

# Safety Data Sheet(SDS)

Revision date : 01-06-2026

## 1. Identification

- 1) Product identifier : TEG\_TRI\_ETHYLENE\_GLYCOL
- 2) Relevant identified uses of the substance or mixture and uses advised against
  - Relevant identified uses
    - 1.Raw materials and intermediates, Solvent and extraction agents
  - Restrictions on use
    - Use for recommended use only
    - Do not use it for weapons manufacturing and related purposes.
- 3) Supplier information
  - Seller
    - Company name : Lotte Daesan Petrochem Corporation
    - Address : 82 Dokgot 1-ro, Daesan-eup, Seosan-si, Chungcheongnam-do
    - Telephone number : +82-41-689-5114
    - Emergency phone number : (Control Room) +82-41-689-5119
    - Fax number : +82-41-689-5985

## 2. Hazards identification

- 1) Hazard classification
  - Skin corrosion/irritation Category 2
  - Reproductive toxicity Category 2
  - Hazardous to the aquatic environment, long-term (chronic) Chronic 4

### 2) Allocation label elements

Hazard pictograms



Signal word

- WARNING

Hazard statements

H315 Causes skin irritation

H361 Suspected of damaging fertility or the unborn child.  
H413 May cause long lasting harmful effects to aquatic life

#### Precautionary statements

##### - Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P264 Avoid contact during pregnancy/ while nursing.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

##### - Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P321 Specific treatment (see supplemental instructions on the administration of antidotes on this label).
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P362+P364 Take off contaminated clothing and wash it before reuse.

##### - Storage

- P405 Store locked up.

##### - Disposal

- P501 Discard the contents/containers in accordance with the laws and laws related to waste.

#### 3) Other hazards:

According to experience and information provided, this product does not affect harmful effects when using and handling it as a regulation.

### 3. Composition/Information on ingredients

Chemical name	Common name	CAS No.	Content(wt%)
Triethylene glycol	2,2'-(ethylenedioxy)diethanol	112-27-6	99.7
Diethylene glycol	2,2'-oxydiethanol	111-46-6	0.3

### 4. First-aid measures

#### 1) Following eye contact

- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Seek immediate medical assistance.

#### 2) Following skin contact

- For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.

- For minor skin contact, avoid spreading material on unaffected skin.
  - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
  - Remove and isolate contaminated clothing and shoes.
  - Seek immediate medical assistance.
- 3) Following inhalation
- Administer oxygen if breathing is difficult.
  - Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
  - Give artificial respiration if victim is not breathing.
  - Keep victim warm and quiet.
  - Move to fresh air.
- 4) Following ingestion
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
  - Seek immediate medical assistance.
- 5) Delayed and immediate effects and also chronic effects from short and long term exposure
- Causes skin irritation
  - Suspected of damaging fertility or the unborn child
- 6) Advice to physician
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
  - Exposures require specialized first aid with contact and medical follow-up .

## 5. Fire-Fighting measures

- 1) Suitable (and unsuitable) extinguishing media
- Suitable extinguishing media
    - CO2.
    - Regular foam.
    - Dry chemical.
    - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
    - Use dry sand or earth to smother fire.
    - Water spray.
  - Unsuitable extinguishing media
    - Direct water.
    - High-pressure water.
- 2) Special hazards arising from the substance or mixture
- Pyrolytic product
    - Can decompose at high temperatures forming toxic gases.
    - Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
    - During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
  - Risk of fire and explosion

- Containers may explode when heated.
  - Some may burn but none ignite readily.
  - Other
    - May cause toxic effects if inhaled.
- 3) Special protective equipment for firefighters
- Substance may be transported hot.
  - Substance may be transported in a molten form.
  - Dike fire-control water for later disposal; do not scatter the material.
  - Evacuate area and fight fire from a safe distance.
  - Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
  - Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
  - Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  - Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
  - Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
  - Move containers from fire area if you can do it without risk.
  - Rescuers should put on appropriate protective gear.

## 6. Accident release measures

- 1) Personal precautions, protective equipment and emergency procedures
- Clean up spills immediately, observing precautions in Protective Equipment section.
  - Cover with plastic sheet to prevent spreading.
  - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
  - Do not touch or walk through spilled material.
  - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
  - Please note that materials and conditions to be avoided.
  - Prevent dust cloud.
  - Stop leak if you can do it without risk.
- 2) Environmental precautions
- Keep out of waterways.
  - Prevent entry into waterways, sewers, basements or confined areas.
- 3) Methods and materials for containment and cleaning up
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
  - Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
  - Absorb the liquid and scrub the area with detergent and water.
  - Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
  - Large Spill: Dike far ahead of liquid spill for later disposal.
  - Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
  - With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

## 7. Handling and storage

### 1) Precautions for safe handling

- Avoid breathing vapors from heated material.
- Avoid prolonged or repeated contact with skin.
- CAUTION: High temperature.
- Do not enter storage area unless adequately ventilated.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Handling refer to engineering control/personal protection section.
- Loosen closure cautiously before opening.
- Please note that materials and conditions to be avoided.
- Use care in handling/storage.

### 2) Conditions for safe storage (including any incompatibilities)

- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

## 8. Exposure controls & personal protection

### 1) Chemical exposure limits, Biological exposure standard

- Contains no substances with occupational exposure limit values.

### 2) Appropriate engineering controls

- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

### 3) Personal protective equipment

- Respiratory protection
  - If you have a direct contact or exposed to the material, wear the appropriate form of respiratory protection certified.
- Eye protection
  - If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
- Hand protection
  - Wear chemical safety gloves.
- Skin protection
  - Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

## 9. Physical and chemical information

Property name	Values	Source
Appearance		
Physical state	Liquid	ICSC
Color	colourless	ICSC

Odor	Odorless	HSDB
Odor threshold	No data available	
pH	No data available	
Melting point/freezing point	-5	ICSC
Initial boiling point and boiling range(°C)	285	ICSC
Flash point(°C)	176	ECHA
Evaporation rate	No data available	
Flammability(solid, gas)	not applicable (liquid)	
Upper/lower flammability or explosive limits	Upper flammability limits : 9.2 %(V), Lower flammability limits : 0.9 %(V)	ICSC
Vapour pressure	0.00132 mmHg (25 °C)	ChemIDplus
Solubility(ies)	miscible	
Vapour density	5.2	ICSC
Relative density	No data available	
n-octanol/water partition coefficient	logPow : -1.98	ChemIDplus
Auto ignition temperature	371	ICSC
Decomposition temperature	No data available	
Viscosity(mm <sup>2</sup> /s, 40°C)	47.8 cP (20 °C)	HSDB
Molecular weight(mass)	150.20	ChemIDplus
Density	1.13 g/cm <sup>3</sup> (15 °C)	
Specific gravity	1.13	ICSC

## 10. Stability and hazardous reactivity

### 1) Chemical stability and Possibility of hazardous reactions

- Can decompose at high temperatures forming toxic gases.
- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- Fire may produce irritating, corrosive and/or toxic gases.
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some may burn but none ignite readily.

### 2) Conditions to avoid

- Heat, contamination.
- Ignition source(heat, spark, flame, etc.).

### 3) Incompatible materials

- Combustibles, reducing material.

#### 4) Hazardous decomposition products

- Corrosive/toxic fume.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Irritating and/or toxic gas.
- Irritating, corrosive and/or toxic gas.

## 11. Toxicological information

### 1) Information on the likely routes of exposure

- Skin Contact
  - Liquids can be exposed through the eyes, skin and oral.

### 2) Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity
  - Acute toxicity(Oral) PRODUCT : Not classified
    - Triethylene glycol  
: LD50 17000 mg / kg experimental species: Rat
    - Diethylene glycol  
: LD50 12565 mg / kg experimental species: Rat
  - Acute toxicity(Dermal) PRODUCT : Not classified
    - Triethylene glycol  
: LD50> 5000 mg / kg experimental species: Rabbit
    - Diethylene glycol  
: LD50 11890 mg / kg experimental species: Rabbit
  - Acute toxicity(Inhalation:Gases) PRODUCT : Not classified
    - No data available
  - Acute toxicity(Inhalation:Vapours) PRODUCT : Not classified
    - No data available
  - Acute toxicity(Inhalation:Dust/mist) PRODUCT : Not classified
    - No data available
- Skin corrosion/irritation PRODUCT : Category 2
  - Triethylene glycol  
: Rabbit / light stimuli
  - Diethylene glycol  
: Mild (500mg, rabbit)
- Serious eye damage/eye irritation PRODUCT : Not classified
  - Triethylene glycol  
: If irritation Rabbit
  - Diethylene glycol  
: Mild (50mg, rabbit)

- Diethylene glycol
  - : Mild (50mg, rabbit)
- Respiratory sensitization PRODUCT : Not classified
  - No data available
- Skin sensitization PRODUCT : Not classified
  - Triethylene glycol
    - : Human / non-irritable
- Carcinogenicity PRODUCT : Not classified
  - No data available
- Germ cell mutagenicity PRODUCT : Not classified
  - Triethylene glycol
    - : In vitro / audio
- Reproductive toxicity PRODUCT : Category 2
  - Triethylene glycol
    - : Rat / fetal effects
  - Diethylene glycol
    - : Use the mouse to have been born in a decrease in the number of times the second-generation reproduction test by the revelation of the past, as well as breeding duyeop facial deformities observed (DFGOT vol.10 (1998)). These effects are weight loss of mother animals appeared in capacity, mortality observed in hamsters, namely, clear reproductive toxicity at doses that toxicity to the parent animals expression
- Specific target organ toxicity single exposure PRODUCT : Not classified
  - No data available
- Specific target organ toxicity repeated exposure PRODUCT : Not classified
  - Diethylene glycol
    - : As characteristic findings caused by repeated oral exposure in the rat calcium oxalate crystals in the urine excretion increased with the oxalic acid is formed in renal impairment (nepeuroje) observed (DFGOT vol.10 (1998)). Exposure is also included technical part of it reaches the long-term bladder stones also are mild while observing the liver than in the kidney (PATTY (5th, 2001)). However, these effects are both limits of the range of the reference value (100 mg / kg / day) in excess. On the other hand, the number of people killed numerous epidemiological studies have been carried out with respect to exposure of the material eg, by the progressive kidney failure and renal failure Finally, some report is reported to the liver (DFGOT vol.10 (1998)).
- Aspiration hazard PRODUCT : Not classified
  - No data available

## 12. Ecological information

### 1) Ecotoxicity

- Fish
  - Triethylene glycol
    - : LC50 > 10000 mg / ℓ 96 hr *Lepomis macrochirus*
  - Diethylene glycol
    - : LC50 32000 mg / ℓ 96 hr
- Crustaceans
  - Triethylene glycol
    - : LC50 46500 mg / ℓ 48 hr *Daphnia magna*
- Aquatic algae
  - No data available

### 2) Persistence and degradability

- Degradability
  - No data available
- Biodegradation
  - Triethylene glycol
    - : 95 (%) 14 day
  - Diethylene glycol
    - : 31 (%) 28 day ((aerobic, other bacteria: waste water, not adapted))

### 3) Bioaccumulative potential

- n-octanol water partition coefficient
  - Triethylene glycol
    - : -1.98 log Kow (estimate)
  - Diethylene glycol
    - : -1.47 log Kow (estimated)
- Bioconcentration factor(BCF)
  - Triethylene glycol
    - : 1700
  - Diethylene glycol
    - : 100 3 ((*Leuciscus idus melanotus* (Fish, fresh water), 0.05mg / l))

### 4) Mobility in soil

No data available

### 5) Other adverse effects

No data available

### 13. Disposal considerations

- 1) Disposal methods
  - Empty containers should be taken to an approved waste handling site for recycling or disposal.
- 2) Precautions (including disposal of contaminated container or package)
  - Dispose of in accordance with local regulations.
  - Send to a licensed waste management company.

### 14. Transport information

- 1) UN No. : Not applicable
  - 2) Proper shipping name : Not applicable
  - 3) Hazard class : Not applicable
  - 4) Packing group : Not applicable
  - 5) Marine pollutant : No
  - 6) Special precautions for user related to transport or transportation measures :
    - Emergency measures in case of fire : Not applicable
    - Emergency measures in the effluent : Not applicable
- ADR
    - Tunnel restriction code : Not applicable
  - IMDG
    - Marine pollutant : No
  - Air transport(IATA)
    - UN No. : Not applicable
    - Proper shipping name : Not applicable
    - Class or division : Not applicable
    - Packing group : Not applicable

### 15. Regulatory information

Australia Industrial Chemicals Notification and Assessment Act

- Inventory - Australia - Inventory of Industrial Chemicals (AIIC)
  - Triethylene glycol : Present
  - Diethylene glycol : Present

China Inventory of Existing Chemical Substances (IECSC)

- Inventory - China - Inventory of Existing Chemical Substances (IECSC)

- Triethylene glycol : Present [11102]

- Diethylene glycol : Present [07877]

92/32/EEC

- Not applicable

European Union Official Journal of the European Communities 15 June 1990 - Annex Based on Article 13 of Directive 67/548/EEC Amended by Directive 79/831/EEC

- Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

- Triethylene glycol : 203-953-2

- Diethylene glycol : 203-872-2

Japan - ISHL Ordinance Hazardous Substances Whose Names Are to be Indicated on the Label

Japan Law Concerning the Examination and Regulations of Manufacture, etc. of Chemical Substances

- Inventory - Japan - Existing and New Chemical Substances (ENCS)

- Triethylene glycol : (2)-429

- Diethylene glycol : (2)-415, (2)-2979

New Zealand Environmental Protection Authority, Inventory of Chemicals

- Inventory - New Zealand - Inventory of Chemicals (NZIoC)

- Triethylene glycol : May be used as a single component chemical under an appropriate group standard

- Diethylene glycol : HSNO Approval: HSR002709

Turkey Regulation on Inventory and Control of Chemicals

- Not applicable

Taiwan Chemical Substance Inventory

- Inventory - Taiwan - Taiwan Chemical Substance Inventory (TCSI)

- Triethylene glycol : Present

- Diethylene glycol : Present

U.S. Toxic Substances Control Act

Vietnam National Chemicals Inventory (NCI)

- Inventory - Vietnam - National Chemicals Inventory (NCI) (DRAFT)

- Triethylene glycol : Present 02147

- Diethylene glycol : Present 02087

## 16. Other information

### 1) Reference

NCIS, KOSHA, Montreal Protocol, ECHA, OECD SIDS, EU IUCLID, HSDB(PubChem), NITE, NTP, ACGIH, IARC, NIOSH, ChemIDplus, EPA, EPI Suite, INCHEM

### 2) Issue date : 01-01-2023

### 3) Revision date

- Revised date count : 3-1
- Last revised date : 01-06-2026

### 4) Other

ACGIH : American Conference of Governmental Industrial Hygienists  
ADR : Agreement Concerning the International Carriage of Dangerous Goods by Road  
ATE : The Acute Toxicity Estimate  
ECHA : European Chemicals Agency  
EPA : United States Environmental Protection Agency  
EPI Suite : The Estimation Programs Interface for Windows  
EU IUCLID : International Uniform Chemical Information Database  
HSDB : Hazardous Substances Data Bank  
IARC : International Agency for Research on Cancer  
IATA : International Air Transport Association  
IMDG : International Maritime Dangerous Goods Codes  
INCHEM : Internationally Peer Reviewed Chemical Safety Information  
M-Factor : The Multiplication Factor  
NIOSH : National Institute of Occupational Safety and Health  
NITE : National Institute of Technology and Evaluation(JAPAN)  
NTP : National Toxicology Program  
SCL : Specific Concentration Limit  
OECD SIDS : Organization for Economic Co-operation and Development Screening Information Dataset

GHS/EN