsonford Rd, Suite 200 Radnor, PA 19087
Telephone:	Customer Service: 855-282-6867
Contact Person:	Product Information Compliance
E-mail:	info@avantormaterials.com

Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada (24 hrs/day, 7 days/week)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Acute toxicity (Oral)	Category 4
Serious Eye Damage/Eye Irritation	Category 2A
Toxic to reproduction	Category 2
Specific Target Organ Toxicity - Single Exposure (Oral)	Category 1[1.]

Target Organs

1. Central nervous system, Kidney

Unknown toxicity - Health

Acute toxicity, inhalation, vapor 100 %

Label Elements

Hazard Symbol:

Signal Word: Danger

Hazard Statement: Harmful if swallowed.
Causes serious eye irritation.
May damage fertility or the unborn child.
Causes damage to organs if swallowed.

Precautionary Statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe dust/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

Response: IF exposed: Call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

Storage: Keep container tightly closed. Store in a well-ventilated place. Store in a dry place. Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Substances

Chemical Identity	CAS number	Content in percent (%)*
Ethylene glycol	107-21-1	99 - 100%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. Get medical attention if symptoms occur. Never give liquid to an unconscious person.

Inhalation: Move to fresh air.

Skin Contact: Wash skin thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Most important symptoms/effects, acute and delayed

Symptoms: May cause irritation to skin, eyes and respiratory tract.

Hazards: No information about adverse effects due to exposure.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed. Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: May burn, but does not ignite readily. No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: No data available.

Specific hazards arising from the chemical: None known.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out. In case of fire and/or explosion do not breathe fumes.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk.

Environmental Precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling: Do not taste or swallow. Wash hands thoroughly after handling. Avoid contact with eyes. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Wear protective gloves/protective clothing/eye protection/face protection. Remove contaminated clothing and wash the skin thoroughly with soap and water after work. See Section 8 of the SDS for Personal Protective Equipment. Do not eat, drink or smoke when using the product. Wash at the end of each work shift and before eating, smoking and using the toilet.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed. Store in a well-ventilated place. Store in a dry place. Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values		Source
Ethylene glycol - Aerosol, inhalable.	STEL		10 mg/m3	US. ACGIH Threshold Limit Values (03 2017)
Ethylene glycol - Vapor fraction	TWA	25 ppm		US. ACGIH Threshold Limit Values (03 2017)
	STEL	50 ppm		US. ACGIH Threshold Limit Values (03 2017)
Ethylene glycol	Ceiling	50 ppm	125 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	Ceiling	50 ppm	125 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
Ethylene glycol - Vapor.	Ceiling	40 ppm	100 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010)
Ethylene glycol	AN ESL	Health	1.8 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)
	ST ESL	Health	450 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)
	AN ESL	Health	4.5 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)
	ST ESL	Health	180 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)

Appropriate Engineering Controls No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/face protection: Wear safety glasses with side shields (or goggles). Use personal protective equipment as required.

Skin Protection

Hand Protection:	Chemical resistant gloves
Other:	Wear suitable protective clothing.
Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Hygiene measures:	Do not eat, drink or smoke when using the product. Wash hands after handling. Avoid contact with eyes. Observe good industrial hygiene practices. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Viscous liquid
Color:	Clear colorless
Odor:	Odorless
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	-13 °C
Initial boiling point and boiling range:	197.3 °C
Flash Point:	111 °C (Closed Cup)
Evaporation rate:	No data available.
Flammability (solid, gas):	Class IIIB Combustible Liquid
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	15.3 %(V)
Flammability limit - lower (%):	3.2 %(V)
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	0.067 hPa (20 °C) 0.123 hPa (25 °C)
Vapor density:	2.14 (Air=1)
Density:	1.1 g/ml (20 °C)
Relative density:	1.1 (20 °C)
Solubility(ies)	
Solubility in water:	1,000 g/l
Solubility (other):	glycerol: Miscible ether: Slightly soluble benzene: Practically insoluble acetic acid: Miscible acetone: Miscible petroleum ether: Practically insoluble pyridine: Miscible
Partition coefficient (n-octanol/water):	-1.36
Auto-ignition temperature:	398 °C
Decomposition temperature:	No data available.
Viscosity:	No data available.

Other information

Bulk density:	1,115.58 kg/m3 (15 °C)

Liquid conductivity:	11.6 µS/cm
Minimum ignition temperature:	397.8 °C
Molecular weight:	62.07 g/mol (C2H6O2)

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	No special precautions.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Thermal decomposition may release oxides of carbon.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	No adverse effects are expected.
Skin Contact:	Prolonged skin contact may cause temporary irritation.
Eye contact:	Causes serious eye irritation.
Ingestion:	Harmful if swallowed.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product:	LD 50 (Rat): 5.89 g/kg

Dermal

Product:	LD 50 (Rabbit) 9,530 mg/kg

Inhalation

Product:	LC 50 (Rat, 6 h) > 2.5 mg/l

Repeated dose toxicity

Product:	None known.

Skin Corrosion/Irritation

Product:	Prolonged skin contact may cause temporary irritation.

Serious Eye Damage/Eye Irritation

Product:	Causes serious eye irritation.

Respiratory or Skin Sensitization

Product:	Not a skin nor a respiratory sensitizer.

Carcinogenicity

Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No mutagenic components identified

In vivo
Product: No mutagenic components identified

Reproductive toxicity
Product: Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Single Exposure
Product: None known.

Specific Target Organ Toxicity - Repeated Exposure
Product: None known.

Target Organs
Specific Target Organ Toxicity - Single Exposure: Central nervous system, Kidney

Aspiration Hazard
Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Specified substance(s):
Ethylene glycol — LC 50 (Bluegill (Lepomis macrochirus), 96 h): 27,540 mg/l
LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 36,000 - 47,000 mg/l
LC 50 (Fathead minnow (Pimephales promelas), 96 h): 40,000 - 63,000 mg/l

Aquatic Invertebrates
Product: No data available.

Specified substance(s):
Ethylene glycol — LC 50 (Water flea (Daphnia magna), 48 h): 37,800 - 57,000 mg/l
LC 50 (Water flea (Ceriodaphnia dubia), 48 h): 4,600 - 33,800 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Ethylene glycol
LC 50 (Menidia peninsulae, 28 d): > 1,500 mg/l
NOAEL (Pimephales promelas, 7 d): 15,380 - 32,000 mg/l

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Ethylene glycol
NOAEL (Ceriodaphnia dubia, 7 d): 8,590 - 24,000 mg/l
EC 50 (Daphnia magna, 21 d): 33,911 mg/l
NOAEL (Daphnia magna, 21 d): 7,500 - 15,000 mg/l
LC 50 (Americamysis bahia, 23 d): > 1,000 mg/l

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD Ratio

Product: Not determined.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: Not known.

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: -1.36

Mobility in soil: The product is water soluble and may spread in water systems.

Other adverse effects: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws. Do not allow to enter drains, sewers or watercourses.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated.

IMDG

Not regulated.

IATA
Not regulated.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Ethylene glycol	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Acute toxicity (any route of exposure)
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 Extremely Hazardous Substance
None present or none present in regulated quantities.

SARA 304 Emergency Release Notification
None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Ethylene glycol	10000 lbs.

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Ethylene glycol	10000 lbs.	25000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Ethylene glycol	Developmental toxin.

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity
Ethylene glycol

US. Massachusetts RTK - Substance List

Chemical Identity
Ethylene glycol

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
Ethylene glycol

US. Rhode Island RTK

Chemical Identity
Ethylene glycol

International regulations

Montreal protocol
Not applicable

Stockholm convention
Not applicable

Rotterdam convention
Not applicable

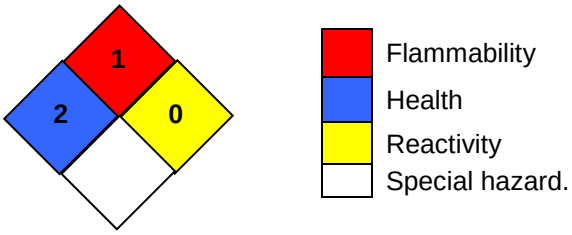
Kyoto protocol
Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

16.Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	06-29-2021
Revision Information:	Not relevant.
Version #:	1.4
Source of information:	Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.
Further Information:	No data available.
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