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

Product identifier:

Product Name: ETHANEDIOL

Index No: 603-027-00-1

EC Number: 203-473-3

CAS No: 107-21-1

Synonyms: MONOETHYLENE GLYCOL, MEG, ETHANE1,2 DIOL, MONOETHYLENE GLYCOL FIBRE, MONOETHYLENE GLYCOL FIBRE SHL, AL20, MONOETHYLENE GLYCOL MIN 99%, NF2, MONOETHYLENE GLYCOL O&G, MONOETHYLENE GLYCOL BLUE, MONOETHYLENE GLYCOL INS, ETHYLENE GLYCOL POLYESTER GRADE, MONOETHYLENE GLYCOL HTF NO, ETHYLENE GLYCOL

Pure substance/mixture: Substance

Contains: ETHANEDIOL

Molecular weight: 62

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

Recommended use: Chemical
Cleaning agent
Heat transfer medium
Intermediate
Chemicals used in the synthesis and / or formulation of industrial products paint
Lubricant
Metal working fluids
Laboratory chemicals
Polymer
Functional fluids
Oil gas
Additive for Agrochemicals
De-icing
Adhesives and/or sealants
Heat transfer fluids,

Uses advised against: Pharmaceuticals

Details of the supplier of the safety data sheet:

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

Acute toxicity – Oral: Category 4 - (H302)

Specific target organ toxicity - repeated exposure: Category 2 - (H373)

Label elements:

Contains: ETHANEDIOL

Signal word: Warning

Hazard statements:
H302 - Harmful if swallowed
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements:
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/ container to an approved waste disposal plant

Other hazards: No information available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances:

Chemical name	Weight-%	EC No. (EU Index No)	UK REACH reg No	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
ETHANEDIOL 107-21-1	90 – 100%	203-473-3 (603-027-00-1)	-	Acute Tox. 4 (H302) STOT RE 2 (H373)	-	-	-

Full text of H- and EUH-phrases: See section 16

This product does not contain candidate substances of very high concern at a concentration >= 0.1% (UK REACH Article 59).

[cont…]

4. FIRST AID MEASURES

Description of first aid measures:

General advice: Show this safety data sheet to the doctor in attendance.

Inhalation: Remove to fresh air. Get medical attention if symptoms occur.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a doctor.

Skin contact: Wash skin with soap and water. In the case of skin irritation or allergic reactions see a doctor.

Ingestion: Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a doctor.

Most important symptoms and effects, both acute and delayed:

Symptoms: Harmful if swallowed.

Inhalation: Coughing and/or wheezing. Difficulty in breathing.

Ingestion: Harmful if swallowed

Indication of any immediate medical attention and special treatment needed:

Note to doctors: 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 15 mg/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: Dry chemical, CO2, alcohol-resistant foam or water spray.

Large Fire: CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media: Do not scatter spilled material with high pressure water streams.

Special hazards arising from the substance or mixture:

Hazardous combustion products: Carbon oxides.

Advice for firefighters

Special protective equipment and precautions for fire-fighters:

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Personal precautions: Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.

Other information: Refer to protective measures listed in Sections 7 and 8.

For emergency responders: Use personal protection recommended in Section 8.

Environmental precautions: See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up:

Methods for containment: Prevent further leakage or spillage if safe to do so.

Methods for cleaning up: Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards: Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections: See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling:

Advice on safe handling: Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Keep container closed when not in use.

General hygiene considerations: Wash hands before breaks and immediately after handling the product.

Conditions for safe storage, including any incompatibilities:

Storage Conditions: Keep containers tightly closed in a dry, cool and well-ventilated place.

Specific end use(s): See section 1 for more information.

Risk Management Methods (RMM): The information required is contained in this Safety Data Sheet.

[cont…]

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters:

Exposure Limits:

Chemical name	United Kingdom
ETHANEDIOL 107-21-1	TWA: 10 mg/m3 (particulate) TWA: 20 ppm TWA: 52 mg/m3 STEL: 40 ppm STEL: 104 mg/m3 (vapour) Sk*

Biological occupational exposure limits:

This product, as supplied, does not contain any hazardous materials with biological limits established by the region-specific regulatory bodies.

Derived No Effect Level (DNEL) – Workers:

Chemical name	Oral	Dermal	Inhalation
ETHANEDIOL 107-21-1		106 mg/kg bw/day [4] [6]	35 mg/m^3 [5] [6]

[4] Systemic health effects.

[5] Local health effects.

[6] Long term.

Derived No Effect Level (DNEL) - General Public:

Chemical name	Oral	Dermal	Inhalation
ETHANEDIOL 107-21-1		53 mg/kg bw/day [4] [6]	7 mg/m^3 [5] [6]

[4] Systemic health effects.

[5] Local health effects.

[6] Long term.

Predicted No Effect Concentration (PNEC):

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
ETHANEDIOL 107-21-1	10 mg/L	10 mg/L	1 mg/L	10 mg/L	

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
ETHANEDIOL 107-21-1	37 mg/kg sediment dw	3.7 mg/kg sediment dw	199.5 mg/L	1.53 mg/kg soil dw	

[cont…]

Exposure controls:

Engineering controls: No information available.

Personal protective equipment:

Eye/face protection: Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.

Hand protection: Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Butyl rubber. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	**PPE – Glove material**	**Glove thickness**	**Break through time**
Long term (repeated)	Viton™	0.6 – 0.8mm	>480 minutes

Skin and body protection: No special protective equipment required.

Respiratory protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Gas filter, type A.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state: Liquid

Appearance: Viscous liquid

Colour: Colourless

Odour: Mild

Odour threshold: No information available

Property	Values	Remarks • Method
Melting point / freezing point	-13°C	
Initial boiling point and boiling range	197.4°C	
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits	28.0%	
Lower flammability or explosive limits	3.0%	
Flash point	116°C	Closed cup
Autoignition temperature	398°C	
Decomposition temperature		No information available.
pH		
pH (as aqueous solution)	6.0 - 7.5	Solution (0.10 %).
Kinematic viscosity		No information available.
Dynamic viscosity	16.1 mPa s	@ 25.0°C.
Water solubility	Soluble in water	
Solubility(ies)		No information available.
Partition coefficient	log Kow: -1.36	
Vapour pressure	0.123 hPa	@ 25.0°C.

[cont…]

Property	Values	Remarks • Method
Relative density	1.11	20.0°C.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density		No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Not considered to be explosive	
Oxidising properties	Does not meet the criteria for classification as oxidising	

Other information:

Molecular weight 62

10. STABILITY AND REACTIVITY

Reactivity: Stable under recommended storage conditions.

Chemical stability:

Stability: Stable under normal conditions.

Explosion data:

Sensitivity to mechanical impact: None.

Sensitivity to static discharge: None.

Possibility of hazardous reactions: None under normal processing.

Conditions to avoid: Excessive heat.

Incompatible materials: Strong oxidising agents.

Hazardous decomposition products: Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Information on likely routes of exposure:

Product Information:

Inhalation: May cause irritation.

Eye contact: May cause temporary eye irritation.

Skin contact: May cause slight irritation.

Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics:

Symptoms: No information available.

[cont…]

Acute toxicity:

Numerical measures of toxicity:

Component Information:

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
ETHANEDIOL	7712 mg/kg (Rat)	>3500 mg/kg (Mouse)	>2.5 mg/L (Rat) 6h

Delayed and immediate effects as well as chronic effects from short and long-term exposure:

Skin corrosion/irritation: No information available.

ETHANEDIOL (107-21-1):

Method	Species	Exposure route	Effective dose	Exposure time	Results
					Brief contact is essentially non-irritating to skin. Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation: No information available.

ETHANEDIOL (107-21-1):

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause slight eye irritation. Corneal injury is unlikely.

ETHANEDIOL (107-21-1):

Method	Species	Exposure route	Results
	Guinea Pig	Dermal	Not a skin sensitiser

Germ cell mutagenicity: No information available.

ETHANEDIOL (107-21-1):

Method	Species	Results
	In vitro	Negative
		Negative - Did not show mutagenic effects in animal experiments

Carcinogenicity: No information available.

ETHANEDIOL (107-21-1):

Method	Species	Results
		Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the foetus, in animal studies.

[cont…]

STOT - single exposure: No information available.

ETHANEDIOL (107-21-1):

Method	Species	Exposure route	Effective dose	Exposure time	Results
					Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney Liver

Aspiration hazard: No information available.

Other adverse effects: No information available.

12. ECOLOGICAL INFORMATION

Toxicity:

Ecotoxicity: Not considered to be harmful to aquatic life.

ETHANEDIOL (107-21-1):

Method	Species	Endpoint	Effective dose	Exposure time	Results
Acute toxicity	Pimephales promelas	LC50	72860 mg/L	96 hours	
OECD Test No. 202: Daphnia sp. Acute Immobilisation Test	Daphnia magna	EC50	>100 mg/L	48 hours	

Chemical name	Algae/Aquatic plants	Fish	Toxicity to microorganisms	Crustacea
ETHANEDIOL	EC50: 6500 - 13000mg/L (96h, Pseudokirchneriella subcapitata)	LC50: =41000mg/L (96h, Oncorhynchus mykiss) LC50: 14 - 18mL/L (96h, Oncorhynchus mykiss) LC50: =27540mg/L (96h, Lepomis macrochirus) LC50: =40761mg/L (96h, Oncorhynchus mykiss) LC50: 40000 - 60000mg/L (96h, Pimephales promelas) LC50: =16000mg/L (96h, Poecilia reticulata)	-	EC50: =46300mg/L (48h, Daphnia magna)

[cont…]

Persistence and degradability: No information available.

ETHANEDIOL (107-21-1)

Method	Exposure time	Value	Results
OECD Test No. 301A: Ready Biodegradability: DOC Die-Away Test (TG 301 A) or Equivalent.	10 days	Biodegradation 90-100%	Readily biodegradable

Bioaccumulative potential:

Bioaccumulation: No information available.

Component Information:

Chemical name	Partition coefficient
ETHANEDIOL	-1.36

Mobility in soil: Soluble in water.

Results of PBT and vPvB assessment:

PBT and vPvB assessment: The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
ETHANEDIOL	The substance is not PBT/vPvB

Other adverse effects: No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods:

Waste from residues/unused products: Dispose of in accordance with local regulations.
Dispose of waste in accordance with environmental legislation.

Contaminated packaging: Do not reuse empty containers.

14. TRANSPORT INFORMATION

IATA:

UN number or ID number: Not regulated
UN proper shipping name: Not regulated
Transport hazard class(es): Not regulated
Packing group: Not regulated
Environmental hazards: Not applicable
Special precautions for user:
Special Provisions: None

IMDG:

UN number or ID number: Not regulated
UN proper shipping name: Not regulated
Transport hazard class(es): Not regulated
Packing group: Not regulated
Environmental hazards: Not applicable
Special precautions for user:
Special Provisions: None

Maritime transport in bulk according to IMO instruments: No information available

[cont…]

RID:

UN number or ID number:	Not regulated
UN proper shipping name:	Not regulated
Transport hazard class(es):	Not regulated
Packing group:	Not regulated
Environmental hazards:	Not applicable
Special precautions for user:	
Special Provisions:	None

ADR:

UN number or ID number:	Not regulated
UN proper shipping name:	Not regulated
Transport hazard class(es):	Not regulated
Packing group:	Not regulated
Environmental hazards:	Not applicable
Special precautions for user:	
Special Provisions:	None

15. REGULATORY INFORMATION

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

National regulations:

Authorisations and/or restrictions on use:

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

Persistent Organic Pollutants: Not applicable

Export Notification requirements: Not applicable

Named dangerous substances per COMAH Regulations 2015 (as amended): Not applicable

The Ozone-Depleting Substances Regulations 2015: Not applicable

The Biocidal Products Regulations 2001 (as amended): Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended): Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended): Not applicable

International Inventories:

TSCA:	Contact supplier for inventory compliance status
DSL/NDSL:	Contact supplier for inventory compliance status
EINECS/ELINCS:	Contact supplier for inventory compliance status
ENCS:	Contact supplier for inventory compliance status
IECSC:	Contact supplier for inventory compliance status
KECI:	Contact supplier for inventory compliance status
PICCS:	Contact supplier for inventory compliance status
AIIC:	Contact supplier for inventory compliance status
NZIoC:	Contact supplier for inventory compliance status

[cont…]

Legend:

TSCA:	United States Toxic Substances Control Act Section 8(b) Inventory.
DSL/NDSL:	Canadian Domestic Substances List/Non-Domestic Substances List.
EINECS/ELINCS:	European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances.
ENCS:	Japan Existing and New Chemical Substances.
IECSC:	China Inventory of Existing Chemical Substances.
KECL:	Korean Existing and Evaluated Chemical Substances
PICCS:	Philippines Inventory of Chemicals and Chemical Substances
AIIC:	Australian Inventory of Industrial Chemicals
NZIoC:	New Zealand Inventory of Chemicals

Chemical safety assessment: Chemical Safety Report A Chemical Safety Assessment has been carried out for this substance.

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

Key or legend to abbreviations and acronyms used in the safety data sheet:

Full text of H-Statements referred to under section 3:

H302 - Harmful if swallowed

H373 - May cause damage to organs through prolonged or repeated exposure

Legend:

SVHC:	Substances of Very High Concern for Authorisation

Legend Section 8: Exposure controls/personal protection:

TWA	TWA (time-weighted average)
STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value
*	Skin designation
+	Sensitisers

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.