

# Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		1/8

## 1. Chemical Product and Manufacturer

A. Product Name: Propylene glycol USP (PG-USP).

B. Recommended Use and Restrictions on Use

- Recommended Use: Medicines, cosmetics, food additives, essence/flavor.
- Restrictions on use: Prohibited for uses other than those specified above.

C. Manufacturer/Supplier/Distributor

- Supplier: SKC Co.,Ltd
- Address: 55, Gosa-dong, Nam-gu, Ulsan, Korea
- Information Service or Emergency Contact Number: 052)278-5511~6
- Department in Charge: Safety Environment Team

## 2. Hazards·Risks

A. Classification of Hazards·Risks

- PG USP is not a dangerous material per the OSHA Hazard Communication Definition.

B. Warning Sign, Including Caution

- Pictograph: No pictograph.
- Signal words: No signal words.
- Hazard·Risk Words: No hazard/signal words.
- Precaution Words: No precaution words.

C. Other Hazards and Risks Not Included in the Hazard and Risk Classification (NFPA)

- Public Health: 0, Fire: 1, Reactivity: 0

## 3. Name and Contents of Ingredients

Substance Name	Propylene glycol	Dipropylene Glycol, Others
Nickname (Usual Name)	1,2-PROPANEDIOL	-
CAS No.	57-55-6	-
Contents (%)	Over 99.9	Under 0.1

## 4. First Aid Measures

A. Eye

- Irrigate eyes with a heavy stream of water for over 15 minutes.

B. Skin

- Wash clothing or shoes contaminated with a chemical substance before reuse.
- Take off clothing or shoes contaminated with a chemical substance, wash out the affected area with soap for over 15 minutes.

## Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		2/8

- Immediately wash with soapy water for over 15 minutes to remove chemical substances.

### C. Inhalation

- If effects of exposure appear move the patient to a non-polluted area.
- If chemical is inhaled, consult with medical personnel immediately.

### D. Ingestion

- If chemicals are ingested, consult with medical personnel.

### E. First Aid and Doctor's Caution: No data.

## 5. Fire Fighting and Explosion Measures

### A. Suitable (Unsuitable) Fire Extinguishing Agents

- Suitable Fire Extinguishing Agents: CO<sub>2</sub>, powder fire extinguishing agent, carbon dioxide, water, ordinary foam, alcohol resistant foam.
- Unsuitable Fire Extinguishing Agents: No data.
- For Big Fires: Use an alcohol resistant foam and a fine water spray.

### B. Specific Hazards from Chemical Substances

- Pyrolysis Products: Carbon dioxide, carbon monoxide.
- Fire and Explosion risk: Slight risk of fire.

### C. Protective Devices to Wear for Fire Extinguishing and Preventive Actions

- Move the case from near the fire if work can be done without risk.
- Spray high-pressure water on the leaked substance to prevent scattering.
- Construct a bank for further processing.
- Use a fire extinguisher that has been used and found effective for nearby fire.
- Avoid inhalation of substances or their fumes.
- Stand facing the wind and avoid low areas.

## 6. Measures for Accidental Spillages

### A. Actions and Protective Devices Required to Protect the Body

- Workers should only stop a chemical spill if it is not dangerous to do so.

### B. Actions for the Protection of the Environment

- Air: No data.
- Soil: No data.
- Water: No data.

### C. Purification or Removal Method

- Small Spills
  - For further disposal, move the leaked substance to a suitable case and dispose.
  - Absorb using nonflammable substances.
  - Quarantine the exposed area and restrict access to the area except for the related personnel.

# Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		3/8

- Big Spills: No data.

## 7. Handling and Storage

### A. Tips for Safe Handling

- Store in an enclosed case.
- Ventilate using an overall or local air exhauster.
- Wash the body and clothing after using chemicals.

### B. Safe Storage

- Store in an enclosed case.
- Store in a cool and dry place.
- Avoid contact with moisture.
- Avoid contact with halogens and intermediate halogens.
- Store and use in accordance with the laws and regulations of the relevant government department and local self-governing bodies.
- Store in well-ventilated areas.

## 8. Prevention of Exposure and Personal Protective Devices

### A. Exposure Standard of Chemicals, Biological Exposure Criteria

- Domestic Regulations: No data.
- ACGIH Regulations: No data.
- Biological Exposure Criteria: No data.

### B. Suitable Engineering Management

- Check whether the work process complies with the allowable standards and exposure standards of the Ministry of Labor.
- Install a ventilation device, such as a local exhauster, to ensure a suitable control wind speed.

### C. Personal Protective Devices

- Protection of Respiratory Organs
  - Make sure to wear protection devices certified by KOSHA.
- Eye Protection
  - Install an emergency shower and basins for easy use by workers.
  - Wear protective glasses to protect the eyes from scattering substances.
- Hand Protection
  - Wear chemical resistant gloves to avoid the direct contact of water and chemicals.
- Body Protection
  - Wear chemical resistant protective wear to protect the skin.

## 9. Physical/Chemical Characteristics

### A. Appearance

Physical Properties: Liquid.

Color: Achromatic.

### B. Smell: Odorless.

## Material Safety Data Sheet (MSDS)

Classification No.	Propylene Glycol USP (PG-USP)	Page
US-P-205		4/8

- C. Detection Threshold: No data.  
D. Melting Point/Freezing Point : -60 °C.  
E. Initial Boiling Point and Range of Boiling Point: 188 ~ 189 °C.  
F. Steam Pressure: 0.08 mm Hg (at 25 °C).  
G. Solubility: 1,000 g/ml.  
H. Steam Density: 2.6-2.62.  
I. Specific Gravity: 1.0361.  
J. n-Octanol/Water Partition Coefficient: -1.4.  
K. Viscosity: 58.1 cP (20 °C).  
L. Molecular Weight: 76.09.

### 10. Stability and Reactivity

- A. Chemical Stability: Stable at room temperature and normal pressure.  
B. Possibility of hazardous reaction: No polymerization.  
C. Conditions to Avoid
- Avoid heat, flames, sparks and other sources of ignition. Avoid contact with substances that are prohibited for mixing.
- D. Substances to Avoid
- Acids, bases, combustible substances, halogen carbon chemicals, metals, metallic salts, oxidizers, reducers.
- E. Hazardous Substances Created at the Time of Decomposition
- Pyrolysis products or burning products: Carbon oxide.

### 11. Information on Toxicity

- A. Information on Route of Highly Likely Exposure
- Respiratory Organ: No data.
  - Oral: No data.
  - Skin Contact: No data.
  - Eye Contact: No data.
- B. Delay by Short-term and Long-term Exposure, Acute Effects and Chronic Effects
- Acute Toxicity
    - Oral: LD50 2000 mg/kg rat (Classification 4 by the Ministry of Labor).
    - Percutaneous: LD50 > 16000 mg/kg rabbit.
    - Inhalation: No data.
  - Skin Corrosion or Stimulation
    - Rabbit/OECD Guide-line 404: No irritation.
    - Human/Skin (104 mg/2D): Moderate irritation.
    - Male/Skin (10%/2D): Moderate irritation.
    - Children/Skin (30%/96H): Moderate irritation.
  - Severe Eye Damage or Irritation
    - Human/Eye: Weak irritation.

# Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		5/8

- Rabbit/Eye(100 mg): Minor irritation.
- Hypersensitivity of Respiratory Organ: No data.
- Skin Hypersensitivity: Human/Draize Test: No hypersensitivity.
- Carcinogenicity
  - IARC: No data.
  - NTP: No data.
  - OSHA: No data.
  - WISHA: No data.
  - ACGIH: No data.
- Mutagenesis of reproductive cells
  - In vitro - Salmonella typhimurium/TA 98, TA100, TA1535, TA1537 (Reverse Mutation Test; Ames Test): Negative; Human/sister chromatid exchange test: Negative.
- Reproductive Toxicity
  - If 1230 mg/kg is administered to a pregnant rabbit for 10 days as food, no effect on fertilization rate is observed together with no effect on the survival rate of the embryo or mother.
  - Skeletal system and teratogenesis are the biggest index for toxicity in the embryo and none in the mother. It is observed in mouse  $\geq 500$  mg/kg/day and rat  $\geq 1,000$  mg/kg/day. Effects on the weight and survival rate of the embryo occur at the higher densities.
- Target Organ: Whole Body Poisonous Substance (One Exposure)
  - Non-toxicity symptom is the restriction of central nerve if anesthetized. No organ to target.
- Target Organ: Whole Body Poisonous Substance (Repeated Exposure)
  - If exposed to rats for 90 days, weight and feed intake decreases, but no change is seen in the clinical-chemical and blood values. No toxic effects on organs (liver, kidney, pancreas and lung).
- Inhalation Toxicity: No data.

## 12. Effects on Environment

### A. Aquatic· Terrestrial Ecological Toxicity

- Fish: LC50 710 mg/l 96 hr Oncorhynchus mykiss.
- Crustacean: EC50 > 1000 mg/l 48 hr Daphnia magna.
- Birds: EC50 > 1000 mg/l 72 hr Selenastrum capricornutum.

### B. Residual Tendency and Resolvability

- Residual Tendency: log Kow -1.4.
- Resolvability: No data.

### C. Biological Condensability

- Condensability: BCF < 1.
- Biological Condensability: > 60 (%) 10 days.

### D. Soil Mobility: No data.

# Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		6/8

E. Other Hazardous Effects: No data.

## 13. Cautions for Disposal

### A. Disposal Method

- Discard the contents and case according to the regulations if it is regulated in the Waste Management Act.

### B. Caution for Disposal

- Consider the caution indicated in the regulations if it is regulated in the Waste Management Act.

## 14. Information on Transportation

A. UN No.: No information on the classification of the UN Transport of Hazardous Substances.

B. Suitable Ship Name: N/A.

C. Class of Risk at Transportation: N/A.

D. Case Grade: N/A.

E. Marine Pollutants: No data.

F. Special Measures That a User Should Know with Regard to Transportation or Means of Transportation

- Emergency Measures for Fire: N/A.
- Emergency Measures for Leakage: N/A.

## 15. Legal Regulation Status

A. Regulations of the Occupational Safety and Health Acts: No data.

B. Regulations of the Hazardous Chemical Management Act: No data.

C. Regulations by the Hazardous Substance Safety Management Act: 4 Class 3 Petroleum (Soluble Liquid) 4000ℓ.

D. Regulations by the Waste Management Act: No data.

E. Regulations by Other Domestic and Foreign Acts

- Domestic Regulations
  - Residue-Prone Organic Pollutant Management Act: N/A.
- International Regulations
  - America Management Information (OSHA Regulations): N/A.
  - America Management Information (CERCLA Regulations): N/A.
  - America Management Information (EPCRA 302 Regulations): N/A.
  - America Management Information (EPCRA 304 Regulations): N/A.
  - America Management Information (EPCRA 313 Regulations): N/A.
  - America Management Information (Rotterdam Convention): N/A.
  - America Management Information (Stockholm Convention): N/A.
  - America Management Information (Montreal Protocol): N/A.
  - EU Classification Information (Fixed Classification): N/A.

## Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		7/8

- EU Classification Information (Risk Words): N/A.
- EU Classification Information (Safety Words): N/A.

### 16. Other References

#### A. Source of Data

- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Physical Properties)
- o International Program on Chemical Safety (IPCS INCHEM) (<http://www.inchem.org/>) (Color)
- o The Chemical Database, The Department of Chemistry at the University of Akron (<http://ull.chemistry.uakron.edu/erd>) (B. Smell)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (E. Melting Point/Freezing Point)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (G. Flashing Point)
- o National Institute of Technology and Evaluation (NITE) ([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html)) (H. Upper/Lower Limit of Ignition or Exposure Range)
- o National Institute of Technology and Evaluation (NITE) ([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html)) (I. Steam Pressure)
- o National Institute of Technology and Evaluation (NITE) ([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html)) (J. Solubility)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (a. n-Octanol/Water Partition Coefficient)
- o The Chemical Database, The Department of Chemistry at the University of Akron (<http://ull.chemistry.uakron.edu/erd>) (c. Decomposition Temperature)
- o International Program on Chemical Safety (IPCS INCHEM) (<http://www.inchem.org/>) (d. Molecular Weight)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Oral)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Injectant)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Skin Corrosion or Irritation )
- o Corporate Solution From Thomson Micromedex (<http://csi.micromedex.com>) (Skin Corrosion or Irritation )
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Severe Eye Damage or Irritation )
- o Corporate Solution From Thomson Micromedex (<http://csi.micromedex.com>) (Severe Eye Damage or Irritation )
- o International Program on Chemical Safety (IPCS INCHEM) (<http://www.inchem.org/>) (Skin Irritation)
- o National Library of Medicine/genetic toxicology (NLM/GENETOX) (<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?GENETOX>) (Reproductive Cell

## Material Safety Data Sheet (MSDS)

Classification No.	<b>Propylene Glycol USP (PG-USP)</b>	Page
US-P-205		8/8

Mutagenicity)

- o National Library of Medicine/Chemical Carcinogenesis Research Information System (NLM/CCRIS) (<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CCRIS>) (Reproductive Cell Mutagenicity)
- o National Library of Medicine/Agency for Toxic Substances and Disease Registry (NLM/ATSDR) (<http://www.atsdr.cdc.gov/MHMI/mmg111.html>)(reproductive toxicity)
- o International Uniform Chemical Information Database(IUCLID) (<http://ecb.jrc.it/esis>) (Target Organ: Whole Body Poisonous Substance (One Exposure))
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Target Organ: Whole Body Poisonous Substance (Repeated Exposure))
- o ECOTOX (Fish)
- o ECOTOX (Crustaceans)
- o National Institute of Technology and Evaluation (NITE) ([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html)) (Birds)
- o International Uniform Chemical Information Database (IUCLID) (<http://ecb.jrc.it/esis>) (Residual Tendency)
- o SIDS (Condensability)
- o SIDS (Bio-degradability)

B. Date of Initial Creation: Mar. 1, 1996

C. Number of Revision and Final Date of Revision

- Number of Revision : 4 times
- Final Revision Date : Feb. 10, 2011

D. Others

- The above Material Safety Data Sheet (MSDS) was created with some modifications in reference to the MSDS provided by the Korea Occupational Safety & Health Agency (KOSHA).