

Section-1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the substance/preparation:

Commercial name: DI ETHYLENE GLYCOL (DEG)

Chemical name: DI ETHYLENE GLYCOL (DEG) C₄-H₁₀-O₃

Synonyms: diethylene glycol, glycol ethyl ether, beta, beta'-dihydroxydiethyl ether, 1, 5-dihydroxy-3-oxapentane, bis(2-hydroxyethyl)ether, brecolane NDG, deactivator E, dicol, digenos, diglycol, digol, dissolvent APV, ethylene diglycol

1.2 Use of the substance /preparation:

Used in Unsaturated Polyester Resins, Coolants, Pesticides, Rubber Compounding, Plasticizer, Polyurethane Foams, Textile Auxiliaries, Polyethylene Glycols, Paints, brake fluids, etc. Use in polyester resins and polyurethanes, antifreeze blends, triethylene glycol, morpholine, natural gas dehydration, and in solvents.

1.3 MANUFACTURER & SUPPLIER: Reliance Industries Limited

Emergency Coordination Centre contact details:

Hazira Mfg. Division Village Mora, Dist. Surat, Gujarat, India	SSM Office	+91 2612835050/+912612835056
Dahej Mfg. Division Po Dahej 392130 Taluka: Vagra Dist. Bharuch, Gujrat, India	SSM Office	+91 2641 282021 /+91 2641 282022
Jamnagar Mfg. Division Village Meghpar / Padana, Ta Lalpur, Dist. Jamnagar, Gujarat	CSM Office	+ 91 288 3533300 Mobile 6353212828 (Available 24*7)

SSM: Site Shift Manager

CSM: Complex Shift Manager

Section 2 – HAZARD IDENTIFICATION

2.1 Classification of the substance/preparation: Hazard class and category code.

GHS Category:

Health	Environmental	Physical
Acute Toxicity Category Inhalation: NA	Aquatic Toxicity – Category- NA	Flammable – Category NA

NA: Not available

Data reference: Official Journal of the European Union regarding EU GHS

GHS Label: GHS07: Warning.



Signal word: Warning. Details of statements:

Hazard Statements	H 302: Harmful if swallowed.
Precautionary Statement Prevention	P102: Keep out of reach of children. P103: Read label before use. P264: Wash exposed <i>parts of the body</i> thoroughly after handling. P270: Do not eat, drink or smoke when using this product.
Precautionary Statement Response	P101: If medical advice is needed, have product container or label at hand. P301+P317: IF SWALLOWED: Get medical help. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth.
Precautionary Statement Storage	No storage statements
Precautionary Statement Disposal	Follow local regulations P501: Dispose of contents and container to hazardous or special waste collection point

Data reference: Official Journal of the European Union regarding EU GHS

Hazard ratings:

NFPA HAZARD CODES	RATINGS SYSTEM
HEALTH: 1	0 = No Hazard
FLAMMABILITY: 1	1 = Slight Hazard
INSTABILITY: 0	2 = Moderate Hazard
	3 = Serious Hazard
	4 = Severe Hazard

Data Reference:

<https://pubchem.ncbi.nlm.nih.gov/compound/Diethylene-Glycol#section=NFPA-Hazard-Classification>

2.2 Information pertaining to particular dangers for human:

Irritating if inhaled, Irritating to eyes, skin and respiratory organs.

Ingestion Exposure: Abdominal pain. Nausea. Vomiting. Diarrhoea. Dizziness. Drowsiness. Confusion. Unconsciousness.

Adverse effect: Neurotoxin - Another CNS neurotoxin

Occupational hepatotoxin - Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.

Nephrotoxin - The chemical is potentially toxic to the kidneys in the occupational setting.

2.3 Information pertaining to particular dangers for the environment: NA

2.4 Other adverse effects:

Flammable and easily ignitable substance. Mixtures keep above ground and after ignition they spread fast into far distances. Ignition possible when exposed to hot surfaces, sparks, naked flames and by electrostatic discharges too.

Route of entry:

Those with history of lung diseases, or skin problems may be more susceptible to the effects of this substance. Those with history of lung diseases, or skin problems may be more susceptible to the effect of this material.

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	Yes	Yes	Yes	Yes

DATA REFERENCE: <https://pubchem.ncbi.nlm.nih.gov/compound/Diethylene-Glycol#section=Health-Hazards>

Health hazards:

Source	NTP listed?	IARC cancer review group?	OSHA Regulated?
Carcinogenicity	No	No	No

DATA REFERENCE: Toxic release inventory (TRI) basis of Occupational Safety and Health Administration (OSHA) carcinogen, National Toxicological program (NTP), International Agency for Research on Cancer (IARC), <https://pubchem.ncbi.nlm.nih.gov/compound/Diethylene-Glycol>

Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients / Hazardous	CAS No.	EC No.	Percentage
Di Ethylene Glycol/Yes	111-46-6	203-872-2	99.80% min.
Acidity (As Acetic Acid) /Yes	64-19-7	200-580-7	0.05% max.
Mono Ethylene Glycol/Yes	107-21-1	203-473-3	0.2% (wt.) max.
Tri Ethylene Glycol/Yes	112-27-6	203-953-2	0.2% (wt.) max.

Data reference: <https://pubchem.ncbi.nlm.nih.gov/compound/8117>

Section 4 – FIRST AID MEASURES

4.1 General advice

IMMEDIATE MEDICAL ATTENTION IS REQUIRED AFTER INHALATION OR AFTER SWALLOWING.

In case of health troubles or doubts, seek medical advice immediately and show this Material Safety Data Sheet.

4.2 Inhalation

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

4.3 Skin contact

In case of contact, immediately wash skin with copious amounts of water.

4.4 Eye contact

Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water. Assure adequate flushing of the eyes by separating the eyelids with fingers.

4.5 Swallowing

If patient is conscious and give one or two glasses of water to drink. Rinse mouth. Never give anything by mouth to an unconscious person, just put patient into a stabilized position. Seek medical advice immediately.

Data Reference:

<https://pubchem.ncbi.nlm.nih.gov/compound/DiethyleneGlycol#section=First-Aid-Measures>

Section 5 – FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media

Foam, powder, CO₂. Cool containers with water spray.

5.2 Extinguishing media to be avoided: Water.

5.3 Caution about specific dangers in case of fire and fire-fighting

procedures: Danger of violent reaction or explosion. Vapours may travel considerable far distances and cause subsequent ignition. Vapours is heavier than air, may cumulate along the ground and in enclosed spaces – danger of explosion. Do not empty into drains. When burning, it emits carbon monoxide, carbon dioxide and irritant fumes. Containers with the substance exposed to excessive heat may explode.

5.4 Special protective equipment for fire-fighters

Wear full protective fire-resistant clothing and self-contained breathing apparatus.

Section 6 –ACCIDENTAL RELEASE MEASURES

6.1 Person-related safety precautions

Isolate hazard area. Evacuate all unauthorized personnel not participating in rescue operations from the area. Avoid entry into danger area. Remove all possible sources of ignition. Stop traffic and switch off the motors of the engines. Do not smoke and do not handle with naked flame. Use explosion-proof lamps and non-sparking tools. Avoid contact with the substance. Apply recommended full protective personal equipment. When escaping from the contaminated area, wear mask with cartridge against organic vapors. In case of general average, evacuate personnel from danger area.

6.2 Precautions for protection of the environment

Prevent further leaks of substance.

6.3 Recommended methods for cleaning and disposal

Soak up residues with compatible porous material and forward for disposal in closed containers. Dispose off under valid legal waste regulations.

Section 7 –HANDLING AND STORAGE

7.1 Information for safe handling

Observe all fire-fighting measures (no smoking, do not handle with naked flame and remove all possible sources of ignition). Take precautionary measures against static discharges. Wear recommended personal protective equipment and observe instructions to prevent possible contact of substance with skin and eyes and inhalation. Avoid leak to environment.

7.2 Information for storage

Storerooms should meet the requirements for the fire safety of constructions and electrical facilities and should be in conformity with valid regulations. Store in cool, well-ventilated place with effective exhaust, away from heat and all sources of ignition. Store in tightly closed container. Do not store together with oxidizing agents. Take precautionary measures against static discharges. Avoid leak to environment.

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

Packaging material: Suitable material: Stainless steel. Mild steel. Carbon steel

Unsuitable material: Data not available

Container Advice: Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Storage stability: NA

Storage temperature: < 40 °C

The stated storage temperature should be noted.

Storage duration: 12 Months

7.3 Information for specific use: NA.

Section 8 –EXPOSURE CONTROL & PERSONAL PROTECTION

8.1 Occupational Exposure Limits:

Material	Source	Type	ppm	mg/m3	Notation
DI ETHYLENE GLYCOL(DEG)	ACGIH	TWA	NA	10	
	ACGIH	STEL	NA		
	ACGIH	SKIN_DES TWA	NA		
	NIOSH	IDLH	NA		
	OSHA	TWA	NA	10 mg/m ³ (total dust)	

NA: Data not available

DATA REFERENCE:

<https://pubchem.ncbi.nlm.nih.gov/compound/DiethyleneGlycol#section=Occupational-Exposure-Limits-%28OEL%29>

8.2 Occupational exposure controls

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

HANDS	EYES	BODY	RESPIRATORY
			

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-face piece respirator, airline hood, or full face piece self-contained breathing apparatus. protective mask with canister A (brown colored, protecting against organic vapors), self-contained breathing apparatus.

Eye protection: Use chemical safety goggles and/or a full-face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Hand protection: Wear gloves of impervious material.

Body protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Protective coverall antistatic design recommended, impervious when handling big amounts (nitrile rubber), sealed leather footwear (free from synthetic adhesives)

Hygiene Measures: Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3 Environmental Exposure Controls:

Proceed in accordance with valid air and water legislative regulations.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits. The engineering controls also need to keep vapor or

dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 9 –PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colourless Syrupy liquid
Odour	Odorless
Solubility in water	Miscible
Relative Density (H ₂ O=1)	1.12 at 20 °C
Boiling Point °C	244-245.8°C
Melting Point °C	-6.5-10.5 °C
Relative Vapour Density (Air=1)	3.66
Flash point °C	149°C (Closed cup)
Auto ignition °C	364°C
Vapour pressure (kPa) @ 20 °C	0.0003
Molecular weight	106.12
Explosive limits in air % by volume	LEL 1.6% UEL12.2%
pH	6 – 8 at 200 g/l at 20 °C
Viscosity cP @20 °C	37.2
Pour point	NA
Evaporation rate (water=1)	NA
Octanol/water partition coefficient log Kow	NA
% volatile	NA

NA: NOT AVAILABLE

DATA REFERENCE: <https://pubchem.ncbi.nlm.nih.gov/compound/Diethylene-Glycol>

Section 10 –CHEMICAL STABILITY AND REACTIVITY INFORMATION

10.1 Conditions to avoid: Prolonged exposure of containers or tank cars to heat or fire may cause the material to expand with possible container rupture

10.2 Material to avoid

AIR AND WATER REACTIONS:

Oxidizes readily in air to form unstable peroxides that may explode spontaneously [Bretherick, 1979 p.151-154, 164]. A mixture of liquid air and diethyl ether exploded spontaneously, [MCA Case History 616(1960)]. Water soluble.

A violent explosion occurred when lithium aluminum hydride was being used to dry diethylene glycol dimethyl ether. The ignition may have occurred due to the presence of large amounts of water or perhaps peroxide formed in the ether. About 75% of the ether had been removed when the explosion occurred, [MCA Case History 1494 (1968)].

REACTIVE GROUPS: Ethers, Very dangerous fire hazard when exposed to oxidizers

10.3 Hazardous decomposition products

Thermal decomposition generates carbon monoxide and carbon dioxide.

Polymerization: Polymerization occurs if heated in sunlight or presence of air; reaction is exothermic.

Section 11 –TOXICOLOGICAL INFORMATION

11.1 Acute effects:

Product(s) irritates eyes and skin. High vapor concentrations irritate respiratory system and eyes and may lead to fast coma and death.

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LD50	Oral	Rat	12565 mg/kg	Not applicable

Data Reference: <https://pubchem.ncbi.nlm.nih.gov/compound/Diethylene-Glycol#section=Acute-Effects>

11.2 Repeated dose toxicity: Chronic effects cause irritation

11.3 Sensitization: May cause skin irritation

11.4 CMR effects (carcinogenetic, mutagenicity, toxicity for reproduction)

Not a CMR

11.5 Toxicokinetic, metabolism, distribution: NA

Section 12 –ECOLOGICAL INFORMATION

12.1 Ecotoxicity data:

Parameter	Route	Species	Values	Exposure period
LC50	Inhalation	Daphnia magna	>10000 mg/L	24 Hours
LD	Oral	Human	1.000 mg/kg	N/A (Not Specified)
LC50	Inhalation	Rat	> 4.6 mg/l	3 h

12.2 Persistence and degradability: Substance is biodegradable

12.3 Bioaccumulative potential: NA

12.4 Results of PBT assessment Persistence and Degradation: NA

12.5 Other adverse effects: NA

Environmental Fate: Di Ethylene Glycol is expected to have high mobility in soil, Volatilization from water surfaces is expected.

Section 13– DISPOSAL CONSIDERATION

13.1 Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

13.2 Recommended disposal methods for the substance / preparation

Product reuse or disposal in accordance with valid waste legislative regulations.

13.3 Recommended disposal methods for contaminated packaging

Product is transported in tank-vehicles.

13.4 Waste management measures that control exposure of humans and environment

Proceed in accordance with valid health, air and water legislative regulations.

13.5 Waste regulation: Follow local regulation.

Section 14– TRANSPORT INFORMATION

International Transport Regulation:

ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)

The product is not regulated

14.1

Proper Shipping Name: Not classified

Hazard Class: Not classified

UN Number: Not classified

Emergency Action Code: Not classified

14.2 Special transport precautionary measures

Not applicable

Section 15– REGULATORY INFORMATION

MSDS format on a 16 Section based on guidance provided in:

Indian Regulation:

Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989.
The Factories Act 1948

International Regulations:

European SDS Directive
ANSI MSDS Standard
ISO 11014-1 1994
WHMIS Requirements

United States

Hazard Communication Standard

Canada

Hazardous Products Act and Controlled Products Regulations

Europe

Dangerous Substance and Preparations Directives

Australia

National Model Regulations for the Control of Workplace Hazardous Substances

**The Globally Harmonized System of Classification and Labeling of Chemicals
endorsed by The UN Economic and Social Council**

*Risk phrases: R22 Harmful if swallowed.

*Safety phrases: S2 Keep out of reach of children, S46 If swallowed, seek medical advice immediately and show the container or label.

*These standard risk and safety phrases for use when interpreting Material Safety data Sheets are derived from the European Union Regulation, CHIP Regulations - Chemicals (Hazard Information and Packaging for Supply). They are required to be used in Materials Safety Data Sheets to identify potential hazards and offer safe handling advice.

Section 16 – OTHER INFORMATION

Training Instructions:

Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.

Tremcard details/Reference: Refer Section 14

Local bodies involved (Applicable only with in India): Local District Authorities and Local Crisis Group

Sources of data used to compile the Material Safety Data Sheet

Data Compilation Reference: National Institute for Occupational Safety and Health guide to chemical hazards and International Chemical Safety Cards (WHO/IPCS/ILO) and <https://www.cdc.gov/niosh/npg/npgd0049.html>.

Data reference: Official Journal of the European Union regarding EU GHS

MSDS Revision Status:

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Sep. 01, 2011	Section 4 (4.3)	Sep. 01, 2009
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Sep. 01, 2026	Section-1.3/ 2.1/ 2.2/ 2.4/ 4.5/ 7.2/ 8.1/ 8.2/ 9.0/ 12.1	Aug. 01, 2022

This MSDS is issued by the Centre for HSE Excellence, Reliance Industries Limited

Contact Details: For any enquiry/comment regarding this Material Safety Data Sheet, kindly contact the Centre for HSE Excellence at HSE.ExcellenceCentre@ril.com

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