MATERIALS SAFETY DATA SHEET (MSDS) Ethylene glycol (C2H6O2)	**MSDS Number:**	
	Version number:	
	Date issued:	
	Page No:	

1. Product Identification

Trade name	Ethylene Glycol
Synonyms	Monoethylene glycol, 1,2-Ethanediol, 1,2-Dihydroxyethane
CAS No	107-21-1
Recommended Use	Laboratory chemicals.
Uses advised against	Food, drug, pesticide or biocidal product use

Manufacturer/Importer/Supplier/Distributor information

Manufacturer Supplier	
E-Mail	
Contact Person	
Emergency Telephone	

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Specific target organ toxicity (single exposure)	Category 3

Target Organs - Central nervous system (CNS).Specific target organ toxicity - (repeated exposure) Target Organs - Kidney, Liver.	Category 2

Label Elements	
Signal word	Warning
	
Hazard Statements	Harmful if swallowed. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure.
Precautionary Statements	
Prevention	Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this productDo not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.
Response	Get medical attention/advice if you feel unwell.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Ingestion	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container to an approved waste disposal plant

3. Composition and ingredient information

Chemical name	CAS number	%
Ethylene glycol	107-21-1	50

4. First-aid measures

General advice	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
Inhaled	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
Skin contact	Wash off with soap and water. Wash clothing before reuse. If skin irritation persists, call a physician.
Eye contact	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
Swallowed	Do not induce vomiting without medical advice. Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

5. Fire-fighting measures

Extinguishing media	
Suitable extinguishing media:	Water spray, Foam, Carbon dioxide (CO2) andDry powder.
Extinguishing media which shall not be used for safety reasons	High volume water jet
Special hazards arising from the substance or mixture	**In case of fire hazardous decomposition products may be produced such as:** Carbon monoxide Carbon dioxide (CO2)
Advice for firefighters	In the event of fire, wear self-contained breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	**Protective equipment:** Gloves (EN 374). Protective clothing (EN 14605 or EN 13034). **Emergency procedures:** Evacuate unnecessary personnel
For emergency responders	**Protective equipment:**

	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". Equip cleanup crew with proper protection. **Emergency procedures:** Ventilate area.
Environmental precautions	Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.
Methods and material for containment and cleaning up	For containment Methods for cleaning up: Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. Other information: Dispose of materials or solid residues at an authorized site.

7. Handling and storage

Advice on protection against fire and explosion	Normal measures for preventive fire protection.
Advice on safe handling	Do not breathe vapours/dust. Smoking, eating and drinking should be prohibited in the ap-plication area. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

8. Exposure Controls/ Personal Protection

Exposure Guidelines:

Component	ACGIH TLV	OSHA PEL
Ethylene glycol	TWA: 25 ppm STEL: 50 ppm STEL: 10 mg/m3	(Vacated) Ceiling: 50 ppm (Vacated) Ceiling: 125 mg/m3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration

Engineering Measures	Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	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.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	liquid
Colour	Clear, Colourless
Odour	sweet, slight
Odour Threshold	No data available
pH	9
Freezing Point (Melting point/freezing point)	-13 - -11.2 °C (9 - 11.8 °F)
Boiling Point (Boiling point/boiling range)	197.4 °C (387.3 °F)
Flash point	111 - 116 °C (232 - 241 °F) **Method**: closed cup
Evaporation rate	0.01 (Butyl Acetate = 1)
Flammability (solid, gas)	No data available
Upper explosion limit	22 %(V)
Lower explosion limit	1.8 %(V)
Vapour pressure	< 1 hPa @ 20 - 25 °C (68 - 77 °F)
Relative vapour density	< 2.14 @ 20 - 25 °C (68 - 77 °F) (Air = 1.0)
Relative density	1.115 @ 20 °C (68 °F) Reference substance: (water = 1)
Density	1.11 g/cm3 @ 20 °C (68 °F)

Solubility(ies) Water solubility	**Water solubility :**Soluble
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	log Pow: -1.36
Auto-ignition temperature	398 °C
Thermal decomposition	No data available
Viscosity, dynamic	19.83 - 21 mPa.s @ 20 - 25 °C (68 - 77 °F)
Viscosity, kinematic	145 mm2/s @ 25 °C (77 °F)

10. Stability and reactivity

Reactivity	Stable under normal conditions.
Chemical stability	No decomposition if used as directed.
Possibility of hazardous reactions	Vapours may form explosive mixture with air.
Conditions to avoid	Keep away from open flames, hot surfaces and sources of ignition.
Incompatible materials	Strong oxidizing agents, Strong acids and Alkalis.
Hazardous decomposition products	carbon oxides (CO, CO2). Alcohols and Aldehydes.

11. Toxicological information

Acute Toxicity

Product Information - Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylene glycol	7712 mg/kg (Rat)	LD50 = 9530 µL/kg (Rabbit) LD50 = 10600 mg/kg (Rat) LD50 > 3500 mg/kg (mice)	LC50 > 2.5 mg/L (Rat) 6 h

Toxicologically Synergistic Products	No information available
Delayed and immediate effects as well as chronic effects from short and long-term exposure	
Irritation	May cause skin, eye, and respiratory tract irritation
Sensitization	No information available

Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA
Ethylene glycol	107-21-1	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
STOT - single exposure	Central nervous system (CNS)
STOT - repeated exposure	Kidney Liver
Aspiration hazard	No information available
Symptoms / effects, both acute and delayed	No information available
Endocrine Disruptor Information	No information available
Other Adverse Effects.	The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Ethylene glycol	EC50: 6500 - 13000 mg/L, 96h (Pseudokirchneriella subcapitata)	LC50: 14 - 18 mL/L, 96hstatic (Oncorhynchusmykiss) LC50: = 27540 mg/L, 96hstatic (Lepomismacrochirus)	Not listed	EC50: = 46300 mg/L, 48h(Daphnia magna)

		LC50: = 40761 mg/L, 96h static (Oncorhynchus mykiss) LC50: 40000 - 60000 mg/L, 96h static (Pimephales promelas) LC50: = 16000 mg/L, 96h static (Poecilia reticulata		

Persistence and Degradability	Persistence is unlikely
Bioaccumulation/ Accumulation	No information available.
Mobility	Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Ethylene glycol	-1.93

13. Disposal considerations

Waste treatment methods:

Product	Dispose according to legal requirements
Packaging	Legal requirements are to be considered in regard of reuse or disposal of used packaging materials
Further information	**Provisions relating to waste:** EC Directive 2006/12/EC; 2008/98/EEC Regulation No. 1013/2006 For personal protection see section 8.

14. Transport information

ADR	
UN-No	Not dangerous goods
Proper Shipping Name	Not dangerous goods

Hazard Class	Not regulated as a dangerous good
Packing Group	Not regulated as a dangerous good

RID	
UN-No	Not dangerous goods
Proper Shipping Name	Not dangerous goods
Hazard Class	Not regulated as a dangerous good
Packing Group	Not regulated as a dangerous good

IMDG	
UN-No	Not dangerous goods
Proper Shipping Name	Not dangerous goods
Hazard Class	Not regulated as a dangerous good
Packing Group	Not regulated as a dangerous good

IATA	
UN-No	Not dangerous goods
Proper Shipping Name	Not dangerous goods
Hazard Class	Not regulated as a dangerous good
Packing Group	Not regulated as a dangerous good

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

Basis	Value	Remarks
Substances of very high concern (SVHC)	-	This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of ≥ 0.1 % (w/w).

16. Any other information

History

Product name	
Product code	
Date of printing	
Date of issue/Date ofRevision	
Date of previous issue	
Version	
Prepared by	

17. Change Details