

Material Safety Data Sheet

According to the Controlled Product Regulations

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : **Monopropylene glycol - USP**
Uses : Generally accepted for use in the manufacture of cosmetics, food and flavours, pharmaceuticals and as humectant for tobacco subject to local regulatory restrictions.

Product Code : U1512

Manufacturer/Supplier : **Shell Chemicals Americas Inc.**
PO Box 670 STN M
CALGARY AB T2P 2J3
Canada

Telephone : 1-888-791-4314
Fax : 1-403-691-3555

Emergency Telephone Number
CHEMTREC (24 hr) : 1-800-424-9300
Canutec (24 hr) : 1-613-996-6666

Material Formal Name : Propane-1,2-diol

2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS No. : 57-55-6

THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE.

Refer to Chapter 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Routes of Exposure : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Health Hazards : No specific hazards under normal use conditions.

Safety Hazards : Not classified as flammable but will burn.

4. FIRST AID MEASURES

General Information : In general no treatment is necessary, however, obtain medical advice.

Inhalation : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.

Eye Contact : Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist, transport to the nearest medical facility for additional treatment.

Ingestion : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Material Safety Data Sheet

According to the Controlled Product Regulations

Advice to Physician : Treat symptomatically. Following cases of gross over-exposure, investigation of liver, kidney and eye function may be advisable. Records of such incidents should be maintained for future reference.

5. FIRE FIGHTING MEASURES

Flash point : 99 °C / 210 °F
Explosion / Flammability limits in air : 2.6 - 12.6 %(V)
Auto ignition temperature : 421 °C / 790 °F
Hazardous Combustion Products and Specific Hazards : Clear fire area of all non-emergency personnel. Will only burn if enveloped in a pre-existing fire. Hazardous combustion products may include: Carbon dioxide. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Extinguishing Media : Large fires should only be fought by properly trained fire fighters. Dry chemical powder, carbon dioxide or protein based foam. If water has to be used it must only be sprayed in large quantities. Do not discharge extinguishing waters into the aquatic environment. Foam. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media : Do not use water in a jet.
Protective Equipment for Firefighters : Wear full protective clothing and self-contained breathing apparatus.
Additional Advice : All storage areas should be provided with adequate fire fighting facilities. Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe all relevant local and international regulations.

Protective Measures : Avoid inhaling vapour and/or mists. Avoid contact with the skin. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Use appropriate containment to avoid environmental contamination. Ventilate contaminated area thoroughly.
Clean Up Methods : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove

Material Safety Data Sheet

According to the Controlled Product Regulations

- Additional Advice** : contaminated soil and dispose of safely.
: Proper disposal should be evaluated based on regulatory status of this material (refer to Section 13), potential contamination from subsequent use and spillage, and regulations governing disposal in the local area. Observe all relevant local regulations.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
- Handling** : In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. Use local exhaust extraction over processing area. Avoid contact with skin, eyes, and clothing. Air-dry contaminated clothing in a well-ventilated area before laundering. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Do not empty into drains. Handling Temperature: Ambient. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- Storage** : Prevent all contact with water and with moist atmosphere. Tanks must be clean, dry and rust-free. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Nitrogen blanket recommended for large tanks (capacity 100 m³ or higher). Drums should be stacked to a maximum of 3 high. Keep container tightly closed. Keep dry. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Prevent ingress of water. Storage Temperature : 40°C maximum.
- Product Transfer** : Lines should be purged with nitrogen before and after product transfer. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Keep containers closed when not in use.
- Additional Information** : Ensure that all local regulations regarding handling and storage facilities are followed. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

None established.

- Additional Information** : Wash hands before eating, drinking, smoking and using the toilet.

Material Safety Data Sheet

According to the Controlled Product Regulations

- Exposure Controls** : No exposure controls are ordinarily required under normal conditions of use. It is good general industrial hygiene practice to minimize exposure to the material.
- Personal Protective Equipment** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. The following information, while appropriate for the product is general in nature. The selection of Personal Protective Equipment will vary depending on the conditions of use.
- Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
- Hand Protection** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Incidental contact/Splash protection: PVC. Neoprene rubber. Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Thin disposable gloves should be avoided for long term use. When worn, use once and dispose.
- Eye Protection** : Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166.
- Protective Clothing** : Skin protection not ordinarily required beyond standard issue work clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Colourless. Liquid.
Odour : Odourless.
Odour threshold : Data not available.
pH : Data not available.
Boiling point : 186 - 189 °C / 367 - 372 °F
Melting / freezing point : -59 °C / -74 °F
Vapour pressure : ca. 10 Pa at 20 °C / 68 °F
Specific gravity : 1.04 at 3.89 °C / 39.00 °F
- Density : 1,036 kg/m³ at 20 °C / 68 °F
Water solubility : Completely miscible.
Solubility in other solvents : Readily soluble in various organic solvents.
n-octanol/water partition coefficient (log Pow) : ca. -1
Dynamic viscosity : 55 mPa.s at 20 °C / 68 °F
Vapour density (air=1) : 2.5 at 20 °C / 68 °F
Evaporation rate (nBuAc=1) : Not applicable.
Hygroscopicity : Hygroscopic.

10. STABILITY AND REACTIVITY

- Stability** : Stable. Hygroscopic.
Conditions to Avoid : Heat, flames, and sparks. Temperatures above 40°C

Material Safety Data Sheet

According to the Controlled Product Regulations

Materials to Avoid : Strong oxidising agents. Strong acids.
Hazardous : Carbonyl and dioxolane derivatives may be formed.
Decomposition Products
Hazardous : No
Polymerisation
Sensitivity to Mechanical Impact : No
Sensitivity to Static Discharge : Yes

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing, and/or similar products, and/or components.
Routes of Exposure : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Routes of Exposure	Material	Values
Oral	Monopropylene glycol	LD 50: 18,000 - 24,900 mg/kg
Dermal	Monopropylene glycol	LD 50: 20,800 mg/kg, Rabbit

Acute Inhalation Toxicity : LC50 greater than near-saturated vapour concentration.
Skin Irritation : Not irritating to skin.
Eye Irritation : Essentially non-irritating to eyes.
Respiratory Irritation : Not expected to be a respiratory irritant.
Sensitisation : Not a skin sensitiser.
Repeated Dose Toxicity : Low systemic toxicity on repeated exposure. Cats given high doses of MPG in diet showed a decrease in red blood cell survival.
Mutagenicity : Not mutagenic.
Carcinogenicity : Not carcinogenic in animal studies.
Reproductive and Developmental Toxicity : Not a developmental toxicant. Does not impair fertility.

12. ECOLOGICAL INFORMATION

Acute Toxicity
Fish : Low toxicity: LC/EC/IC50 > 100 mg/l
Aquatic Invertebrates : Low toxicity: LC/EC/IC50 > 100 mg/l
Algae : Low toxicity: LC/EC/IC50 > 100 mg/l
Microorganisms : Expected to have low toxicity: LC/EC/IC50 > 100 mg/l
Mobility : If product enters soil, it will be highly mobile and may contaminate groundwater.
Dissolves in water.
Persistence/degradability : Readily biodegradable.
Bioaccumulation : Does not bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical

Material Safety Data Sheet

According to the Controlled Product Regulations

- properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
- Container Disposal** : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Send to drum recoverer or metal reclaimer.
- Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION**Canadian Road and Rail Shipping Classification**

This product is not regulated under the Canadian Transportation of Dangerous Goods Regulations for transport by road and rail.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Inventory Status

- AICS : Listed.
DSL : Listed.
INV (CN) : Listed.
ENCS (JP) : Listed. (2)-234
ISHL (JP) : Listed. 2-(8)-321
ISHL (JP) : Listed. 2-(8)-323
TSCA : Listed.
EINECS : Listed. 200-338-0
KECI (KR) : Listed. KE-29267
PICCS (PH) : Listed.

16. OTHER INFORMATION

- Additional Information** : For further information, contact your local Shell company or agent.
- MSDS Version Number** : 3.2
- MSDS Effective Date** : 03-21-2006
- MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.
- MSDS Regulation** : The content and format of this (M)SDS is in accordance with the Controlled Product Regulations.
- MSDS Prepared By** : Product Stewardship; Shell Chemicals Americas Inc.; 1-888-791-4314
- Uses and Restrictions** : Advice in this document relates only to product as originally supplied. Other derivative chemicals will have different

Material Safety Data Sheet

According to the Controlled Product Regulations

properties and hazards. Advice should be sought on their safe handling and use. Do not use in theatrical fogs or other artificial smoke generator applications. Monopropylene Glycol USP is not an approved additive to cat foodstuff acc. to 91/336/EEC and 21CFR § 582.1666.

MSDS Distribution : The information in this document should be made available to all who may handle the product

Disclaimer : The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.