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Shell Chemicals

Material Safety Data Sheet

Diethylene Glycol
MSDS# 5260
Version 17.4

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : Diethylene Glycol
Uses : Chemical intermediate. Advice in this document relates only to product as originally supplied. Other derivative chemicals will have different properties and hazards. Advice should be sought on their safe handling and use.

Product Code : U1237
Company : Shell Chemical LP
PO Box 2463
HOUSTON TX 77252-2463
USA

MSDS Request : 1-800-240-6737
Customer Service : 1-866-897-4355

Emergency Telephone Number
Chemtrec Domestic : 1-800-424-9300
(24 hr)
Chemtrec : 1-703-527-3887
International (24 hr)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Diethylene Glycol	111-46-6	95.00 - 100.00 %

3. HAZARDS IDENTIFICATION

Emergency Overview	
Appearance and Odour	: Colourless. Slightly viscous liquid. Mild.
Health Hazards	: Harmful if swallowed.

Health Hazards

Inhalation : Vapours expected to be slightly irritating.

Skin Contact : May cause moderate irritation to skin.

Eye Contact : Moderately irritating to eyes. Vapours may be irritating to the eye.

Ingestion : Harmful if swallowed. May cause drowsiness and dizziness.

Other Information : Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s):
Kidney.
Intentional abuse, misuse or other massive exposure may cause multiple organ damage and or death.

Signs and Symptoms : Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea, lumbar pain shortly after ingestion, and possibly narcosis and



death.
 Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
 Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.
 Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

Aggravated Medical Condition : Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Kidney.

4. FIRST AID MEASURES

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. If persistent irritation occurs, obtain medical attention.

Eye Contact : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion : DO NOT DELAY. If swallowed, do not induce vomiting; transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Advice to Physician : May cause significant renal, respiratory, and CNS toxicity. May cause significant acidosis. Consider: Gastric lavage with protected airway, administration of ethanol or alcohol dehydrogenase inhibitors, such as fomepizole, as antidotal treatments. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Flash point : 149 °C / 300 °F (Pensky-Martens Closed Cup)

Auto ignition temperature : 365 °C / 689 °F

Specific Hazards : Material will not burn unless preheated. Carbon monoxide may be evolved if incomplete combustion occurs. Containers exposed to intense heat from fires should be cooled with large quantities of water.

Extinguishing Media : Alcohol-resistant foam, water spray or fog. 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 : Evacuate the area of all non-essential personnel. Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Protective measures : Avoid contact with spilled or released material. For guidance



- on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. 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** : Contain run-off from residue flush and dispose of properly. Soak up residue with an absorbent such as clay, sand or other suitable material.
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 contaminated soil and dispose of safely. 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.
- Additional Advice** : See Chapter 13 for information on disposal. Observe all relevant local regulations. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Dike and contain spill water.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier.
- Handling** : Use local exhaust extraction over processing area. Handle and open container with care in a well-ventilated area. Do not empty into drains. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Handling Temperature: Ambient. 60 °C maximum
- Storage** : Tanks must be clean, dry and rust-free. Keep container tightly closed. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Cleaning, inspection and maintenance of storage tanks is a specialist operation which requires the implementation of strict procedures and precautions. Drums should be stacked to a maximum of 3 high. Storage Temperature: Ambient. 60 °C maximum
- Product Transfer** : Keep containers closed when not in use. Do not pressurize drum containers to empty.
- Recommended Materials** : Stainless steel. Mild steel. Carbon steel
- Additional Information** : Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

None established.

- Additional Information** : Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.
- 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.
- Respiratory Protection** : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
- Hand Protection** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: PVC. Neoprene rubber. Nitrile rubber. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
- Protective Clothing** : Skin protection not ordinarily required beyond standard issue work clothes. Chemical resistant gloves/gauntlets, boots, and apron.
- Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods
<http://www.cdc.gov/niosh/nmam/nmammenu.html> Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha-slc.gov/dts/sltc/methods/toc.html> Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances <http://www.hsl.gov.uk/search.htm>



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Environmental Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapour generation and the person working at this point. Eye washes and showers for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Colourless. Slightly viscous liquid.
Odour : Mild.
Boiling point : 244 - 250 °C / 471 - 482 °F
Melting / freezing point : -10 °C / 14 °F
Flash point : 149 °C / 300 °F (Pensky-Martens Closed Cup)
Auto-ignition temperature : 365 °C / 689 °F
Vapour pressure : < 1.3 Pa at 20 °C / 68 °F
Density : 1,116 g/cm3
Water solubility : Completely Soluble
State of aggregation : Liquid/Solid
Stability : Stable.

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions of use. Reacts with strong oxidising agents.
Conditions to Avoid : High Temperature.
Materials to Avoid : Strong oxidising agents. Strong acids. Strong bases.
Hazardous Decomposition Products : Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing.
Acute Oral Toxicity : Low toxicity: LD50 >2000 mg/kg , Rat
There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 millilitres (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs.
Acute Dermal Toxicity : Low toxicity: LD50 >2000 mg/kg , Rat
Ingestion may cause drowsiness and dizziness.
Acute Inhalation Toxicity : No deaths at highest tested dose.
Skin Irritation : May cause moderate skin irritation (but insufficient to classify).
Eye Irritation : Moderately irritating to eyes (but insufficient to classify).
Respiratory Irritation : Repeated inhalation of vapours and mists is expected to cause irritation of the respiratory tract.



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- Sensitisation** : Not a skin sensitiser.
- Repeated Dose Toxicity** : Kidney: can cause kidney damage.
- Mutagenicity** : No evidence of mutagenic activity.
- Carcinogenicity** : Tumours produced in animals are not considered relevant to humans.

- Reproductive and Developmental Toxicity** : Affects reproductive system in animals; considered to be secondary to other toxic effects.

12. ECOLOGICAL INFORMATION

- Acute Toxicity**
 - Fish** : Low toxicity: LC/EC/IC50 > 1000 mg/l
 - Aquatic Invertebrates** : Low toxicity: LC/EC/IC50 > 1000 mg/l
 - Algae** : Expected to have low toxicity: LC/EC/IC50 > 1000 mg/l
 - Microorganisms** : Expected to have low toxicity: LC/EC/IC50 > 1000 mg/l
- Mobility** : Dissolves in water.
If product enters soil, it will be highly mobile and may contaminate groundwater.
- Persistence/degradability** : Inherently biodegradable.
Oxidises rapidly by photo-chemical reactions in air.
- Bioaccumulation** : Does not have the potential to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Recover or recycle if possible. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Remove all packaging for recovery or waste disposal.
Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.
- Container Disposal** : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG
This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)



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This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

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

Federal Regulatory Status

Notification Status

AICS	Listed.
DSL	Listed.
INV (CN)	Listed.
ENCS (JP)	Listed. (2)-2979
ENCS (JP)	Listed. (2)-415
TSCA	Listed.
EINECS	Listed. 203-872-2
KECI (KR)	Listed. KE-27694
PICCS (PH)	Listed.

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Pennsylvania Right-To-Know Chemical List

Diethylene Glycol (111-46-6) 100.00% Listed.

16. OTHER INFORMATION

HMIS Rating (Health, Fire, Reactivity) : 3, 1, 0
 NFPA Rating (Health, Fire, Reactivity) : 1, 1, 0
 MSDS Version Number : 17.4
 MSDS Effective Date : 02/07/2007



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- MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.
- MSDS Regulation** : The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
- Uses and Restrictions** : Do not use in the manufacture or preparation of foods or pharmaceuticals.
Keep out of reach of children and pets.
Do not use in theatrical fogs or other artificial smoke generator applications.
Do not use in aircraft deicing applications.
- 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.