



SAFETY DATA SHEET DIETHYLENE GLYCOL REVISION 4, DATE 04 JUL 19

1. IDENTIFICATION

Product Name	Diethylene glycol
Other Names	2,2'-Oxydiethanol; DEG
Uses	Cosmetic ingredients, anti-freezing agents, colouring agents and solvents.
Chemical Family	No Data Available
Chemical Formula	C ₄ H ₁₀ O ₃
Chemical Name	Ethanol, 2,2'-oxybis-
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887



2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Schedule 6



Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)		
Hazard Categories	Acute Toxicity (Oral) - Category 4 Specific Target Organ Toxicity (Repeated Exposure) - Category 2		
Pictograms	 		
Signal Word	Warning		
Hazard Statements	H302	Harmful if swallowed.	
	H373	May cause damage to organs through prolonged or repeated exposure.	
Precautionary Statements	Prevention	P264	Wash hands thoroughly after handling.
		P270	Do not eat, drink or smoke when using this product.
		P260	Do not breathe mist/vapours.
	Response	P330	Rinse mouth.
		P314	Get medical advice if you feel unwell.
		P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
	Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Diethylene glycol	C4H10O3	111-46-6	100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink a glass of water. Do not induce vomiting unless directed to do so by medical personnel. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.
Advice to Doctor	Get medical advice/attention if you feel unwell. Treat symptomatically. Effects may be delayed.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction.
Fire and Explosion Hazard	Containers may explode when heated. May form flammable vapour mixtures with air.
Hazardous Products of Combustion	Fire will produce irritating and/or toxic gases, including Carbon oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
Flash Point	143 °C [Closed cup]
Lower Explosion Limit	1.7 %
Upper Explosion Limit	12.3 %
Auto Ignition Temperature	372 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material - Slippery when spilt. Avoid accidents, clean up immediately. Do not breathe vapours and avoid contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to suitable, properly labelled containers for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Prevent entry into drains and waterways. If contamination of sewers or waterways has occurred advise local emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapours and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Keep away from heat and ignition sources - No smoking.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use - check regularly for leaks. Protect from moisture (hygroscopic liquid). Keep away from heat and ignition sources - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Diethylene glycol (CAS No. 111-46-6): - Safe Work Australia Exposure Standard: TWA = 23 ppm (100 mg/m ³). - New Zealand Workplace Exposure Standard: TWA = 23 ppm (101 mg/m ³).
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Ensure ventilation is adequate to maintain air concentrations below Workplace Exposure Standards.
Personal Protection Equipment	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour/particulate filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses. - Hand protection: Handle with gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes.
Special Hazards Precautions	Vapour heavier than air - prevent concentration in hollows or sumps. Do NOT enter confined spaces where vapour may have collected.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Viscous liquid
Odour	Odourless
Colour	Colourless
pH	5 - 8 (500 g/L at 20 °C)
Vapour Pressure	<0.008 hPa (@ 20 °C)
Relative Vapour Density	3.66 Air = 1
Boiling Point	245 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Miscible with water
Specific Gravity	1.118
Flash Point	143 °C [Closed cup]
Auto Ignition Temp	372 °C
Evaporation Rate	<1 (n-Butyl acetate = 1)
Bulk Density	No Data Available

Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Hygroscopic (moisture absorbing) liquid.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition will produce irritating and/or toxic gases, including Carbon oxides.
Release of Invisible Flammable Vapours and Gases	May form flammable vapour mixtures with air.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under normal conditions of use.
Conditions to Avoid	Keep away from heat and sources of ignition. Protect from moisture.
Materials to Avoid	Incompatible/reactive with strong oxidising agents, strong acids, zinc.
Hazardous Decomposition Products	Fire/decomposition will produce irritating and/or toxic gases, including Carbon oxides.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none"> - Acute toxicity: Harmful if swallowed, with symptoms including abdominal pain, nausea, vomiting, diarrhoea, dizziness, drowsiness, confusion, unconsciousness. Acute exposure to DEG may cause effects in the nervous system, kidneys and liver. Humans appear to be more susceptible to acute oral toxicity effects of DEG compared with experimental animals. - Skin corrosion/irritation: May cause slight skin irritation. - Eye damage/irritation: May cause slight eye irritation. - Respiratory/skin sensitisation: Not a skin sensitiser.
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- Germ cell mutagenicity: Not considered to be genotoxic.
- Carcinogenicity: Not considered carcinogenic.
- Reproductive toxicity: DEG may induce adverse effects on fertility and development, but only at doses higher than those associated with repeated dose effects and in the presence of maternal toxicity.
- STOT (single exposure): Breathing in mists or aerosols may produce respiratory irritation.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure. Repeated oral exposure to the chemical is associated with adverse health effects, mainly in the kidneys, and to a lesser extent, the liver. Severe adverse health effects including deaths have been documented in humans from inadvertent ingestion of DEG used as a glycerine substitute, or as a contaminant in medicinal preparations; However it is not clear whether these were single or repeated dose occurrences.
- Aspiration toxicity: No information available.

Acute**Ingestion**

Acute toxicity (Oral):

- LD50, Rats: 15,600 mg/kg bw. [NICNAS].
- Median lethal dose in humans: 1,490 mg/kg bw. [NICNAS].

Carcinogen Category

None

12. ECOLOGICAL INFORMATION**Ecotoxicity**

No information available.

Persistence/Degradability

The material is biodegradable.

Mobility

No information available.

Environmental Fate

Prevent entry into drains and waterways.

Bioaccumulation Potential

No information available.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS**General Information**

Dispose of contents/container in accordance with local/regional/national regulations.

Special Precautions for Land Fill

No information available.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name

Diethylene glycol

Class

C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable

Subsidiary Risk(s)

No Data Available

No Data Available

UN Number

No Data Available

Hazchem

No Data Available

Pack Group

No Data Available

Special Provision

No Data Available

Comments

NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Diethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Diethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Diethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Diethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No

Comments NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Diethylene glycol
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
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Poisons Schedule (Aust)	Schedule 6
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Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002503 - Additives, Process Chemicals and Raw Materials (Subsidiary Hazard) Group Standard 2020
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National/Regional Inventories

Australia (AIIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Listed
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed

Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes	DIGLYC0100, DIGLYC0700, DIGLYC0701, DIGLYC0800, DIGLYC0900, DIGLYC0901, DIGLYC1000, DIGLYC1001, DIGLYC1002, DIGLYC1003, DIGLYC1004, DIGLYC1005, DIGLYC1006, DIGLYC1007, DIGLYC1008, DIGLYC1009, DIGLYC1010, DIGLYC1011, DIGLYC1012, DIGLYC1013, DIGLYC1014, DIGLYC1015, DIGLYC1016, DIGLYC1017, DIGLYC1018, DIGLYC1019, DIGLYC1030, DIGLYC1031, DIGLYC1033, DIGLYC1045, DIGLYC1046, DIGLYC1100, DIGLYC1101, DIGLYC1102, DIGLYC1200, DIGLYC1201, DIGLYC1300, DIGLYC1400, DIGLYC1500, DIGLYC1501, DIGLYC1600, DIGLYC1700, DIGLYC1800, DIGLYC1801, DIGLYC1802, DIGLYC1803, DIGLYC1804, DIGLYC1805, DIGLYC1900, DIGLYC2000, DIGLYC2001, DIGLYC2002, DIGLYC2200, DIGLYC2300, DIGLYC2350, DIGLYC2400, DIGLYC2401, DIGLYC2402, DIGLYC2500, DIGLYC2501, DIGLYC2502, DIGLYC2503, DIGLYC2510, DIGLYC2600, DIGLYC2601, DIGLYC2602, DIGLYC2603, DIGLYC2700, DIGLYC2800, DIGLYC3000, DIGLYC3001, DIGLYC3002, DIGLYC3003, DIGLYC3004, DIGLYC3005, DIGLYC3006, DIGLYC3007, DIGLYC3008, DIGLYC3009, DIGLYC3010, DIGLYC3011, DIGLYC3020, DIGLYC3021, DIGLYC3100, DIGLYC3120, DIGLYC3150, DIGLYC3300, DIGLYC3500, DIGLYC3501, DIGLYC3502, DIGLYC3600, DIGLYC4000, DIGLYC4200, DIGLYC4500, DIGLYC4501, DIGLYC4700, DIGLYC4800, DIGLYC5000, DIGLYC5200, DIGLYC5400, DIGLYC5500, DIGLYC5600, DIGLYC5601, DIGLYC5800, DIGLYC5801, DIGLYC5805, DIGLYC5810, DIGLYC5820, DIGLYC5830, DIGLYC6000, DIGLYC6100, DIGLYC6150, DIGLYC6200, DIGLYC6500, DIGLYC6900, DIGLYC7000, DIGLYC7001, DIGLYC7100, DIGLYC7200, DIGLYC7210, DIGLYC7400, DIGLYC7500, DIGLYC7600, DIGLYC7700, DIGLYC7800, DIGLYC8000, DIGLYC9800, DIGLYC9900
Revision	4
Revision Date	04 Jul 2019
Key/Legend	<p>< Less Than</p> <p>> Greater Than</p> <p>AICS Australian Inventory of Chemical Substances</p> <p>atm Atmosphere</p> <p>CAS Chemical Abstracts Service (Registry Number)</p> <p>cm² Square Centimetres</p> <p>CO₂ Carbon Dioxide</p> <p>COD Chemical Oxygen Demand</p> <p>deg C (°C) Degrees Celcius</p> <p>EPA (New Zealand) Environmental Protection Authority of New Zealand</p> <p>deg F (°F) Degrees Farenheit</p> <p>g Grams</p> <p>g/cm³ Grams per Cubic Centimetre</p> <p>g/l Grams per Litre</p> <p>HSNO Hazardous Substance and New Organism</p> <p>IDLH Immediately Dangerous to Life and Health</p> <p>immiscible Liquids are insoluable in each other.</p> <p>inHg Inch of Mercury</p> <p>inH₂O Inch of Water</p> <p>K Kelvin</p> <p>kg Kilogram</p> <p>kg/m³ Kilograms per Cubic Metre</p> <p>lb Pound</p> <p>LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.</p> <p>LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.</p> <p>ltr or L Litre</p> <p>m³ Cubic Metre</p>

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight