Safety Data Sheet
ETHYLENE GLYCOL - INDUSTRIAL GRADE

1. Identification

Product identifier used on the label

ETHYLENE GLYCOL - INDUSTRIAL GRADE

Recommended use of the chemical and restriction on use
Recommended use*: industrial chemicals; antifreezing agent; Intermediate; solvent(s); Monomer.
- **- Unsuitable-for use: Pharmaceutical

* The "Recommended use" identified for this product is provided solely to comply with a US Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SOS) do not create or infer any warranty, express or implied, including by incorporationinto or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
Everchem Specialty Chemicals
1400 N. Providence Road
Media, PA 19063
USA
Telephone 484-234-5030

Emergency telephone number

CHEMTREC: 1-800-424-9300

Other means of identification

Molecular formula: CH(2)OH-CH(2)OH
Chemical family: glycols
Synonyms: 1,2-Ethanediol

2. Hazards Identification


Classification of the product

<table>
<thead>
<tr>
<th>Acute Tox.</th>
<th>STOT RE</th>
<th>Acute toxicity</th>
<th>Specific target organ toxicity - repeated exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (oral)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Label elements

Everchem Specialty Chemicals Phone: 484-234-5030 www.everchem.com
Safety Data Sheet
ETHYLENE GLYCOL - INDUSTRIAL GRADE
Revision date: 2014/11/21
Version: 1.0

Signal Word:
Warning

Hazard Statement:
H302  Harmful if swallowed.
H373  May cause damage to organs (Kidney) through prolonged or repeated exposure.

Precautionary Statements (Prevention):
P260  Do not breathe dust/gas/mist/vapours.
P270  Do not eat, drink or smoke when using this product.
P264  Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):
P311  Call a POISONCENTER or doctor/physician.
P301 + P330  IF SWALLOWED: rinse mouth.

Precautionary Statements (Disposal):
P501  Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified
If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture. See section 12 - Results of PBT and vPvB assessment.


Emergency overview
WARNING:
Contains a component for which embryotoxicity and teratogenicity was observed in animal studies, in the absence of maternal toxicity.
MAY BE HARMFUL IF SWALLOWED.
MAY BE HARMFUL IF INHALED.
May be harmful if absorbed through skin.
Prolonged and repeated exposure may affect CNS, liver and kidney.
MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
Prolonged or repeated contact may result in dermatitis.
Chronic exposure may cause liver and kidney damage.
Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.
Avoid inhalation of mists/vapours.
Use with local exhaust ventilation.
Avoid contact with the skin, eyes and clothing.
Wear NIOSH-certified chemical goggles.
Eye wash fountains and safety showers must be easily accessible.
Wear chemical resistant protective gloves.
Wear protective clothing.
3. Composition / Information on Ingredients


<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content /W/W\</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>&gt;= 99.0 - &lt;= 100.0</td>
<td>ethylene glycol</td>
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</tr>
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4. First-Aid Measures

Description of first aid measures

General advice:
Remove contaminated clothing.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:
Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

If swallowed:
Rinse mouth and then drink plenty of water. Induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Most important symptoms and effects, both acute and delayed

Symptoms: kidney damage
Hazards: No hazard is expected under intended use and appropriate handling.

Indication of any immediate medical attention and special treatment needed

Note to physician
Antidote: Administration of ethanol may counteract the effects of ethylene glycol, such as metabolic acidosis and renal damage. 4-Methylpyrazole (a competitive inhibitor of alcohol dehydrogenase) can be used as an antidote in ethylene glycol poisoning.

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.
5. Fire-Fighting Measures

**Extinguishing media**

Suitable extinguishing media:
- water spray, foam, dry powder, gaseous extinguishing media, carbon dioxide

**Special hazards arising from the substance or mixture**

Hazard during fire-fighting:
- See MSDS section 7 - Handling and storage.

**Advice for fire-fighters**

Protective equipment for fire-fighting:
- Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
- Vapours are heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition. In case of fire and/or explosion do not breathe fumes.

Impact Sensitivity:
- Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental precautions**

This product is regulated by CERCLA ('Superfund').

**Methods and material for containment and cleaning up**

For residues: Rinse away with water.
- Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

**Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice.

- Protection against fire and explosion:
  - No explosion proofing necessary.

**Conditions for safe storage, including any incompatibilities**

No applicable information available.

Further information on storage conditions: Keep container tightly closed and dry; store in a cool place. Protect from air. Protect from atmospheric humidity. Protect contents from the effects of light. Keep container tightly closed.

**Storage stability:**
- Storage temperature: < 40 V
- The stated storage temperature should be noted.
- Storage duration: 12 Months
8. Exposure Controls/Personal Protection

Components with occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA PEL</th>
<th>CLV 50 ppm</th>
<th>ACGIH TLV</th>
<th>TLVValue</th>
<th>aerosol; Ceiling Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethylene glycol</td>
<td></td>
<td>125 mg/m3</td>
<td></td>
<td>100 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

Advice on system design:
Provide local exhaust ventilation to control vapours/lmists.

Personal protective equipment

Respiratory protection:

Hand protection:
Chemicalresistant protective gloves, Consult with glove manufacturer for testing data.

Eye protection:
Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protectionsuit.

General safety and hygiene measures:
No special measures necessary if stored and handled correctly. Avoid inhalation of vapours/lmists. Wear protective clothing as necessary to prevent contact. Wash soiled clothing immediately.

g. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless, clear</td>
</tr>
<tr>
<td>pH value</td>
<td>5.0</td>
</tr>
<tr>
<td>Melting point</td>
<td>-13 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>197.4 °C</td>
</tr>
<tr>
<td>Sublimation point</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>111 °C</td>
</tr>
<tr>
<td>Flammability</td>
<td>not flammable</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td></td>
</tr>
<tr>
<td>upper explosion limit</td>
<td></td>
</tr>
<tr>
<td>Autoignition</td>
<td>398 °C</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.123 hPa</td>
</tr>
<tr>
<td>Density</td>
<td>1.11 g/cm³</td>
</tr>
<tr>
<td>Relative density: Vapour</td>
<td>1.11</td>
</tr>
<tr>
<td>density: Partitioning</td>
<td></td>
</tr>
<tr>
<td>coefficient n- octanol/water</td>
<td>approx. -1.36</td>
</tr>
</tbody>
</table>

For liquids not relevant for classification and labelling. The lower explosion point may be 5 - 15 °C below the Dash point.
For liquids not relevant for classification and labelling.

(500 g/kg, 20 °C) (internal method) Literature data.
(1,013 hPa) Literature data. No applicable information available. Literature data.
(25 oC) (measured) Literature data.
(20 °C) Literature data.
(20 oC) Literature data.
(23 oC) (Calculation Hansch/Leo) Literature data.
10. Stability and Reactivity

Reactivity
No applicable information available.

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
Based on its structural properties the product is not classified as oxidizing.
Formation of flammable gases:
Remarks: Forms no flammable gases in the presence of water.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is chemically stable.
No hazardous reactions when stored and handled according to instructions.

Conditions to avoid
> 40 degrees Celsius
Avoid humidity. Avoid daylight. Disregard of the conditions mentioned may result in undesirable decomposition reactions.
Avoid extreme temperatures. Avoid moisture.

incompatible materials
strong oxidizing agents
alkali or alkaline-earth metal, aldehydes, aluminum compounds

Hazardous decomposition products
Decomposition products:
Possible decomposition products: carbonyl compounds, Dioxolan derivatives

Thermal decomposition:
No decomposition if correctly stored and handled.
11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Of moderate toxicity after single ingestion. Of low toxicity after short term skin contact.

Oral
Type of value: LD (human)
Value: approx. 1,600 mg/kg
The European Union(EU) has classified this substance as 'harmful'.

Inhalation
Type of value: LC50
Species: rat (male/female)
Value: > 2.5 mg/l
Exposure time: 6 h
An aerosol was tested.

Dermal
Type of value: LD50
Species: mouse (male/female)
Value: > 3,500 mg/kg

Assessment other acute effects
Assessment of STOT single:
The available information is not sufficient for evaluation.

Irritation/corrosion
Assessment of irritating effects: Not irritating to eyes and skin.

Skin
Species: rabbit
Result: non-irritant
Method: -Test

Eye
Species: rabbit
Result: non-irritant
Method: -Test

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies. Human data do not fully exclude a skin sensitizing potential.

Guinea pig maximization test
Species: guinea pig
Result: Non-sensitizing.

Aspiration Hazard
No aspiration hazard expected.

**Chronic Toxicity/Effects**

Repeated dose toxicity
Assessment of repeated dose toxicity: The substance may cause damage to the kidney after repeated ingestion. The substance may cause damage to the kidney after repeated skin contact with high doses.

Genetic toxicity
Assessment of mutagenicity: The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in a test with mammals.

Carcinogenicity
Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive toxicity
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: In animal studies the substance caused malformations when given at high doses. However, the relevance of this result for humans is unclear.

**Symptoms of Exposure**

kidney damage

Medical conditions aggravated by overexposure:
Individuals with pre-existing diseases of the skin, respiratory disorders or impaired function for the liver/kidneys may have increased susceptibility to excessive exposures.

**12. Ecological Information**

**Toxicity**

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish
LC50(96 h) 72,860 mg/l, Pimephales promelas (EPA 72-1, static)

Aquatic invertebrates
EC50 (48 h) > 100 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants
EC50(96 h) 6,500 - 13,000 mg/l (growthrate), Selenastrum capricornutum

Chronic toxicity to fish
No observed effect concentration (7 d) 15,380 mg/l, Pimephales promelas
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Chronic toxicity to aquaticinvertebrates
No observed effect concentration (7 d) 8,590 mg/l, Ceriodaphnia sp.

Assessment of terrestrial toxicity
Study scientifically not justified.

Microorganisms/Effect on activated sludge
Toxicity to microorganisms
DIN EN ISO 8192 aerobic activated sludge, domestic/EC2O (30 min): > 1,995 mg/l
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Persistence and degradability
Assessment biodegradation and elimination\(H2O\)
Readily biodegradable (according to OECD criteria).

Elimination information
90 - 100 % DOC reduction(10 d)(OECD 301 A (new version))(aerobic, activated sludge, domestic)

Assessment of stability in water
According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential
Assessment bioaccumulation potential
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Mobility in soil
Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.

13. Disposal considerations

Waste disposal of substance:
Do not discharge into waterways or sewer systems without proper authorization. Dispose of in a licensed facility. Dispose of in accordance with national, state and local regulations.

Container disposal:
Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

14. Transport information

Land transport
USDOT
Not classified as a dangerous good under transport regulations

Sea transport
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15. Regulatory Information

Federal Regulations
Registration status:
Chemical TSCA, US released/listed

EPCRA 311/312 (Hazard categories): Acute; Chronic

CERCLA RQ CAS Number Chemical name
5000 LBS 107-21-1 ethylene glycol
Reportable Quantity for release: 5,000 lb

State regulations

State RTK CAS Number Chemical name
MA, NJ, PA 107-21-1 ethylene glycol

NFPA Hazard codes:
Health: 2 Fire: 1 Reactivity: 0 Special:

HMIS Ill rating
Health: 2u Flammability: 1 Physical hazard: 0

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Acute Tox. 4 (oral) Acute toxicity
STOT RE 2 Specific target organ toxicity; repeated exposure

16. Other Information

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.
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