

MATERIAL SAFETY DATA SHEET

KOREA PTG SAFETY DATA SHEET

DATE / REVISED : 12.04.1996

PRODUCT : Polytetramethylene Ether Glycol

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Polytetramethylene Ether Glycol

COMPANY : Korea PTG Co., Ltd.
489-3, YONGYEUN-DONG, NAM-KU,
ULSAN, KOREA
Tel 052) 257-5240
Fax 052) 257-5246

SEOUL OFFICE 5TH FLOOR, YONGSAN BLDG, 92
KALWOL-DONG, YONGSAN-KU, SEOUL, KOREA
Tel 02) 717-7005
Fax 02) 717-0212

SYNONYMS :

- * Poly(Oxy-1,4-Butanediyl), Alpha-Hydro-Omega-Hydroxy
- * Alpha-Hydro-Omega-Hydroxy-Poly(Oxy-1,4-Butanediyl)
- * Glocols, Polytetramethylene
- * Polybutylene Glycol
- * Poly(Butylene Oxide)
- * Polymeg
- * Poly(Oxybutylene) Glycol
- * Poly(Oxy-1,4-Butylene) Glycol
- * Poly(Oxytetramethylene)
- * Poly(Oxytetramethylene) Diol
- * Poly(Oxytetramethylene) Glycol

- * Poly(Tetramethylene Ether)
- * Poly(Tetramethylene Ether) Diol
- * Poly(Tetramethylene Ether) Glycol
- * Poly(Tetramethylene Glycol)
- * Poly(Tetramethylene Oxide)
- * Poly(Tetramethylene Oxide) Glycol
- * Tetrahydrofuran Homopolymer
- * PTMG

CHEMICAL FAMILY : Glycol Ether

SECTION 2. COMPOSITION, INFORMATION ON INGREDIENTS
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COMPONENT : Polytetramethylene Ether Glycol

CAS NUMBER : 25190-06-1

PERCENTAGE : 100.0

OTHER CONTAMINANTS : May Contain 2,6-Di-T-Butyl P-Cresol As An
INHIBITOR (0.015-0.025%)

SECTION 3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4) : Health=1 Fire=1 Reactivity=0

EMERGENCY OVERVIEW :

White, waxy solid or clear, colorless liquid.

May form flammable or explosive dust-air mixtures.

Avoid contact with eyes, skin and clothing. Avoid creation of dust, wash thoroughly after handling.

POTENTIAL HEALTH EFFECTS :

INHALATION :

SHORT TERM EFFECTS : No information is available.

LONG TERM EFFECTS : No information is available.

SKIN CONTACT :

SHORT TERM EFFECTS : May cause mild irritation.

LONG TERM EFFECTS : No information is available.

EYE CONTACT :

SHORT TERM EFFECTS : May Cause mild irritation.

LONG TERM EFFECTS : No information is available.

INGESTION :

SHORT TERM EFFECTS : No information available on significant adverse effects.

LONG TERM EFFECTS : No information is available

CARCINOGEN STATUS :

OSHA : N

NTP : N

IARC : N

SECTION 4. FIRST AID MEASURES

INHALATION :

FIRST AID : Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

SKIN CONTACT :

FIRST AID : Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15 ~ 20 minutes). Get medical attention immediately.

EYE CONTACT :

FIRST AID : Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical

remains (at least 15 ~ 20 minutes). Get medical attention immediately.

INGESTION :

FIRST AID : If vomiting occurs, keep head lower than hips to help prevent aspiration.
Treat symptomatically and supportively. Get medical attention if needed.

NOTE TO PHYSICIAN

ANTIDOTE : No specific antidote. Treat symptomatically and supportively.

SECTION 5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD : Slight fire hazard when exposed to heat or flame
Dust-air mixtures may ignite or explode.

EXTINGUISHING MEDIA :

Dry chemical, carbon dioxide, water spray or regular foam
(1993 Emergency Response Guidebook, RSPA P 5800.6).
For larger fires, use water spray, fog or regular foam
(1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING :

Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 31).

Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapor, keep upwind.

FLASH POINT : 380OF (193 °C)

LOWER FLAMMABLE LIMIT : no data available

UPPER FLAMMABLE LIMIT : no data available

AUTOIGNITION : no data available

FLAMMABILITY CLASS (OSHA) : IIIB

HAZARDOUS COMBUSTION PRODUCTS :

Thermal decomposition products may include toxic oxides of carbon .

SECTION 6. ACCIDENTAL RELEASE MEASURES
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PERSONAL PRECAUTIONS : none

ENVIRONMENTAL PRECAUTIONS : sources of ignition should be kept clear

METHODS FOR CLEANING UP :

SMALL AMOUNTS : Contain with absorbent material and dispose.

LARGE AMOUNTS : Allow to solidify and sweep / shovel up.

SECTION 7. HANDLING AND STORAGE

HANDLING :

PROTECTION AGAINST FIRE AND EXPLOSION :

Ensure thorough ventilation of stores and work areas.

Take precautionary measures against static discharges.

Sources of ignition should be kept well clear.

STORAGE :

Store under nitrogen

Storage temperature : max. 95 °C

SECTION 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS :

No occupational exposure limits established by OSHA, ACGIH or NIOSH.

VENTILATION :

Provide local exhaust ventilation. Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.

EYE PROTECTION :

Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

EMERGENCY EYE WASH :

Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.

CLOTHING :

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES :

Employee must wear appropriate protective gloves to prevent contact with this substance.

RESPIRATOR :

The following respirators are recommended based on information found in the physical data, toxicity and health effects sections. They are ranked in order from minimum to maximum respiratory protection. The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

Any chemical cartridge respirator with organic vapor cartridge(s) and a full facepiece.

Any gas mask with organic vapor canister (chin-style or front- or back-mounted canister), with a full facepiece.

Any type "c" supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure mode or with a full facepiece, helmet or hood operated in a

continuous-flow mode.

Any self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS :

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
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DESCRIPTION : White, waxy solid or clear, colorless liquid.

MOLECULAR WEIGHT : varies

MOLECULAR FORMULA : $\text{H-O}(\text{C-H}_2\text{-C-H}_2\text{-C-H}_2\text{-C-H}_2\text{-O})\text{X-H}$

BOILING POINT : >400OF (>204°C)

MELTING POINT : 66~95OF (19~35°C)

VAPOR PRESSURE : <0.1 mbar (20°C)

VAPOR DENSITY : not applicable

SPECIFIC GRAVITY : 0.975

WATER SOLUBILITY : slightly soluble

VOLATILITY : 0%

PH : not applicable

ODOR THRESHOLD : no data available

EVAPORATION RATE : not applicable

SOLVENT SOLUBILITY : Soluble in aromatic & chlorinated hydrocarbons.

VISCOSITY (40°C) :

MOLE WEIGHT 1,000 : 310 cps

MOLE WEIGHT 2,000 : 1,445 cps

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY : Stable under normal temperatures and pressures.

CONDITIONS TO AVOID :

May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks or open flame.

INCOMPATIBILITIES :

POLYTETRAMETHYLENE ETHER GLYCOL :

ACIDS (STRONG) : Incompatible

OXIDIZERS (STRONG) : Fire and explosion hazard.

HAZARDOUS DECOMPOSITION :

Thermal decomposition products may include toxic oxides of carbon.

POLYMERIZATION :

Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

SECTION 11. TOXICOLOGICAL INFORMATION

POLYTETRAMETHYLENE ETHER GLYCOL :

TOXICITY DATA :

* 8,370 mg/kg skin-rabbit LD50 (650mw, Quaker Oats MSDS)

* >10,250 mg/kg skin-rabbit LD50 (1,000mw, Quaker Oats MSDS)

* >10,250 mg/kg skin-rabbit LD50 (2,000mw, Quaker Oats MSDS)

* 11,340 mg/kg oral-rat LD50 (650mw, Quaker Oats MSDS)

* 18,830 mg/kg oral-rat LD50 (1,000mw, Quaker Oats MSDS)

* >34,600 mg/kg oral-rat LD50 (2,000mw, Quaker Oats MSDS)

CARCINOGEN STATUS : None

ACUTE TOXICITY LEVEL : Slightly toxic by dermal absorption, ingestion.

TARGET EFFECTS : No data available.

HEALTH EFFECTS :

INHALATION :

POLYTETRAMETHYLENE ETHER GLYCOL :

ACUTE EXPOSURE : No data available.

CHRONIC EXPOSURE : No data available.

SKIN CONTACT :

POLYTETRAMETHYLENE ETHER GLYCOL :

ACUTE EXPOSURE : Contact may cause slight irritation.

CHRONIC EXPOSURE : No data available.

EYE CONTACT :

POLYTETRAMETHYLENE ETHER GLYCOL :

ACUTE EXPOSURE : Contact may cause slight irritation.

CHRONIC EXPOSURE : No data available.

INGESTION :

POLYTETRAMETHYLENE ETHER GLYCOL :

ACUTE EXPOSURE : The lethal dose reported in rats was 11,340 mg/kg. The symptoms were not reported.

CHRONIC EXPOSURE : No data available.

SECTION 12. ECOLOGICAL INFORMATION

ELIMINATION INFORMATION :

TEST METHOD : OECD 301F / ISO 9408

METHOD OF ANALYSIS : BOD of COD

DEGREE OF ELIMINATION : <20%

EVALUATION : Not readily biodegradable

The product can be virtually eliminated from water by abiotic processes e.g. adsorption onto activated sludge.

BEHAVIOUR AND ENVIRONMENTAL FATE :

Inhibition of degradation activity in activated sludge not to be anticipated during correct introduction of low concentrations.

ECOTOXIC EFFECTS : No data available.

FURTHER ECOLOGICAL INFORMATION :

AOX : not relevant

SECTION 13. DISPOSAL CONSIDERATIONS

Must be disposed of by special means, e.g. suitable incineration, in accordance with local regulations.

DISPOSAL CODE NO. FOR UNUSED PRODUCT : 55315 (Germany)

CONTAMINATED PACKAGING :

Contaminated packs should be emptied as far as possible, they can then be passed on for recycling after being thoroughly cleaned.

SECTION 14. TRANSPORT INFORMATION

Not classified as hazardous under transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA INVENTORY STATUS : Y

CERCLA SECTION 103 (40CFR302.4) : N

SARA SECTION 302 (40CFR355.30) : N

SARA SECTION 304 (40CFR355.40) : N

SARA SECTION 313 (40CFR372.65) : N
OSHA PROCESS SAFETY (29CFR1910.119) : N
CALIFORNIA PROPOSITION 65 : N

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21)

ACUTE HAZARD : Y
CHRONIC HAZARD : N
FIRE HAZARD : N
REACTIVITY HAZARD : N
SUDDEN RELEASE HAZARD : N

SECTION 16. OTHER INFORMATION

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The information contained herein is based on the present state of our knowledge and does not
therefore guarantee certain properties.

Recipients of our product must take responsibility for observing existing laws and regulations.