

## KHARG MEG PLANT

# Material Safety Data Sheet



Doc No.: ESS-Rev. No.: B



Ethylene Glycol Fiber Grade Version 1.3

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Effective Date 10.07.2003

**Material Safety Data Sheet** 

according to EC directive 2001/58/EC

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : Ethylene Glycol Fiber Grade

**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 : U1285

Manufacturer/Supplier : Shell Chemicals Europe B.V.

PO Box 8610

3009 AP Rotterdam

Netherlands

Telephone : +31 (0)10 231 7000 Fax : +31 (0)10 231 7180

**Emergency Telephone** 

Number

: +31 (0)10 431 3233

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Material Formal Name : 1,2-Ethane diol.

Synonyms : Glycol

Ethane diol 1,2 Ethylene glycol

MEG

Dihydroxy ethane 1,2

CAS No. : 107-21-1 | INDEX No. : 603-027-00-1 | EINECS No. : 203-473-3

**Hazardous Components** 

Chemical NameCASEINECSSymbol(s)R-phrase(s)Conc.Ethylene glycol107-21-1203-473-3XnR22> 99.00 %W

## 3. HAZARDS IDENTIFICATION

**Health Hazards** : Vapours expected to be slightly irritating. May cause moderate

irritation to skin. Moderately irritating to eyes. Vapours may be irritating to the eye. Toxic: danger of very serious irreversible effects if swallowed. May cause drowsiness and dizziness. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Kidney.



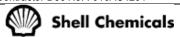
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Intentional abuse, misuse or other massive exposure may

cause multiple organ damage and or death.

Signs and Symptoms Kidney damage may be indicated by changes in urine output or

appearance, pain upon urination or in the lower back. or

general oedema (swelling from fluid retention).

Not classified as flammable but will burn. **Safety Hazards** 

## 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If rapid recovery does not occur, transport

to nearest medical facility for additional treatment.

If persistent irritation occurs, obtain medical attention. **Skin Contact Eye Contact** 

Immediately flush eyes with large amounts of water for at least

15 minutes while holding eyelids open. Transport to the

nearest medical facility for additional treatment.

Ingestion DO NOT DELAY. Do not induce vomiting. If victim is alert,

rinse mouth and drink 1/2 to 1 glass of water to help dilute the material. Do not give liquids to a drowsy, convulsing, or unconscious person. 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, alcohol dehydrogenase inhibitors such as alcohol. Contact a Poison Control Center or toxicologist for

auidance.

### 5. FIRE FIGHTING MEASURES

**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.

Alcohol-resistant foam, water spray or fog. Dry chemical **Extinguishing Media** 

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



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other appropriate barriers. Use appropriate containment to avoid environmental contamination. Ventilate contaminated

area thoroughly.

Contain and cover the spillage with decontaminant, wet earth **Clean Up Methods** 

> or wet sand and leave to react for at least 30 minutes. 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 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. 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

Tanks must be clean, dry and rust-free. Keep container tightly Storage

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



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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## **Occupational Exposure Limits**

Material	Source	Туре	ppm	mg/m3	Notation
Ethylene	ACGIH	Ceiling		100 mg/m3	
glycol					

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

toilet. Launder contaminated clothing before re-use.

MaterialSourceHazard DesignationEthylene glycolACGIHNot classifiable as a human

carcinogen.

Personal protective equipment (PPE) should meet

Personal Protective Equipment

**Respiratory Protection** recommended national standards. Check with PPE suppliers.

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 unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use

appropriate positive pressure breathing apparatus. Where airfiltering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point

>65 °C (149 °F)] meeting EN141.

**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: Longer term 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.

**Eye Protection** : Chemical splash goggles (chemical monogoggles). **Protective Clothing** : Skin protection not ordinarily required beyond stand

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



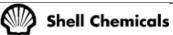
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monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods

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

Berufsgenossenschaftliches Institut für Arbeitssicherheit (BIA), Germany http://www.hvbg.de/d/bia/pub/grl/grle.htm L'Institut National de Recherche et de Securité, (INRS), France

http://www.inrs.fr/indexnosdoss.html

**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. Firewater monitors and deluge systems are

recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Colourless Slightly viscous liquid.

Odour : Mild

Flash point : 116 °C / 241 °F (Pensky-Martens Closed Cup)

Explosion / Flammability : 3.2 %(V)

limits in air

Auto-ignition temperature : 413 °C / 775 °F

Vapour pressure : < 10 Pa at 20 °C / 68 °F Water solubility : Completely Soluble Kinematic viscosity : 24.8 mm2/s at 20 °C / 68 °F

State of aggregation : Liquid/Solid

State of aggregation : Liquid/Solid Stability Stable.

Volatile organic carbon 100

content

## 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** : Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including



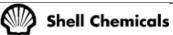
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carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

## 11. TOXICOLOGICAL INFORMATION

Basis for Assessment Acute Oral Toxicity

: Information given is based on product testing.

: Low toxicity: LD50 >2000 mg/kg , Rat

There is a marked difference in acute oral toxicity between animals and man, man being more susceptible than animals. The estimated fatal dose for man is 100 millilitres (1/2 cup).

Ingestion may cause drowsiness and dizziness.

, Man (Ethylene glycol)

Classified as harmful by the European Commission.

Acute Dermal Toxicity
Acute Inhalation Toxicity

Low toxicity: LD50 >2000 mg/kg, Rabbit Expected to be of low toxicity: LC50 >5 mg/l Rat

Skin Irritation

May cause moderate skin irritation (but insufficient to classify). Moderately irritating to eyes (but insufficient to classify).

Eye Irritation Respiratory Irritation

Inhalation of vapours or mists may cause irritation to the

respiratory system.

Sensitisation

Not a skin sensitiser.

Repeated Dose Toxicity Mutagenicity Kidney: can cause kidney damage. No evidence of mutagenic activity. Not carcinogenic in animal studies.

Carcinogenicity
Reproductive and

Causes foetotoxicity in animals; considered to be secondary to

Developmental Toxicity

maternal toxicity.

## 12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish Aquatic Invertebrates Low toxicity: LC/EC/IC50 > 100 mg/l Low toxicity: LC/EC/IC50 > 100 mg/l Low toxicity: LC/EC/IC50 > 100 mg/l Low toxicity: LC/EC/IC50 > 100 mg/l

Microorganisms Mobility

Algae

Dissolves in water.

If product enters soil, it will be highly mobile and may

contaminate groundwater.

Persistence/degradability

Readily biodegradable.

Oxidises rapidly by photo-chemical reactions in air.

**Bioaccumulation** : Does not 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.



Contractor Job No. : HC3700 Da

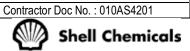
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Container Disposal : Dispose in accordance with prevailing regulations, preferably to

a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation : Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

## 14. TRANSPORT INFORMATION

#### **ADR**

This material is not classified as dangerous under ADR regulations.

#### RID

This material is not classified as dangerous under RID regulations.

#### **ADNR**

This material is not classified as dangerous under ADNR regulations.

#### **IMDG**

This material is not classified as dangerous under IMDG regulations.

## IATA (Country variations may apply)

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

EC Label Name : MONOETHYLENE GLYCOL

EC label/EC Number : 203-473-3 EC Classification : Harmful. EC Annex I Number : 603-027-00-1 EC Symbols : Xn Harmful.

EC Risk Phrases : R22 Harmful if swallowed.

EC Safety Phrases : S2 Keep out of the reach of children.

AICS : Listed.
DSL : Listed.
INV (CN) : Listed.

ENCS (JP) : Listed. (2)-230

TSCA : Listed.

EINECS : Listed. 203-473-3 KECI (KR) : Listed. KE-13169

PICCS (PH) : Listed.



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## **Material Safety Data Sheet**

Shell Chemicals

according to EC directive 2001/58/EC

## 16. OTHER INFORMATION

R-phrase(s)

R22 Harmful if swallowed. **MSDS Version Number** : 1

MSDS Effective Date : 10.07.2003

**MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment

from the previous version.

**MSDS Regulation** : The content and format of this safety data sheet is in

accordance with Commission Directive 2001/58/EC of 27 July 2001, amending for the second time Commission Directive

91/155/EEC.

**Uses and Restrictions** : Keep out of reach of children and pets.

Do not use in theatrical fogs.

Do not use in the manufacture or preparation of foods or

pharmaceuticals.

MSDS Distribution : The information in this document should be made available to

all who may handle the product

**Disclaimer** : This information is based on our current knowledge and is

intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property

of the product.