

**1 Identification****GHS Product Identifier****Ethylene Glycol****Other means of identification**

CAS:	107-21-1
EC:	203-473-3
	TQ3500000 from The National Institute for Occupational Safety and Health (NIOSH) KW2975000 from The National Institute for Occupational Safety and Health (NIOSH) TQ3850000
RTECS:	from The National Institute for Occupational Safety and Health (NIOSH)
ICSC:	0270
	57859 from DTP/NCI 152325 from DTP/NCI 152324 from DTP/NCI 32854 from DTP/NCI 155081 from DTP/NCI 32853 from DTP/NCI 93876 from DTP/NCI
NSC Number:	
Index Number:	603-027-00-1
Composition:	mono-constituent substance
Origin:	Organic
	1,2-Dihydroxyethane 1,2-Ethanediol Glycol
Synonyms:	Monoethylene glycol (MEG)
Proper Shipping Name:	Not regulated for transport
Chemical Formula:	C ₂ H ₆ O ₂
Molecular Weight:	62.068 g/mol

Recommended use of the chemical and restriction on use

Industrial Water Treatment. Not for food, drug or household use.

Supplier's details**AQUATRADE WATER TREATMENT CHEMICALS (PTY) LTD**4A Spanner Road
Spartan, Kempton Park
Gauteng, South Africa
1619PO Box 357
Isando
Gauteng, South Africa
1600www.aquatradesa.co.za
sheq@aquatradesa.co.zaTel: +27 11 394 0752
Tel: +27 87 654 3326 (SDS Enquiries)**Emergency phone number**

+27 82 921 0643 (Available Mon - Fri, GMT 5:00 to 20:00)

2 Hazard(s) identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute Toxicity, Oral (Category 4), H302

Chronic Toxicity (Category 2), Specific Target Organ Toxicity - Repeated Exposure - Route: Oral - Organ: Kidney, H373

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS label elements

Warning



Harmful if swallowed

May cause damage to organs through prolonged or repeated exposure

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.

Get medical advice/attention if you feel unwell.

Rinse mouth.

Dispose of contents and container in accordance with local, regional, national, international regulations.

Other hazards which do not result in classification

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3 Composition/information on ingredients

Description	CAS Number	EINECS Number	%	Note
Ethylene Glycol	107-21-1		99	Acute toxicity 4 Acute (oral) STOT-RE 2 Specific target organ toxicity - repeated exposure

4 First-aid measures

Description of necessary first-aid measures

Eyes:

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

Skin:

Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes. Get medical attention immediately.

Ingestion:

DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Eyes:

Causes eye irritation.

Skin:

Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Inhalation:

Over-exposure by inhalation may cause respiratory irritation. Inhalation causes headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness.

Ingestion:

Harmful if swallowed. Symptoms similar to alcohol intoxication. Contains material which may cause damage to the following organs: kidneys. See toxicological Information (section 11)

Medical conditions aggravated by overexposure:

None identified.

Indication of immediate medical attention and special treatment needed, if necessary

Treat symptomatically.

5 Fire-fighting measures

Suitable extinguishing media

In case of fire, use water fog, foam, dry chemicals, or carbon dioxide. **DO NOT** use water jet.

Specific hazards arising from the chemical

Containers may rupture from pressure build-up.

Products of combustion:

These products are carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide).

Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge.

Flammability of the product:

May be combustible at high temperature.

Auto-ignition temperature:

398 °C

Flash point:

119 °C (Closed cup) Setaflash.

Explosion limits:

Lower: 3.2 % Upper: 15.3 %

Special protective actions for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (See

Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures").

Chemical splash goggles. Chemical resistant protective suit. Boots. Chemical resistant gloves. Vapor respirator or a self-contained breathing apparatus. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

Environmental precautions

If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. **Avoid** contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal Information.

Methods and materials for containment and cleaning up

Safely stop source of spill. Restrict non-essential personnel from area.

Small spill:

Absorb with inert material and place in waste receptacle. Rinse contaminated area.

Large spill:

Absorb with inert material and place in waste receptacle. Rinse contaminated area to drain system.

7 Handling and storage

Precautions for safe handling

DO NOT ingest. **Avoid** contact with skin and clothing. **Avoid** prolonged or repeated contact with skin. **Avoid** contact with eyes. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Keep container in a cool, well-ventilated area. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. **DO NOT** cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

8 Exposure controls/personal protection

Control parameters

Data for WORKERS

INHALATION Exposure	Threshold	Most sensitive study
Systemic Effects		
Long-term:	No hazard identified	
Acute /short term:	No hazard identified	
Local Effects		
Long-term:	(DNEL) 35 mg/m ³	skin irritation/corrosion
Acute /short term:	No hazard identified	

DERMAL Exposure	Threshold	Most sensitive study
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Systemic Effects

Long-term:	(DNEL) 106 mg/kg bw/day	repeated dose toxicity
Acute /short term:	No hazard identified	

Local Effects

Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

EYE Exposure

No hazard identified

Data for the GENERAL POPULATION

INHALATION Exposure	Threshold	Most sensitive study
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Systemic Effects

Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

Local Effects

Long-term:	(DNEL) 7 mg/m ³	skin irritation/corrosion
Acute /short term:	No hazard identified	

DERMAL Exposure	Threshold	Most sensitive study
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Systemic Effects

Long-term:	(DNEL) 53 mg/kg bw/day	repeated dose toxicity
Acute /short term:	No hazard identified	

Local Effects

Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

ORAL Exposure	Threshold	Most sensitive study
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Systemic Effects

Long-term:	No hazard identified	
Acute /short term:	No hazard identified	

EYE Exposure

No hazard identified

Predicted No-Effect Concentration (PNEC)

The Predicted No-Effect Concentration (PNEC) value is the concentration of a substance below which adverse effects in the environment are not expected to occur. Please note that when more than one summary is provided, PNEC values may refer to constituents of the substance and not to the substance as a whole.

Hazard for Aquatic Organisms

Freshwater	10 mg/L
Intermittent releases (freshwater)	10 mg/L
Marine water	1 mg/L
Intermittent releases (marine water)	10 mg/L
Sewage treatment plant (STP)	199.5 mg/L
Sediment (freshwater)	37 mg/kg sediment dw
Sediment (marine water)	3.7 mg/kg sediment dw

Hazard for Air

Air	No hazard identified
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Hazard for Terrestrial Organism

Soil	1.53 mg/kg soil dw
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Hazard for Predators

Secondary poisoning	No potential for bioaccumulation
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Appropriate engineering controls

Control Measures:

Avoid spraying the material. Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the work-station location.

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Individual protection measures

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.



Eye/face protection:

Safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as

NIOSH (US) or EN 166 (EU).

Skin protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection:

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9 Physical and chemical properties

Physical and chemical properties

Appearance (physical state, colour etc):	Clear colourless liquid
Odour:	Odourless
Odour threshold:	No test data available
pH:	No test data available
Melting/Freezing Point:	-13 - -12.69 °C @ 101.3 - 101.325 kPa
Initial boiling point and boiling range:	197.3 - 197.4 °C @ 101.3 kPa
Density:	1.11 - 1.113 g/cm ³ @ 20 °C
Flash point:	111 - 115 °C @ 101.3 - 101.325 kPa
Evaporation rate:	No test data available
Flammability (solid, gas):	No test data available
Upper/lower flammability or explosive limits:	Upper explosion limit: 15.3 %(V) Lower explosion limit: 3.2 %(V)
Vapour pressure:	12.3 - 100 000 Pa @ 25 - 196.9 °C
Vapour density:	2.14 (NTP, 1992) (Relative to Air)

Relative density:	No test data available
Solubility(ies):	1 000 g/L @ 20 °C
Partition coefficient:	Log Pow -1.36
Autoflammability/Auto-ignition temperature:	398 - 412 °C @ 101.3 - 101.325 kPa
Decomposition temperature:	No test data available
Viscosity:	dynamic viscosity (in mPa s) 1.975 - 16.1

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10 Stability and reactivity

Reactivity

No known reactions under normal conditions of use.

Chemical stability

Stable under normal conditions of use.

Possibility of hazardous reactions

Hazardous polymerization will not occur.

Conditions to avoid

Keep away from heat, sparks and flames.

Incompatible materials

Strong acids, Strong oxidizing agents, Strong bases, Aldehydes, Aluminum.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides In the event of fire: see section 5.

11 Toxicological information

Toxicological (health) effects

Harmful or fatal if swallowed.

Ingestion of ethylene glycol can cause metabolic acidosis, kidney damage, central nervous system depression, convulsions and death. The estimated human lethal dose is approximately 1 ml/kg (about 1/2 cup for an adult). Vapour from hot operations or an aerosol can cause eye and respiratory irritation. Birth defects were reported in laboratory animals fed ethylene glycol repeatedly in large amounts. Based on these studies, there may be a potential for birth defects following ingestion of ethylene glycol by pregnant women.

Information on the likely routes of exposure

Skin and eye contact - YES (Vapours/Mist)

Inhalation - YES (Vapours/Mist)

Ingestion - YES (Unhygienic practices)

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion:

Initial symptoms following a large dose (>100ml) are those of alcohol intoxication progressing to vomiting, headache, stupor, convulsions and unconsciousness. Respiratory system involvement may occur 12 - 24 hours after ingestion. Symptoms may include hyperventilation and rapid shallow breathing. Death may occur from respiratory failure or pulmonary oedema.

Eye contact:

May be an eye irritant.

Skin contact:

Contact with skin may result in irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis. Can be absorbed through the skin. Effects can include those described for 'INGESTION'.

Inhalation:

Breathing in vapour can result in headaches, dizziness, drowsiness, and possible nausea.

Delayed and immediate effects and also chronic effects from short and long term exposure

Skin corrosion/irritation:

Mild irritant (rabbit).

Serious eye damage/irritation:

Mild irritant (rabbit).

Chronic effects:

Available evidence from animal studies indicate that repeated or prolonged exposure to this material could result in effects on the central nervous system, liver and kidneys. Estimated minimum lethal dose (human) following ingestion of ethylene glycol is thought to be 1.4ml/kg. High doses of ethylene glycol in rats and mice have resulted in reproductive and developmental toxicity following exposure by the oral and inhalation (respirable aerosol) routes. These particular data sets are not considered relevant to normal industrial use but do emphasise the need for care in handling. Data from animal and human studies to date do not provide evidence that exposure to ethylene glycol has mutagenic or carcinogenic effects.

Numerical measures of toxicity (such as acute toxicity estimates)

Acute toxicity:	
LD ₅₀ Oral (rat)	7 712 mg/kg bw
LD ₅₀ Dermal (mouse)	3 500 mg/kg bw
LC ₅₀ Inhalation (rat)	(6 h) 2.5 mg/L air

Summaries

Oral route:

Adverse effect observed LD₅₀ 7 712 mg/kg bw

Inhalation route:

Adverse effect observed Discriminating conc. 2 500 mg/m³

Dermal route:

Adverse effect observed Discriminating dose 3 500 mg/kg bw

Repeated Dose toxicity:	
NOAEL (rat)	200 mg/kg bw/day
NOAEL (mouse)	12 500 ppm
NOEL (rat)	150 mg/kg bw/day

Summaries

Oral route - systemic effects:

Adverse effect observed NOAEL 150 mg/kg bw/day (subchronic, rat)

Dermal route - systemic effects:

Adverse effect observed NOAEL 2 200 mg/kg bw/day (subacute, dog)

Interactive effects

None known.

Where specific chemical data are not available

No data available.

Mixtures

No further data available.

Mixture versus ingredient information

No further data available.

Other information

No further data available.

12 Ecological information

Toxicity

Short-term toxicity to fish

LC₅₀ (4 days) 72.86 g/L

Summaries

LC₅₀ for freshwater fish 72.86 g/L

LC₅₀ for marine water fish 72.86 g/L

Long-term toxicity to fish

NOEC (7 days) 15.38 - 32 g/L

LC₅₀ (28 days) 1.5 g/L

Summaries

EC₁₀ / LC₁₀ or NOEC for freshwater fish 15.38 g/L

Short-term toxicity to aquatic invertebrates

EC₅₀ (48 h) 100 mg/L

LC₅₀ (24 h) 74.484 g/L

EC₀ (48 h) 100 mg/L

EC₁₀₀ (48 h) 100 mg/L

Long-term toxicity to aquatic invertebrate

NOEC (23 days) 1 g/L

NOEC (21 days) 7.5 - 15 g/L

NOEC (7 days) 8.59 - 24 g/L

EC₅₀ (21 days) 33.911 g/L

LC₅₀ (23 days) 1 g/L

Summaries

EC₁₀ / LC₁₀ or NOEC for freshwater invertebrates 8.59 g/L

Toxicity to aquatic algae and cyanobacteria

EC₅₀ (4 days) 3.536 - 13 g/L

IC₅₀ (4 days) 10.94 g/L

NOEC (72 h) 100 mg/L

Summaries

EC₁₀ / LC₁₀ or NOEC for freshwater algae 100 mg/L

Environmental fate and pathways

Phototransformation in air

Dissipation half life (DT50) 46.3 h

Adsorption/desorption

Koc 1 L/kg
log Koc 0 L/kg

Henry's law constant (H)

H - (pressure) m³/mol 0.013 Pa m³/mol @ 25 °C

Distribution modelling

% Distribution in Media:

Air	0.03 %
Water	100 %
Soil	0 %
Sediment	0 %

Persistence and degradability

Biodegradation in water - screening tests

Readily biodegradable (100%)

Bioaccumulative potential

This product shows a low bioaccumulation potential.

Mobility in soil

Spillages may penetrate the soil causing ground water contamination.

Soil/water partition coefficient (KOC)

This product is not likely to partition to organic material in the environment because its Log (Kow) is: -1.30.

Other adverse effects

Miscible in water. Spills on water will disperse throughout the water phase. Unlikely to be harmful to aquatic organisms unless glycol concentration is high.

13 Disposal considerations

Disposal methods

Waste disposal recommendations:

Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Dispose of in accordance with all applicable local and national regulations.

Ecology - waste materials:

Avoid release to the environment.

Empty Container:

DO NOT reuse container. Rinse thoroughly before discarding in trash or return to supplier.

14 Transport information

UN Number

NOT REGULATED FOR TRANSPORT

UN Proper Shipping Name

NOT REGULATED FOR TRANSPORT

Transport hazard class(es)

Not regulated for transport.

Packing group, if applicable

Not regulated for transport.

Environmental hazards

Avoid discharge into the environment.

Special precautions for user

No other except those in sections 4 to 8.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

15 Regulatory information**Safety, health and environmental regulations specific for the product in question****SA NATIONAL LEGISLATION**

Hazardous Substances Act 15 of 1973 and Regulations.

Occupational Health and Safety Act 85 of 1993 and Regulations.

SA NATIONAL STANDARDS

SANS 10228 : 2006 : Identification and Classification of Dangerous Goods for Transport by Road and Rail.

SANS 10231 : 2018 : Transport of dangerous goods - Operational requirements for road vehicles.

SANS 10234 : 2008 : Globally Harmonized System of classification and labelling of chemicals (GHS).

SANS 11014 : 2010 : Safety Data Sheets for chemical Products.

REACH Regulation (EC) No 1907/2006

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH)., The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

Seveso III: Directive 2012/18/EU

Listed in Regulation: Not applicable

Chemical safety assessment:

Not assessed.

16 Other information**Other information*****Full text of H-Statements referred to under section 2.******Hazard Statements***

H302 Harmful if swallowed.

H373 May cause damage to organs through prolonged or repeated exposure. Route: Oral. Organs: Kidney.

Precautionary Statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P301+P312 IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.

P314 Get medical advice/attention if you feel unwell.

P330 Rinse mouth.
P501 Dispose of contents and container in accordance with local, regional, national, international regulations.

Labelling REGULATION (EC) No 1272/2008

Signal Word

Warning

Pictograms

GHS07 Health Hazard
GHS08 Serious Health Hazard

Acronyms:

CAS Chemical Abstract Service
CEIL Ceiling Limit
DNEL Derived No-Effect Level
DMEL Derived Minimal Effect Level
DTP/NCI NCI Development Therapeutics Program
EINECS European Inventory of Existing Commercial Chemicals
ICSC International Chemical Safety Cards
NCI National Cancer Institute
NSC National Service Centre
PNEC Predicted No-Effect Concentration
RTECS Registry of Toxic Effects of Chemical Substances
TLV Threshold Limit Value
TWA Time Weighted AVerage

Training advice

Provide adequate information, instruction and training for operators.

Compiled by R. van Rooyen, SHEQ and E. Le Sar, COO

MANUFACTURER/SUPPLIER DISCLAIMER:

IMPORTANT: This information is given without a warranty or guarantee. No suggestions for use are intended or shall be construed as a recommendation to infringe any existing patents or violate any national or local laws. Safe handling and use is the responsibility of the customer. Read the label before using this product. This information is true and accurate to the best of our knowledge.

Revision History

Revision:	Date:	Change:
1.0	2019/01/07	Preparation of the safety data sheet according to Regulation (EC) No 1907/2006 of the European Parliament and of the Council