

Material Safety Data Sheet (MSDS)

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1. Chemical Product and Manufacturer

- A. Product Name: Dipropylene Glycol (DPG).
- B. Recommended Use and Restrictions on Use
 Recommended Use: Paints and general solvents
 Restrictions on use: Prohibited for uses other than those specified above.
- C. Manufacturer / Importer / Distributor
 Distributor:
 Perfumery Orders Co.
 Phone: +965 55554834
 Email: PerfumeryOrders@gmail.com
 Website: www.perfumeryorders.shop

2. Hazards Risks

- A. Classification of Hazards Risks
 DPG 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	Oxybispropanol
Nickname (Usual Name)	Dipropylene Glycol
CAS No.	25265-71-8
Contents (%)	Over 99.5

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 and remove clothing or shoes contaminated with a chemical substance.
 Immediately take off and 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.

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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: CO₂, powder fire extinguishing agent, water, ordinary foam.

Unsuitable Fire Extinguishing Agents: No data.

For Big Fires: Use an ordinary fire fighting agent and a fine water spray.

B. Specific Hazards from Chemical Substances

Pyrolysis Products: Acids, aldehydes, 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.

Big Spills: No data.

7. Handling and Storage

A. Tips for Safe Handling

Store in an enclosed case.

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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-vented 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.
Eye 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.

C. pH: N/A

D. Melting Point/Freezing Point : -32 °C.

E. Initial Boiling Point and Range of Boiling Point: 229 ~ 232°C.

F. Flash Point: 121 °C (PMCC).

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G. Steam Pressure: 0.0319 mmHg (at 25 °C).

H. Water Solubility: Soluble (1000g/L).

I. Steam Density: 4.63 (air=1).

J. Specific Gravity: 1.02-1.04 (water=1).

K. Viscosity: 107 cP (at 20 °C).

L. Molecular Weight: 134.18.

10. Stability and Reactivity

A. Chemical Stability: Stable at roomtemperatureand normal pressure.

B. Possibility of hazardous reaction:Nopolymerization.

C. Conditions to Avoid

Avoid heat, flames,sparksandothersources of ignition. Avoid contact with substances thatareprohibitedformixing.

D. Substances to Avoid

Acids, bases,combustiblesubstances,halogen carbon chemicals, metals, metallic salts,oxidizers,reducers.

E. Hazardous SubstancesCreatedattheTimeofDecomposition

Pyrolysis productsorburningproducts:Carbon oxide.

11. Information on Toxicity

A. Information on Route ofHighlyLikelyExposure

Respiratory Organ:Nodata.

Oral: No data.

Skin Contact: Nodata.

Eye Contact: Nodata.

B. Delay by Short-termandLong-termExposure,Acute Effects and Chronic Effects

Acute Toxicity

- Oral: LD50 2000mg/kgat(Classification4by the Ministry of Labor).

- Percutaneous:LD50>16000mg/kg rabbit.

- Inhalation: Nodata.

Skin CorrosionorStimulation

- Rabbit/OECDGuide-line404:Noirritation.

- Human/Skin(104mg/2D):Moderateirritation.

- Male/Skin(10%/2D):Moderateirritation.

- Children/Skin(30%/96H):Moderateirritation.

Severe EyeDamageorIrritation

- Human/Eye:Weakirritation.

- Rabbit/Eye(100mg):Minorirritation.

HypersensitivityofRespiratoryOrgan:Nodata.

Skin Hypersensitivity:Human/DraizeTest:No hypersensitivity.

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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 ≥ 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.

E. Other Hazardous Effects: No data.

13. Caution for Disposal

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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) 4000.

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.

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

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

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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)
(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) (I. Steam Pressure)
- o National Institute of Technology and Evaluation (NITE)
(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 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)

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- 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) (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

- o Number of Revision : 3 times
- o Final Revision Date :Feb. 10, 2011 -

D. Others

- o 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).