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SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006 (REACH)

Diethylene Glycol

Date: 09.08.2009 Version: 2.0 replaces version: 1.0 from 15.07.2005 pages: 12

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

Substance/Preparation identification

Chemical name: Diethylene glycol or 2,2'-oxybisethanol

Molecular formula: C₄H₁₀O₃

Use of the substance:

- > Raw material for chemistry
- > Industrial solvent
- > Extraction agent

Company/Undertaking Identification:

The person responsible for commercial introduction of the substance in the EU:

KLEMAT CZ Ltd.
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2 HAZARDS IDENTIFICATION

Classification

Principal hazards:

Indications of danger: Harmful

R-phrases: Harmful if swallowed.

Classification:

Xn; R22

Product is classified as hazardous.

The substance is listed in Directive 67/548/EEC annex I.

Explication of special hazards for human health and environment

Vapours have anesthetic or narcotic effects. Irritating to mucous membranes and the eyes. Absorbed by the skin. Product may cause serious damage to eyes leading to entire loss of sight.

3 COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical characterization C₄H₁₀O₃

Structural formula HO-CH₂-CH₂-O-CH₂-CH₂-OH

Molecular weight: 106,1g/mol

EC No	CAS №	Chemical name	Quantity	Classification
203-872-2	111-46-6	2,2' -oxybisethanol	> 98 %	Xn R22

4 FIRST AID MEASURES

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General information: In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible). In all cases, keep patient warm and at rest. In life-threatening conditions first start with resuscitation and obtain medical attention immediately.

Apneusis: start immediately with artificial respiration.

Cardiac arrest: start immediately with cardiac massage.

Insensibility: patient should be positioned and transported on his side.

In the case of I.st. burns (painful redness) and II.st. burns (painful blisters) cool the affected areas under a stream of cold water, in the case of III.st. burns (blackening, crumbly pale skin, usually without pain) do not cool the affected areas, only cover them by a clean cloth.

After inhalation: Move victim to fresh air. Change contaminated clothing. Keep victim warm. Do not allow victim to walk! In case of breathing difficulties administer oxygen. Seek medical attention.

After contact with skin: Take off contaminated clothing. Flush the affected area with plenty of tepid water. Soap or shampoo can be used if skin is not injured. Apply a high-fat content skin care cream to irritated areas. Seek medical attention if problems persist.

After contact with eyes: If the affected person is wearing contact lenses, they must be removed immediately. Immediately rinse with plenty of drinking water for at least 15 minutes. Keep eyelids open. Protect unharmed eye. Seek medical attention.

After ingestion: Rinse mouth immediately with drinkable water. Do not induce vomiting. If victim vomits spontaneously protect him from aspiration of vomitus. Give 1-2 dcl of tepid drinking water with approximately 5 tablets of activated carbon to drink. Never give anything by mouth to person without consciousness or under convulsions. Seek medical attention immediately.

5 FIRE FIGHTING MEASURES

Suitable extinguishing media: Water spray. Extinguishing powder. Carbon dioxide (CO₂). alcohol resistant foam. Isolate from fire, if possible, without unnecessary risk. Cool surrounding containers and equipment with a water spray.

Extinguishing media which must not be used for safety reasons

High power water jet. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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Special exposure hazards arising from substance or preparation itself, combustion products, resulting gases

Development of hazardous combustion gases or vapors is possible in the event of fire [Acrylic acid. Carbon oxides (CO, CO₂)] Avoid breathing the fumes

Special protective equipment for fire-fighters: Full protective clothing. Self-contained breathing apparatus. Use only anti-static equipped (spark-free) tools.

Additional information: Fight fire from protected location or safe distance. Isolate the danger zone and prevent access to unauthorized persons.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid direct contact with the product. Wear personal protection equipment. If the leak occurs in the closed areas it is necessary to ensure thorough ventilation and turn off electric current. Keep escaped material away from combustible materials (wood, paper, oils etc.). Remove all sources of ignition. No smoking. Keep away from open flame. Use spark-proof tools and explosion proof equipment. Isolate hazard area. Stop the leak if possible. Keep unnecessary and unprotected persons from entering. Notify police and fire brigade about the accidental release.

Environmental precautions: Prevent the substance from leaking into the sewerage system, ground and surface water, or into the soil. Prevent spreading over great surfaces (e.g. by damming). Cover with a plastic lid in order to minimize spreading of product. Inform the relevant authorities (police, fire brigades) if product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up/taking up: For large amounts: Pump the spill. For residues: Pick up with suitable absorbent material: Sand, dry earth, kieselguhr, general-purpose binder, lime, Vapex. Collect in the appropriate designated containers for recovery or disposal. Clean up the contaminated area.

Additional information: See also sections 8 and 13.

7 HANDLING AND STORAGE

Handling

Advice on safe handling

Do not eat, drink or smoke during the work and observe the personal hygiene principles. Wear personal protection equipment (see also section 8). Ensure thorough ventilation of store and work areas. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin and eyes. A workplace shall be kept clear and emergency exits shall be unobstructed.

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Advice on protection against fire and explosion

Take precautions against fire and explosion (no smoking, no work with open flame, keep away sources of ignition). Electrically bond and ground all containers and equipment before transfer or use of material. Keep instructions stating technical requirements put on fire safety at construction and using of buildings.

Further information on handling

Prevent the substance from leaking into the sewerage system, ground and surface water, or into the soil.

Storage

Requirements for storage rooms and vessels

Store at clean, dry and well ventilated place. Keep in tightly closed containers. Store apart from: sources of ignition (open flame, sparks or hot surfaces), explosive materials. Stock must be equipped with emergency sumps. Suitable material for packaging: rustproof steel, Aluminium, Zinc, Glass, Plastic containers.

Advice on storage compatibility

Store apart from: food and beverages, feed, strong acids, strong bases, strong oxidizing agents.

Further information on storage conditions

Do not store at temperatures under: -8 °C

Specific use(s)/replacement product(s)

Not available.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

Exposure limits (EH40)

CAS-No.	Chemical name	ml/m ³	mg/m ³	Category	Origin
111-46-6	2,2'-Oxydiethanol	23	101	TWA (8 h) STEL (15)	WEL WEL

Exposure controls

Occupational exposure controls

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Do not eat, drink or smoke during the work. Wash hands with water and soap after work and use hand cream. Follow the instructions for safety handling with chemicals.

Protective and hygiene measures

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Provide for sufficient ventilation of workplace. If ventilation is insufficient, local exhaust of the working

place must be ensured.

Adopted engineering controls should maintain airborne levels below exposure limit requirements and

exclude direct contact with product.

Respiratory protection

Use only when adequate ventilation is provided.

In the case of risk of exposure use self-contained breathing apparatus.

In the case of accident, fire or high concentration of fumes use protective mask with filter counter to

organic vapors and steams. Type: A

Hand protection

Protective gloves. Hand care cream.

Preferred material: butyl rubber, natural rubber, nitrile rubber, neoprene, viton, polyethylene, PVC (polyvinyl alcohol), PVA (polyvinylchloride), CR (polychloroprenes, Chloroprene rubber).

The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. In case of reutilization, clean gloves before taking off and store in well-aired place.

Eye protection

Tightly sealed safety glasses. / Face protection shield.

Skin protection

Protective clothing and footwear.

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Required properties: antistatic.

Wash contaminated clothing prior to re-use.

Environmental exposure controls

Use process enclosures, local exhaust, general ventilation. Do not empty into drains, ground waters or soil.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state: liquid

Colour: colourless – yellowish

Odour: odourless

Important health, safety and environmental information

	Test method
pH-Value :	5 - 8 50% solution
Melting point :	Not available.
Boiling point :	245 °C
Flash point :	124 °C
Lower explosion limits :	0,62 vol. %
Upper explosion limits :	6,8 vol. %
Oxidizing properties	Reacts with oxygen and oxidizing agents
Vapour pressure : (at 20 °C)	< 0,01 hPa
Density (at 20 °C) :	1,116 g/cm ³
Water solubility :	unlimited
Solubility in other solvents :	soluble: chloroform, ether, Ethanediol, alcohols, ketone.
Partition coefficient :	-1,98
Viscosity / dynamic : (at 25 °C)	0,3 mPa·s
Vapour density : (at 25 °C)	1,305 air = 1
Evaporation rate :	< 0,001 n-butylacetate = 1
Ignition temperature :	225 °C

Class of danger: IV

Temperature class: T3

Conductivity: 5,86 .10 exp5 S/m

Relative dielectric capacitance: 31,69 (20 °C)

Content of VOC substances 100%

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10 STABILITY AND REACTIVITY

Conditions to avoid

Stable when stored and handled correctly.

The product is volatile and evaporates under normal atmospheric conditions.

Conditions to avoid: concentration between explosion limits, high temperatures, sources of ignition.

The product is hygroscopic, protect it from air humidity.

Materials to avoid

Incompatibilities: acids, bases, oxidizing agents (Explosion hazard.)

Hazardous decomposition products

Development of hazardous combustion gases or vapours is possible in the event of fire [Acrylic acid, carbon oxides (CO, CO₂)]

11 TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed.

Lethal dose for human: HoDL50 = 1-2 g/kg

LD, oral, rat = 5,84 g/kg

LD50, oral: rat = 12 565 mg/kg

LD, oral, guinea-pig = 6,61 g/kg

LD, subcutaneous, mouse = 2,78 g/kg

Corrosive and irritant effects

eye irritation: rabbit - 50 mg = moderately irritant

skin irritation: rabbit - 500 mg/24 h. = moderately irritant

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Severe effects after repeated or prolonged exposure

Frequent and prolonged contact may cause dermatitis, depression.

Carcinogenic/mutagenic/toxic effects for reproduction

Reproduction toxicity: TDLo, oral: mouse = 343 mg/kg

Carcinogenicity: TCLo, inhalation: mouse = 4 mg/m², 2h., 30 weeks

Tumorigenic effect: TDLo, oral: rat = 50 g/kg

TD oral: rat = 584 g/kg, 2 years

Neoplastic effect: TDLo, subcutaneous: rat = 2 500 mg/kg, 28 weeks

Empirical data on effects on humans

After inhalation of vapours causes cough and sneezing, lacrimation eyes. Vapours have anesthetic or narcotic effects. Product can cause headache, dizziness, drunkenness, nausea, vomiting, loss of consciousness, coma.

Toxic if swallowed. Product can cause pain in abdomen, nausea, vomiting, diarrhoea, headache, drunkenness, dizziness, loss of consciousness, coma.

Irritating to slightly skin and eyes. Product is poorly absorbed through intact skin. After contact with eyes may cause inflammation, in aerosol victim may suffer from eye nerve disorders to blindness.

12 ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish: LC50, Carassius auratus > 5 000 ppm (24 h.)

Toxicity to invertebrates: EC50, Daphnia magna > 10 000 mg/l (24 h.)

Toxicity to algae: EC 50, Chlorophyta = 40 g/l (240 h.)

Repression of decomposition activity of activated sludge occurs if concentration of product reaches

2500 mg/l.

Water contaminating class: 1

Mobility

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Easily soluble in water.

Content of VOC substances 100%

Partition coefficient, n-octanol/water (log Pow): -1,98

Persistence and degradability

Readily biodegradable under OECD criteria.

in water: OECD 301A, biodegradation 67% (28days)

Bioaccumulative potential

BOD5 = 1,5 %ThOD

Results of PBT assessment

Not available.

Other adverse effects

Observe principles for safe handling and storage. Protect from accidental release to the environment.

13 WASTE DISPOSALS

Advice on disposal

Consult the appropriate authorities about waste disposal.

Suitable disposal methods: incineration in incinerating plant for industrial waste, recycling. Do not drain product residues into sewerage system, soil or water reservoirs. The product must be handled in compliance with the valid legal regulations governing the disposal of waste as well as with other environmental regulations. The assigning of waste code numbers/waste identifications must be carried out according to EAKV (European Waste Catalogue Order) in an industry and process-specific manner.

Waste disposal number of waste from residues/unused products

070104 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the manufacture, formulation,

supply and use (MFSU) of basic organic chemicals; other organic solvents, washing liquids and mother liquors

Classified as hazardous waste.

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Waste disposal number of used product

160305 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; organic wastes containing dangerous substances Classified as hazardous waste.

Waste disposal number of contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by dangerous substances Classified as hazardous waste.

Contaminated packaging

Returnable packaging. Completely emptied and properly cleaned packings can be returned to supplier. See "Guidlines for loaning of packages" for information about return practice.

14 TRANSPORT INFORMATION

Land transport (ADR/RID)

Description of the goods

Not a hazardous material with respect to these transportation regulations.

15 REGULATORY INFORMATION

R phrases

22 Harmful if swallowed.

S phrases

02 Keep out of the reach of children.

46 If swallowed, seek medical advice immediately and show this container or label.

EU regulatory information

Regulation No. 1907/2006/EC

16 OTHER INFORMATION

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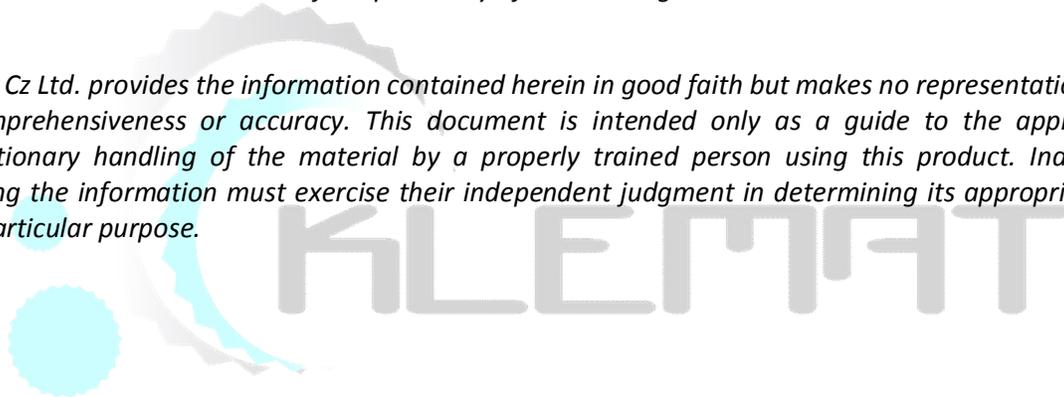
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