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

Product identifier:

Product Name: DIETHYLENE GLYCOL

Synonyms; trade names: DEG, DIETHYLENE GLYCOL, 2,2-OXYDIETHANOL, DIETHYLENE GLYCOL HIGH PURITY GRADE

REACH registration number: 01-2119457857-21-XXXX

CAS number: 111-46-6

EU index number: 603-140-00-6

EC number: 203-872-2

Relevant identified uses of the substance or mixture and uses advised against:

Identified uses:
De-icing
Heat Carrier
Industrial Solvent
Chemical Intermediate
Polymers
Paint
Surface coating
Cleaning agent
Lubricant
Metallurgical Industry
Lab Reagent
Sealant
Adhesive
Biocide
For further information, see attached Exposure Scenario.

Company name:
Nexchem Ltd
Unit 3 Barshaw Park
Leycroft Road
Leicester
LE4 1ET
Tel: 0116 2311130
24/7 Emergency Tel: 0800 246 1274
Email: sales@nexchem.co.uk

[cont…]

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

Classification (EC 1272/2008):

Physical hazards: Not Classified

Health hazards: Acute Tox. 4 - H302

Environmental hazards: Not Classified

Label elements:

EC number: 203-872-2

Hazard pictograms:

Signal Word: Warning

Hazard phrases: H302- Harmful if swallowed.

Precautionary Phrases: P264- Wash contaminated skin thoroughly after handling.
P301+P312- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330- Rinse mouth.
P501- Dispose of contents/container in accordance with national regulations.

Other hazards: This substance is not classified as PBT or vPvB according to current EU criteria.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances:

Product name: 2,2'-OXYBISETHANOL

REACH registration number: 01-2119457857-21-XXXX

EU index number: 603-140-00-6

CAS number: 111-46-6

EC number: 203-872-2

Ingredient notes: Acute Toxicity Estimate (oral): 1000 mg/kg
Acute Toxicity Estimate (dermal): 13300 mg/kg
Acute Toxicity Estimate (inhalation): > 4.6 mg/l Dust/Mist 6 hours

Composition comments: The data shown are in accordance with the latest EC Directives.

[cont…]

4. FIRST AID MEASURES

Description of first aid measures:

Inhalation: Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention.

Ingestion: Do not induce vomiting. Get medical attention immediately. Rinse mouth thoroughly with water. Give plenty of water to drink. Never give anything by mouth to an unconscious person.

Skin contact: Rinse immediately with plenty of water. Immediately remove contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if any discomfort continues.

Eye contact: Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Rinse with water. Get medical attention if any discomfort continues.

Most important symptoms and effects, both acute and delayed:

Inhalation: Vapours may cause headache, fatigue, dizziness and nausea.

Ingestion: Harmful if swallowed. Lethal dose to humans 65ml May cause nausea, headache, dizziness and intoxication.

Skin contact: Prolonged skin contact may cause redness and irritation.

Eye contact: May cause temporary eye irritation.

Indication of any immediate medical attention and special treatment needed:

Notes for the doctor: If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider haemodialysis or peritoneal dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol: loading dose 15mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours: after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late-stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

[cont…]

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture:

Specific hazards: Carbon monoxide (CO). Carbon dioxide (CO2). Aldehydes. Alcohols. Ethers.

Hazardous combustion products: Oxides of carbon. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

Advice for firefighters:

Protective actions during firefighting: Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Contain and collect extinguishing water.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Personal precautions: Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes. Provide adequate ventilation.

Environmental Precautions: Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

Methods and material for containment and cleaning up:

Methods for cleaning up: Absorb in vermiculite, dry sand or earth and place into containers. Flush contaminated area with plenty of water. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

Reference to other sections: Wear protective clothing as described in Section 8 of this safety data sheet.

7. HANDLING AND STORAGE

Precautions for safe handling:

Usage precautions: Avoid spilling. Avoid contact with skin and eyes. Provide adequate ventilation.

Conditions for safe storage, including any incompatibilities:

Storage precautions: Keep separate from food, feedstuffs, fertilisers and other sensitive material. Store in tightly closed, original container in a dry, cool and well-ventilated place. Store at temperatures not exceeding < 40°C.

Storage class: Chemical storage.

Specific end use(s): The identified uses for this product are detailed in Section 1.2. [cont…]

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters:

Occupational exposure limits: Long-term exposure limit (8-hour TWA): WEL 23 ppm 101 mg/m³
WEL = Workplace Exposure Limit.

DNEL:
Workers - Dermal; Long term systemic effects: 43 mg/kg/day
Workers - Inhalation; Long term local effects: 60 mg/m³
Workers - Inhalation; Long term systemic effects: 44 mg/m³
Consumer - Dermal; Long term systemic effects: 21 mg/kg/day
Consumer - Inhalation; Long term local effects: 12 mg/m³
Consumer - Inhalation; Long term systemic effects: 12 mg/m³

PNEC:
- Fresh water; 10 mg/l
- marine water; 1 mg/l
- Sediment (Freshwater); 20.9 mg/kg
- Sediment (Marine water); 2.09 mg/kg
- Intermittent release; 10 mg/l
- Soil; 1.53 mg/kg
- STP; 199.5 mg/l

Exposure controls:

Protective equipment:

Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection: The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection: The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. The selected gloves should have a breakthrough time of at least 8 hours. Butyl rubber. Neoprene. Nitrile rubber. Polyvinyl alcohol (PVA). Thickness: 0.35 mm To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection: Wear suitable protective clothing as protection against splashing or contamination.

Hygiene measures: Use engineering controls to reduce air contamination to permissible exposure level. Wash hands after handling. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated.

Respiratory protection: If ventilation is inadequate, suitable respiratory protection must be worn. Wear a respirator fitted with the following cartridge: Combination filter, type A2/P3. EN 136/140/141/145/143/149.

[cont…]

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance:	Liquid
Colour:	Colourless
Odour:	Odourless
Odour threshold:	No information available
pH:	pH (diluted solution): 7.1 @ 0.5%
Melting Point:	-6.5°C
Initial boiling point and range:	245°C
Flash point:	138 - 154°C (closed cup)
Evaporation rate:	No information available.
Evaporation factor:	No information available.
Flammability (solid, gas):	No information available.
Upper/lower flammability or explosive limits:	
Lower flammable/explosive limit:	2.0%
Upper flammable/explosive limit:	12.3%
Other flammability:	No information available.
Vapour Pressure:	0.008 hPa 25°C
Vapour density:	3.65
Relative Density:	1.18 @ 20°C
Bulk density:	No information available
Solubility:	Soluble in water
Partition coefficient:	log Pow: (-1.98) - (-1.47)
Auto-ignition temperature:	229 - 372°C
Decomposition Temperature:	No information available.
Viscosity:	30 mPa s @ 25°C
Explosive properties:	No information available.

Explosive under the influence of a flame: No information available.

Oxidising properties: No information available.

Other information:

Other information:	Not determined
Refractive index:	No information available
Particle size:	No information available
Molecular weight:	106.12
Volatility:	No information available
Saturation concentration:	No information available
Critical temperature:	No information available
Volatile organic compound:	No information available

[cont…]

10. STABILITY AND REACTIVITY

Reactivity: There are no known reactivity hazards associated with this product.

Chemical stability:

Stability: Stable at normal ambient temperatures and when used as recommended.

Possibility of hazardous reactions: Will not polymerise.

Conditions to avoid: Avoid excessive heat for prolonged periods of time.

Incompatible materials:

Materials to avoid: Strong alkalis. Strong acids. Strong oxidising agents.

Hazardous decomposition products: Oxides of carbon. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Alcohols. Ether. Aldehydes.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Acute toxicity – oral:

Acute toxicity oral (LD_{50} mg/kg): 1,000.0

Species: Human

Notes (oral LD_{50}): Harmful if swallowed. LD_{50} 1000 mg/kg, Oral, Human

ATE oral (mg/kg): 1,000.0

Acute toxicity – dermal:

Acute toxicity dermal (LD_{50} mg/kg): 13,300.0

Species: Rabbit

Notes (dermal LD_{50}): LD_{50} 13330 mg/kg, Dermal, Rabbit

ATE dermal (mg/kg): 13,300.0

Acute toxicity – inhalation:

Notes (inhalation LC_{50}): LC_{50} > 4.6 mg/l, Inhalation, Rat

Skin corrosion/irritation:

Skin corrosion/irritation: Not irritating.

Serious eye damage/irritation:

Serious eye damage/irritation: May cause temporary eye irritation.

Respiratory sensitisation:

Respiratory sensitisation: No information available.

[cont…]

Skin sensitisation:

Skin sensitisation: Not sensitising. Guinea pig. Human.

Germ cell mutagenicity:

Genotoxicity - in vitro: Negative.

Genotoxicity - in vivo: Negative.

Carcinogenicity:

Carcinogenicity: No evidence of carcinogenicity in animal studies.

Reproductive toxicity:

Reproductive toxicity – fertility: Based on available data the classification criteria are not met.

Reproductive toxicity – development: Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure:

STOT - single exposure: Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure:

Target organs: Kidneys.

Aspiration hazard: Based on available data the classification criteria are not met.

Toxicokinetics: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Inhalation: Vapour may irritate respiratory system/lungs. Vapours may cause headache, fatigue, dizziness and nausea.

Ingestion: Harmful if swallowed. Lethal dose to humans 65ml Irritating. Symptoms following overexposure may include the following: Nausea, vomiting. Stomach pain.

Skin contact: Skin irritation should not occur when used as recommended.

Eye contact: May cause temporary eye irritation.

Target organs: Skin Gastro-intestinal tract

12. ECOLOGICAL INFORMATION

Ecotoxicity: The product is not expected to be hazardous to the environment. However, large or frequent spills may have hazardous effects on the environment.

Toxicity: Not considered toxic to fish.

Acute aquatic toxicity:

Acute toxicity – fish: LC_{50}, 96 hours: 75,200 mg/l, Pimephales promelas (Fat-head Minnow)
NOEC, 7 day: 15380 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity – aquatic invertebrates: EC_{50}, 48 hours: 48,900 mg/l, Daphnia magna

Acute toxicity - aquatic plants: EC_{50}, 96 hours: 6,500 - 13,000 mg/l, Pseudokirchneriella subcapitata

Acute toxicity – microorganisms: EC_{20}, 30 minutes: > 1995 mg/l, Activated sludge

[cont…]

Chronic aquatic toxicity:

Chronic toxicity – aquatic invertebrates: NOEC, 21 day: > 15000 mg/l, Daphnia magna

Persistence and degradability: The product is readily biodegradable.

Biodegradation:
- Degradation 90 - 100%: 20 days OECD 301A
- Degradation 82 - 98%: 28 days OECD 302C

Bioaccumulative potential: BCF: 100

Partition coefficient: log Pow: (-1.98) - (-1.47)

Mobility in soil:

Mobility: The product is soluble in water.

Results of PBT and vPvB assessment: This substance is not classified as PBT or vPvB according to current EU criteria.

Other Adverse Effects: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods:

General information: Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.

Disposal methods: Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Avoid the spillage or runoff entering drains, sewers or watercourses.

14. TRANSPORT INFORMATION

General: The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

UN number: Not applicable.

UN proper shipping name: Not applicable.

Transport hazard class(es): No transport warning sign required.

Packing group: Not applicable.

Environmental hazards:

Environmentally hazardous substance/marine pollutant: No.

Special precautions for user: Not applicable.

Transport in bulk according to Annex II of MARPOL and the IBC Code:

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Pollution category: Cat Z Ship type: 1

[cont…]

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture:

EU legislation: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
Commission Regulation (EU) No 2015/830 of 28 May 2015.

Chemical safety assessment: A chemical safety assessment has been carried out.

Inventories:

EU - EINECS/ELINCS:	All the ingredients are listed or exempt.
Canada - DSL/NDSL:	All the ingredients are listed or exempt. DSL.
US – TSCA:	All the ingredients are listed or exempt.
Australia – AICS:	All the ingredients are listed or exempt.
Japan – ENCS:	All the ingredients are listed or exempt.
Korea – KECI:	All the ingredients are listed or exempt.
China – IECSC:	All the ingredients are listed or exempt.
Philippines – PICCS:	All the ingredients are listed or exempt.
New Zealand – NZIOC:	All the ingredients are listed or exempt.

Note: The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Abbreviations and acronyms used in the safety data sheet:

ATE: Acute Toxicity Estimate.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
Kow: Octanol-water partition coefficient.
LC_{50}: Lethal Concentration to 50 % of a test population.
LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).
PBT: Persistent, Bioaccumulative and Toxic substance.
PNEC: Predicted No Effect Concentration.

[cont…]

REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
vPvB: Very Persistent and Very Bioaccumulative.
IARC: International Agency for Research on Cancer.
MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
cATpE: Converted Acute Toxicity Point Estimate.
BCF: Bioconcentration Factor.
BOD: Biochemical Oxygen Demand.
EC_{50}: 50% of maximal Effective Concentration.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
LOEC: Lowest Observed Effect Concentration.
DMEL: Derived Minimal Effect Level.
EL50: Exposure Limit 50
hPa: Hectopascal
LL50: Lethal Loading fifty
OECD: Organisation for Economic Co-operation and Development
POW: Octanol-water partition coefficient
SCBA: self-contained breathing apparatus
STP: Sewage Treatment Plant
VOC: Volatile Organic Compounds

Classification abbreviations and acronyms:

Acute Tox. = Acute toxicity
Aquatic Acute = Hazardous to the aquatic environment (acute)
Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data: ECHA Disseminated REACH Dossier

Legal disclaimer: The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.