

SDS No	PG USP
MPG-001	SAFETY DATA SHEET

1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier:

Substance name: Propane-1,2-diol
 Trade Name : Propylene Glycol USP (PG USP)
 EC No: 200-338-0
 REACH Registration No: 01-2119456809-23-0014
 CAS No: 57-55-6

1.2 Relevant identified uses of the substance or mixture and uses advised against:

In foods additive as a solvent, wetting agent and humectant; emulsifier; anticaking agent; preservative (retards mold and fungi); cleansing, creams; suntan lotions; pharmaceuticals; brake fluids; deicing fluids for airport runway; fermentation inhibitor; as a mist to disinfect air; heat exchangers; as humectant in textiles, tobacco, and pet foods; and in veterinary medicine as a glucogenic (orally) in ruminants

1.3 Details of the supplier of the safety data sheet:

Manufacturer/supplier: SKC Co., ltd.
 Street address/P.O.Box: 255, Yongjam-ro, Nam-gu, Ulsan
 Country ID/Postcode/Place: KOREA/ 680 – 130
 Telephone number: TEL. + 82-52-278-5511 ~ 13/ + 82-52-278-5642
 e-mail: www.skc.kr
 National contact: +82-2-3773-1594

1.4 Emergency telephone number:

Opening hours: +82-52-278-5642

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance:

2.1.1 Classification in accordance with Regulation (EC) No 1272/2008: Not a dangerous substance and is not classified in accordance with Regulation (EC) No 1272/2008.

2.1.2 Classification in accordance with Directive 67/548/EEC: Not a hazardous Substance in accordance with Directive 67/548/EEC.

2.1.3 NOT a dangerous substance according to GHS and the other global regulation

2.2 Label elements:

Labeling in accordance with Regulation (EC) No 1272/2008

Signal Word : no signal word

No label according to Regulation (EC) no 1272/2008

No Signal and Symbol according to GHS and the other global regulation.

2.3 Other hazards

Propylene Glycol is not considered to be a PVT or vPvB substance

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3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances:

Product identifier type in accordance with Article 18(2) of Regulation (EC) No 1272/2008	Identifier number	Identification name	Weight % content (or range)	EC Number
CAS number	57-55-6	¹ propane-1,2-diol	more than 99.90 %	200-338-0

¹Substance is not classified in terms of Regulation (EC) No. 1272/2008 Annex VI.

4 FIRST AID MEASURES

4.1 General

May cause irritation of the eyes, skin and mucous membranes. Always observe self-protection methods Move out of dangerous area. Remove contaminated shoes and clothing. Show this material safety data sheet to the doctor in attendance.

4.2 Eye

First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center.

Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician.

IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

4.3 Skin

Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes.

If sticky, use waterless cleaner first. Seek medical attention if ill effect or irritation develops.

4.4 Ingestion

DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician.

If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital.

4.5 Inhalation

If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed.

Obtain emergency medical attention if breathing difficulty persists.

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4.6 Note To Physician

Symptoms of exposure to this compound may include central nervous system depression. Other symptoms may include convulsions.

It may cause irritation of the skin and eyes. It may cause primary skin irritation in some people, possibly due to dehydration. Prolonged contact may result in defatting of the skin. It can cause skin sensitization. Ingestion of large amounts can cause gastro-intestinal upset and diarrhea. A single drop in human eyes has caused immediate stinging, blepharospasm, and lacrimation followed by mild transient conjunctival hyperemia. Severe inhalation of the mist may cause mild irritation of the upper respiratory tract. In children, exposure can cause stupor, tachypnea, tachycardia, diaphoresis and seizures. It can also cause hypoglycemia in children. Very high doses in experimental animals have produced central nervous system depression, hemolysis, and minimal kidney changes.

5 FIREFIGHTING MEASURES

5.1 Flammable Properties

- o Classification
 - OSHA/NFPA Class IIIB Combustible Liquid
- o Flash Point
 - 128 - 132 °C (262.4 - 269.6 °F)
- o Autoignition Temperature
 - 327 - 337 °C (620.6 – 638.6 °F)

5.2 Protective Equipment and Precautions For Firefighters

- o Extinguishing media Suitable extinguishing media :
 - SMALL FIRE: Use dry chemicals, CO₂, water spray or alcohol-resistant foam.
 - LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.
- o Unsuitable extinguishing media : Do not use solid water stream.
- o Protective Equipment And Precautions For Firefighters
 - Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters protective clothing will only provide limited protection.
- o Precautions for Fire-Fighting
 - Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal Flash point. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/ steam explosion. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Notify authorities immediately if liquid enters sewer/public waters.

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6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Not required.

For emergency responders: No data available.

6.2 Environmental precautions: Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Extinguish ignition sources; stop release; prevent flow to sewers or public waters. Notify fire and environmental authorities. Impound/recover large land spill; soak up small spill with inert solids. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

6.4 Reference to other sections: No dangerous substances are released. See Section 7 for information on safe handling.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling:

Advice on safe handling : Handle empty containers with care - residue can burn if heated. Empty containers should be thoroughly rinsed with copious amounts of clean water. The rinse water can be used for makeup water for any necessary dilution of the concentrated product before use, or it can be properly discarded.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed when not in use. Protect from moisture. Store away from heat. Material can attack some forms of plastics. Do not store together with oxidizing and self-igniting products.

Advice on common storage : Carbon/Mild steel with epoxy-phenolic internal coating, or stainless steel

Other data : No decomposition if stored and applied as directed.

7.3 Specific end use(s): No data available.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters:

Workplace exposure limits listed in EH40/2005 Workplace Exposure Limits:

Substance	CAS number	Workplace exposure limit				Comments
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg.m ⁻³	ppm	mg.m ⁻³	
Propane-1,2-diol total vapour and particulates	57-55-6	150	474	-	-	
particulates		-	10	-	-	

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Occupational Exposure Limits : Consult local authorities for acceptable exposure limits.

DN(M)EL : End Use: Workers Routes of exposure: Inhalation Potential health effects:
Long term Value: 168 mg/m³ Systemic effects

DN(M)EL : End Use: Workers Routes of exposure: Inhalation Potential health effects:
Long term Value: 10 mg/m³ Local effects

DN(M)EL : End Use: General Population Routes of exposure: Inhalation Value: 50
mg/m³ Systemic effects

DN(M)EL : End Use: General Population Routes of exposure: Inhalation Value: 10
mg/m³ Local effects

PNEC : Fresh water Value: 260 mg/l Assessment factor- 50

PNEC : Sea water Value: 26 mg/l Assessment factor- 500

PNEC : Water Value: 183 mg/l Intermittent Releases, Assessment factor -100

PNEC : Fresh water sediment Value: 572 mg/kg dw

PNEC : Sea sediment Value: 57.2 mg/kg dw

PNEC : Soil Value: 50 mg/kg dw

PNEC : Sewage Treatment Plant Value: 20000 mg/l Assessment factor -1

PNEC : Oral Value: 1133 mg/kg Assessment factor-30

8.2 Exposure controls: The usual precautionary measures are to be adhered to when handling chemicals.

8.2.1 Appropriate engineering controls: Use adequate ventilation.

8.2.2 Individual protection measures, such as personal protective equipment:

8.2.2.1 Eye/face protection: Goggles recommended during refilling.

8.2.2.2 Skin protection:

Hand protection: Wear appropriate protective gloves.

The glove material has to be impermeable and resistant to the product. Due to missing tests no recommendation to the glove material can be given for the product. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Other: Wear appropriate protective clothing.

8.2.2.3 Respiratory protection: If ventilation is insufficient, suitable respiratory protection must be provided.

8.2.2.4 Thermal hazards: No data available.

8.2.3 Environmental exposure controls: Do not allow to enter sewers/ surface or ground water.

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9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	clear colourless liquid
Odour:	-
Odour threshold:	-
pH:	-
Melting point/freezing point:	< -20 °C
Initial boiling point and boiling range:	185 - 188°C
Flash point:	104 °C at 100.01 kPa
Evaporation rate:	-
Flammability (solid, gas):	-
Upper/lower flammability or explosive limits:	-
Vapour pressure:	20 Pa at 25 °C
Vapour density:	-
Relative density:	1.03 at 20°C
Solubility(ies):	Water solubility: 100 vol% The substance is fully miscible with water in all proportions at 20 °C and pH = 7.1-7.8.
Partition coefficient: n-octanol/water:	Pow: 0.0851 at 20.5°C log Pow: -1.07 at 20.5°C
Auto-ignition temperature:	>400 °C at >100.01 - <101.44 kPa
Decomposition temperature:	-
Dynamic viscosity:	43.428 mPa.s at 298.15 K 24.247 mPa.s at 308.15 K 12.78 mPa.s at 318.15 K 9.691 mPa.s at 328.15 K 7.044 mPa.s at 338.15 K
Explosive properties:	Not explosive
Oxidising properties:	Not considered an oxidising agent

9.2 Other information: Surface tension: 71.6 mN/m at 21.5°C.

10 STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Not expected to occur.

Note : This material is stable when properly handled and stored

10.4 Conditions to avoid

High temperatures, oxidizing conditions. May degrade when exposed to light or other radiation sources

10.5 Incompatible materials

Reacts with strong oxidizing agents. Strong acids. Isocyanates.

10.6 Hazardous decomposition products

Hezardous decomposition productes : Carbon Monoxide and other toxic vapors.

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Thermal decomposition : Incomplete combustion may produce carbon monoxide and other toxic gases.

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Acute Toxicity

typ. dose	mode	specie	amount	units	other
LD50	ims	rat	14	gm/kg	
LDLo	ims	rbt	6300	mg/kg	
LD50	ipr	mus	9718	mg/kg	
LD50	ipr	rat	6660	mg/kg	
LDLo	ivn	ckn	27	gm/kg	
LD50	ivn	dog	26	gm/kg	
LD50	ivn	mus	6630	mg/kg	
LD50	ivn	rat	6423	mg/kg	
LDLo	ivn	rbt	4200	mg/kg	
TDL0	orl	chd	79	gm/kg/56W-I	
LD50	orl	dog	22	gm/kg	
LD50	orl	gpg	19	gm/kg	
LD50	orl	mus	24	gm/kg	
LD50	orl	rat	20	gm/kg	
LDLo	orl	rbt	14300	mg/kg	
LDLo	scu	gpg	15500	mg/kg	
LD50	scu	mus	17370	mg/kg	
LD50	scu	rat	22500	mg/kg	
LD50	skn	rbt	20800	mg/kg	

11.1.2 Skin corrosion/irritation

Non-irritating to the skin.

11.1.3 Serious eye damage/eye irritation

Non-irritating to the eyes.

11.1.4 Respiratory or skin sensitization

Not sensitizing

11.1.5 Germ cell mutagenicity

Negative for genotoxicity using both in vitro and in vivo tests.

11.1.6 Carcinogenicity

Long term toxicity studies conducted in rodents and dogs demonstrate that this substance is not a carcinogen.

11.1.7 Reproductive toxicity

No toxicity to reproduction

11.1.8 Teratogenicity

No toxicity to development

11.1.9 Target Organ Systemic Toxicant - Repeated exposure

High aerosol concentrations inhaled by rats caused minor nasal and ocular signs that may have been due to mild irritation or drying effects on mucous membranes. Long-term studies in rodents conducted with high oral doses found no evidence of adverse effects. Ingestion by cats, however, results in species-specific hematological changes.

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12 ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish : LC50: 40,613 mg/l

Exposure time: 96 HOURS

Species: Oncorhynchus mykiss (rainbow trout) LC50

Toxicity to daphnia and other aquatic invertebrates. : EC50: 18,340 mg/l

Exposure time: 48 HOURS

Species: Ceriodaphnia dubia

Toxicity to algae : EC50: 19,000 mg/l

Exposure time: 96 HOURS

Species: Pseudokirchneriella subcapita (formerly Selenastrum capricornutum)

Toxicity to bacteria : NOEC: 20,000 mg/l

Exposure time: 18 HOURS

Species: Pseudomonas putida NOEC

Toxicity to fish (Chronic toxicity) :

Remarks: Not expected to exhibit chronic toxicity to fish.

Toxicity to daphnia and other aquatic invertebrates.: NOEC: 13,020 mg/l

(Chronic toxicity) Exposure time: 7 DAY

Species: Ceriodaphnia dubia NOEC

12.2 Persistence and degradability

Readily biodegradable in aerobic conditions.

There is evidence that it is degraded under anaerobic conditions lable.

12.3 Bioaccumulative potential

Bioconcentration factor (BCF): 0.09 Remarks: This material is not expected to bioaccumulate.

12.4 Mobility in soil

Soil Surface tension : 71.6 mN/m at 21.5 °C (Aqueous solution)

Distribution among environmental compartments

Environmental releases of propylene glycol will tend to partition to water and soil, with little potential for evaporation.

Additional advice Environmental fate and pathways

This material is not expected to persist in the environment and should pose little if any physical or toxicological hazards.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)

12.6 Other adverse effects

This material is expected to be non-hazardous to aquatic species.

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13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Consult and comply with local, provincial and federal regulations that may apply.

14 TRANSPORT INFORMATION

14.1 ADR/RID/ADN: The substance is not subject to international regulations on transport of dangerous goods.

14.2 IMDG: The substance is not subject to international regulations on transport of dangerous goods.

14.3 ICAO/IATA: The substance is not subject to international regulations on transport of dangerous goods.

15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Authorisation under REACH : Propane-1,2-diol is not listed on the Annex XIV.

Restriction under REACH : Propane-1,2-diol is not listed on the Annex XVII.

Other EU regulations: Propane-1,2-diol is not a SEVESO substance.

Propane-1,2-diol is not an ozone depleting substance and not a persistent organic pollutant

Germany Classification of Substances Hazardous to Waters(WGK) : 1

Notification status

All Ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
Philippines	PICCS
United States of America	TSCA
New Zealand	NZIoC

15.2 Chemical safety assessment: A chemical safety assessment has been carried out for this substance.

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16 OTHER INFORMATION

16.1 Indication of change: 05/01/2014 rev : 1

16.2 List of relevant risk phrases and hazard statements: -

16.3 Training advice: Product handling instruction shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to specific conditions at the workplace.

16.4 Recommended restrictions on use (i.e. non-statutory recommendations by supplier): Substance should not be used for any other purpose than for which is appointed (point 1.2). Because of the fact that specific conditions of use of substance are out of supplier's control, it is responsibility of the user to adjust the prescribed warnings to local laws and regulations. Safety information describes the product in terms of safety and it cannot be considered as technical information about product.