

DIETHYLENE GLYCOL (DEG)

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

DIETHYLENE GLYCOL (DEG)
2,2'-Oxydiethanol; DEG
CAS: 111-46-6

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Industrial solvent, humectant, plasticizer intermediate, component of hydraulic brake fluids, resins and polyester production. For industrial use only. NOT for use in, or as a component of, food, pharmaceutical, or consumer products – ingestion is highly toxic and has been implicated in fatal mass-poisoning incidents from adulterated products.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
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GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Acute Tox. 4	Acute oral toxicity, Category 4, H302
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2.2 GHS label elements, including precautionary statements:

GHS: Warning

Hazard statements:

H302 – Harmful if swallowed.

Precautionary statements:

P264: Wash exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330: Rinse mouth.
P501: Dispose of contents/container in accordance with local regulations.

2.3 Other hazards which do not result in classification:

Ingestion causes severe, potentially fatal, toxicity (metabolic acidosis, renal and CNS damage) at doses well below the Acute Tox. 4 cut-off – treat any suspected ingestion as a medical emergency regardless of formal classification. Never use to adulterate or substitute in consumer, food or pharmaceutical products.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Diethylene Glycol
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 111-46-6	Diethylene Glycol — Acute Tox. 4: H302 – Warning	≥99%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance immediately, showing the SDS of this product.

By inhalation:

Remove the affected person to fresh air. Seek medical attention if discomfort persists.

By skin contact:

Wash skin thoroughly with soap and water.

By eye contact:

Rinse eyes thoroughly with water for several minutes. Seek medical attention if irritation persists.

By ingestion/aspiration:

Do NOT induce vomiting. Rinse mouth with water. Seek IMMEDIATE medical attention/poison-centre advice even if the person appears well – DEG poisoning has a delayed onset (renal failure, metabolic acidosis, CNS effects) and specific antidotal treatment (e.g. fomepizole/ethanol, haemodialysis) may be required.

4.2 Most important symptoms/effects, acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Ingestion is a medical emergency. Obtain specialist toxicological advice promptly; do not wait for symptoms to appear as DEG toxicity is characteristically delayed by 24–72 hours.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:
Suitable: Water spray/fog, dry chemical powder, carbon dioxide (CO2), alcohol-resistant foam.
Unsuitable: None known.

5.2 Specific hazards arising from the chemical:
Combustible liquid with a high flash point; not readily ignitable under normal ambient conditions. Combustion produces irritant fumes.

5.3 Special protective actions for fire-fighters:
Evacuate all non-essential personnel. Intervention only by capable personnel who are trained and aware of the hazards of the product. In all cases wear self-contained breathing apparatus and full protective clothing.

Additional provisions:
If safe to do so, remove the exposed containers, or cool with large quantities of water spray from a safe/protected position. Approach from upwind. Contain fire-fighting water for later disposal; it must not enter drains or watercourses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel:
Eliminate all sources of ignition. Ensure adequate ventilation. Personal protection equipment must be used against potential contact with the spilled product (see section 8). Evacuate the area and keep out those who do not have protection.
For emergency responders:
Wear protective equipment as per section 8. Keep unprotected persons away.

6.2 Environmental precautions:
Avoid at all cost any type of spillage into an aqueous medium, drains or soil. Contain the product absorbed appropriately in hermetically sealed containers. Notify the relevant authority in case of exposure to the general public or the environment.

6.3 Methods and materials for containment and cleaning up:
Contain spillage with inert absorbent material. Collect into suitable closed containers for disposal. Slippery when spilt – a mild environmental/aquatic oxygen-demand hazard if released to water in quantity.

6.4 Reference to other sections:
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:
A. General precautions for safe use:
Avoid ingestion, skin and eye contact. Use in well-ventilated areas for heated processes. Never store or dispense from unlabelled/food-type containers.
B. Technical recommendations for the prevention of fires and explosions:
Keep away from strong oxidising agents and open flame during heated processing.
C. Technical recommendations on general occupational hygiene:
Do not eat, drink or smoke during the process; wash hands and exposed skin afterwards with suitable cleaning products.
D. Technical recommendations to prevent environmental risks:
Provide banded/contained storage. Avoid atmospheric emissions and discharge to drains. Follow the protective measures given in the exposure controls/personal protection section.

7.2 Conditions for safe storage, including any incompatibilities:
A. Specific storage requirements:

Minimum Temp.	0°C
Maximum Temp.	35°C
Maximum time	24 Months (unopened, original container)

B. General conditions for storage:
Store in a cool, dry, well-ventilated place in tightly closed, clearly labelled containers. Store away from foodstuffs and never in food-grade or unmarked vessels, given the serious ingestion hazard.

7.3 Specific end use(s):
Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:
Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Diethylene Glycol CAS: 111-46-6	Time Weighted average concentration (8 hrs)	Not formally established (ACGIH/OSHA) – Available on request; general good-practice limit as aerosol: 10 mg/m³ (as total particulate, industry guidance)

8.2 Appropriate engineering controls:
It is recommended to use localized extraction/general ventilation in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

B. Respiratory protection:
Not normally required under ambient conditions; use a mist/particulate respirator during heated/spray processing.

C. Specific protection for the hands:
Chemical-resistant gloves (nitrile rubber).

D. Eye and face protection:
Chemical safety goggles/panoramic glasses against splash/projections. Use if there is a risk of splashing.

E. Bodily protection:
Standard protective clothing appropriate to the task.

F. Additional emergency measures:
Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available.

Environmental exposure controls:
Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Liquid
Appearance	Clear, colourless, hygroscopic liquid

Color	Colourless
Odor	Practically odourless
Odour threshold	Not relevant
Volatility	
Boiling point at atmospheric pressure	245°C
Vapour pressure at 20°C	<0.01 kPa
Evaporation rate at 20°C	Very slow
Product Description	
Density / Relative density at 20°C	1.118 g/cm³
Dynamic viscosity at 20°C	~30 mPa·s
Concentration	≥99%
pH (aqueous solution)	5.5–7.5 (approx.)
Vapour density (air = 1)	3.7
Partition coefficient n-octanol/water (log Pow)	-1.47
Solubility in water at 20°C	Miscible (fully soluble)
Decomposition temperature	Not established
Melting point/freezing point	-10.5°C
Flammability	
Flash Point	143–146°C (closed cup)
Flammability (solid, gas)	Non-applicable (liquid)
Autoignition temperature	371°C
Lower / Upper flammability limit	Not established
Particle Characteristics	
Median equivalent diameter	Non-applicable (liquid)

* Not relevant/not established due to the nature of the product or grade.

9.2 Other information:

Explosive properties	Not classified as explosive
Oxidising properties	Not classified as oxidising
Corrosive to metals	Not corrosive to metals
Heat of combustion	Not established
Surface tension at 20°C	Not established
Refraction index	1.447

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

No particular reactivity hazard under normal conditions of use. Hygroscopic – absorbs moisture from air.

10.2 Chemical stability:

Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Stable, hygroscopic	Avoid strong heat	No particular hazard	Absorbs moisture (hygroscopic)

10.5 Incompatible materials:

Strong oxidising agents, strong acids.

10.6 Hazardous decomposition products:

Combustion produces carbon monoxide, carbon dioxide and irritant fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect):

Harmful if swallowed (H302). Ingestion of substantial quantities causes severe, potentially fatal toxicity: metabolic acidosis, acute kidney injury and CNS depression, typically with a delayed onset of 24–72 hours – DEG poisoning has caused fatal mass poisoning incidents when used to adulterate consumer products. Treat all suspected ingestion as a medical emergency.

B. Inhalation (acute effect):

Low vapour pressure limits inhalation exposure under normal conditions; mist from heated/spray processes may cause mild irritation.

C. Contact with skin and eyes (acute effect):

Not classified as an irritant to skin or eyes based on available data; prolonged/repeated skin contact may cause mild irritation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Not classified as carcinogenic, mutagenic or toxic to reproduction based on available human/regulatory data, although developmental effects have been observed in some animal studies at high doses.

E. Sensitizing effects:

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

Classification criteria are not met based on the harmonised classification; systemic effects (renal, CNS) are addressed under acute toxicity (H302) given the known severity of DEG poisoning on ingestion.

G. Specific target organ toxicity (STOT) – repeated exposure:

Classification criteria are not met based on available harmonised data; repeated overexposure by ingestion has been linked to renal effects in poisoning case reports.

H. Aspiration hazard:

Classification criteria are not met based on available data.

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Diethylene Glycol CAS: 111-46-6	LD50 oral: 12200 mg/kg (approx.)	Rat
	LD50 dermal: >11900 mg/kg (approx.)	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment based on available data; however, high oxygen demand can affect water bodies if released in bulk.

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Diethylene Glycol CAS: 111-46-6	LC50: >10000 mg/L (96h, approx.)	Non-applicable	Fish
	EC50: >10000 mg/L (48h, approx.)	Daphnia magna	Crustacean

12.2 Persistence and degradability:

Readily biodegradable.

12.3 Bioaccumulative potential:

Low bioaccumulation potential (log Pow -1.47).

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Low (high soil mobility, miscible with water)	Very low	Mobile	Mobile

12.5 Results of PBT and vPvB assessment:

Not classified as PBT or vPvB based on available data.

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Do not discharge to drains or watercourses in bulk (high BOD/COD load). Dispose of via a licensed waste-management contractor in accordance with local regulations.
Refer to national and local regulations on hazardous waste management (Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended).

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023, India: Motor Vehicles Act / CMVR):

14.1 UN number	Not regulated
14.2 UN proper shipping name	Not restricted for transport
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	Not regulated
14.2 UN proper shipping name	Not restricted for transport
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Marine pollutant	No
14.6 Special precautions for user	Not classified as a dangerous good for sea transport.
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	Not regulated
14.2 UN proper shipping name	Not restricted for transport
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
The Petroleum Act, 1934 and Petroleum Rules, 2002 (where applicable to flammable liquids)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

H302: Harmful if swallowed.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

The United Nations Economic Commission for Europe (UNECE); ECHA classification and labelling inventory; publicly available substance-specific safety data references.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer | TWA: Time-weighted average | STEL: Short-term exposure limit

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET