

SAFETY DATA SHEET

Preparation Date: 10/18/2017

Revision Date: 10/18/2017

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: D1027
Product Name: DIETHYLENE GLYCOL

Other means of identification

Synonyms: 2,2'-Dihydroxyethyl ether
 2,2'-Oxybisethanol
 2,2'-Oxydiethanol
 2,2'-Oxyethanol
 3-Oxa-1,5-pentanediol
 3-Oxapentane-1,5-diol
 beta,beta'-Dihydroxydiethyl ether
 Bis(2-hydroxyethyl) ether
 DEG
 Diglycol
 Dihydroxydiethyl ether
 Ethanol, 2,2'-oxydi-
 Ethylene diglycol

CAS #: 111-46-6
RTECS # ID5950000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Production of polyurethane and unsaturated polyester resins, triethylene glycol; textile softener; petroleum solvent extraction; dehydration of natural gas, in gas conditioning, plasticizers, and surfactants; solvent for nitrocellulose and many dyes and oils; humectant for tobacco, casein, synthetic sponges, paper products; in cork compositions, bookbinding adhesives, lacquers, dyeing assistant, cosmetics, antifreeze solutions, for water seals for gas tank; lubricating and finishing agent for wool, worsted, cotton, rayon and silk; solvent for vat dyes; in composition corks, glues, gelatin, casein, and pastes to prevent drying out; as a constituent in brake fluids, lubricants, mold release agents, and inks; as a plasticizer for cork, adhesives, paper, packaging materials, and coatings; as an intermediate in the production of diethylene glycol dinitrate; and as an intermediate in the production of certain resins, morpholine, and diethylene glycol esters and ethers.

Uses advised against No information available

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000

Order Online At: <https://www.spectrumchemical.com>
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

Product code: D1027

Product name: DIETHYLENE
 GLYCOL

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2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Oral	Category 4
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Warning

Hazard statements

Harmful if swallowed

May cause respiratory irritation. May cause drowsiness or dizziness

May cause damage to organs through prolonged or repeated exposure



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Use only outdoors or in a well-ventilated area

Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

Get medical advice/attention if you feel unwell

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Rinse mouth

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Diethylene Glycol	111-46-6	100

4. FIRST AID MEASURES

First aid measures

- General Advice:** National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.
- Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops.
- Eye Contact:** Flush eyes with water for 15 minutes. Get medical attention if irritation occurs.
- Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

- Symptoms**
- Mild skin irritation
 - Mild eye irritation
 - May cause abdominal pain, nausea, vomiting, diarrhea
 - May cause digestive (gastrointestinal) tract irritation
 - May cause metabolic acidosis
 - May affect electrolyte balance
 - May cause hypocalcemia
 - Hyperkalemia
 - It may affect the kidneys
 - May affect the liver
 - May affect the blood
 - May affect the cardiovascular system
 - Weak, rapid pulse or rapid heart rate (Tachycardia)
 - Bradycardia
 - Dyspnea (Shortness of breath and difficulty breathing)
 - May cause cyanosis
 - Central nervous system effects
 - Headache
 - Dizziness
 - Drowsiness
 - Inhalation of high concentrations may cause loss of consciousness (anesthesia)
 - Inhalation of high concentrations may cause anesthetic effects
 - Convulsions

Indication of any immediate medical attention and special treatment needed

- Notes to Physician:** Support vital functions. Correct for dehydration and shock. Manage fluid balance. Correct metabolic acidosis and take frequent measurement of the acid/base status. In addition to correcting or treating for metabolic acidosis, the currently recommended medical management of diethylene glycol poisoning includes the elimination of toxic metabolite 2-hydroxyethoxyacetic acid (HEAA). This may be achieved by the following methods:1. Administer ethanol (orally or intravenously) or fomepizole (4-methylpyrazole or Anitzol) therapy (intravenously) as an antidote to inhibit the formation of toxic metabolites.Hemodialysis maybe avoided If patients are diagnosed and treated early with the above methods, and ethanol or fomepizole therapy is effective, and metabolic acidosis has been corrected. However, once severe acidosis and renal failure have occurred, hemodialysis is necessary to effectively remove diethylene glycol and toxic metabolite and correcting metabolic acidosis.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of

contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO₂). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide.

Specific hazards: May be combustible at high temperatures. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth).

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe vapors or spray mist. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:

Oxidizing agents
Sodium hydroxide
Acids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Diethylene Glycol	111-46-6	None	None	None	10 mg/m ³ TWA

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Diethylene Glycol	111-46-6	None	None	None	None

Australia and Mexico

Components	CAS-No.	Australia	Mexico
Diethylene Glycol	111-46-6	23 ppm TWA 100 mg/m ³ TWA	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Long sleeved clothing
Chemical resistant apron
Gloves

Respiratory protection: Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures:

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid	Appearance: Syrupy.	Color: Clear. Colorless.
Odor: None.	Taste Sweet.	Formula: C4-H10-O3
Molecular/Formula weight: 106.12	Flammability: No information available	Flash point (°C): 111
Flashpoint (°C/°F): 124 °C/255.2 °F 137.78-143.3 °C/280-290 °F	Flash Point Tested according to: Closed cup Open cup	Autoignition Temperature (°C/°F): 228.89 °C/444 °F
Lower Explosion Limit (%): 1.6%	Upper Explosion Limit (%): 10.8%	Melting point/range(°C/°F): -10.4 °C/14 °F
Decomposition temperature(°C/°F): No information available	Boiling point/range(°C/°F): 245-246 °C/473-475 °F	Bulk density: No information available
Density (g/cm3): No information available	Specific gravity: 1.1197 @ 15 °C 1.115-1.119 at 20-25 °C	pH: No information available
Vapor pressure @ 20°C (kPa): <0	Evaporation rate: No information available	Vapor density: 3.66
VOC content (g/L): No information available	Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): log Kow = -1.47
Viscosity: No information available	Miscibility: Miscible with water Miscible with alcohol Miscible with Ether Miscible with Acetone Immiscible with toluene Immiscible with petroleum	Solubility: Soluble in Ethanol Soluble in Ether Soluble in Chloroform Insoluble in Benzene Insoluble in Carbon tetrachloride

10. STABILITY AND REACTIVITY

Reactivity

Reactive with oxidizing agents
Reactive with acids

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Exposure to moist air. Exposure to moisture. Incompatible materials.

Incompatible Materials: Oxidizing agents

Sodium hydroxide
Acids

Hazardous decomposition products:

Carbon monoxide. Carbon dioxide.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Skin. Eyes. Ingestion. Inhalation.

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document

Component Information

Diethylene Glycol
CAS-No. 111-46-6

LD50/oral/rat = 12565 mg/kg Oral LD50 Rat

LD50/oral/mouse = >20000 mg/kg

LD50/dermal/rabbit = 11890 mg/kg Dermal LD50Rabbit

LD50/dermal/rat = No information available

LC50/inhalation/rat = No information available

LC50/inhalation/mouse = No information available

Other LD50 or LC50 information = 2300 mg/kg Lowest Lethal Dose (LDL) human
1700 mg/kg Lowest Toxic Dose (TDL) human

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = No information available

LD50/oral/mouse =

Value - Acute Tox Oral = No information available

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat

VALUE-Vapor = No information available

VALUE-Gas = No information available

VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available

VALUE - Gas = No information available

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VALUE - Dust/Mist = No information available

Symptoms

- Skin Contact:** It may cause mild skin irritation. It may be absorbed through the skin.
- Eye Contact:** May cause eye irritation. May cause slight or mild eye irritation.
- Inhalation** May cause irritation of respiratory tract. Inhalation of high concentrations of vapors may cause dizziness or suffocation. May cause central nervous system effects, central nervous system depression. Inhalation of high concentrations of vapor may cause anesthetic effects. Can cause dyspnea (shortness of breath and difficulty breathing). May cause cyanosis.
- Ingestion** Harmful if swallowed. It is rapidly absorbed from the gastrointestinal tract. Oral toxicity is expected to be moderate in humans though tests with animals show a lower degree of toxicity. May cause digestive (gastrointestinal) tract irritation. May cause abdominal pain, nausea, vomiting, diarrhea. May cause dehydration. May cause metabolic acidosis. May affect electrolytes. May cause hypocalcemia. May cause hyperkalemia. May affect respiration (dyspnea, respiratory stimulation). May affect liver. May affect urinary system (kidneys). May cause central nervous system effects (affect behavior). May affect behavior/central nervous system (general anesthetic). May cause muscle weakness. May affect behavior/central nervous system (somnolence). It may affect behavior/central nervous system (dizziness, excitement). May cause headache. May affect behavior/central nervous system (convulsions/seizures). May affect the cardiovascular system (slow heart rate (bradycardia)). May affect the cardiovascular system (tachycardia). It may affect the blood (leukocytosis). May cause cyanosis. May affect respiration (dyspnea, respiratory depression). May cause hypoglycemia (low blood sugar).
- Aspiration hazard** No information available.

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

- Chronic Toxicity** Prolonged or repeated inhalation may cause headache. Prolonged or repeated inhalation may affect the brain. Prolonged or repeated inhalation may cause central nervous system effects. Prolonged or repeated inhalation may affect respiration. Chronic exposure may affect the liver and kidneys.
- Sensitization:** No information available.
- Mutagenic Effects:** No information available
- Carcinogenic effects:** Not classifiable as a human carcinogen.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Diethylene Glycol	111-46-6	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: May cause adverse reproductive effects based on animal data
Developmental Effects: May cause adverse developmental effects based on animal data
Teratogenic Effects: May cause birth defects (teratogenic effects) based on animal test data
 There are no adequate and well-controlled studies in humans

Specific Target Organ Toxicity

STOT - single exposure central nervous system.
STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.
Target Organs: Kidneys. Central nervous system. Brain. Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Diethylene Glycol - 111-46-6

Freshwater Fish Species Data: 75200 mg/L LC50 Pimephales promelas 96 h flow-through 1
Water Flea Data: 84000 mg/L EC50 Daphnia magna 48 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
 Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
 Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Diethylene Glycol	111-46-6	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Class No information available
Packing group: No information available
Emergency Response Guide Number No information available
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions No Information available

Symbol(s): No information available
Description: No information available

TDG (Canada)

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant Description: No Information available

ADR

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available

IMO / IMDG

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant No information available

RID

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

ICAO

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions No information available

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
<i>Diethylene Glycol</i>	111-46-6	Present	Present KE-27694	Present	Present (2)-415,(2)-29 79	Present	Present	Present 203-872-2

U.S. Regulations

Diethylene Glycol

Pennsylvania RTK: Present

Minnesota - Hazardous Substance List: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Diethylene Glycol	111-46-6	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Diethylene Glycol	111-46-6	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Diethylene Glycol	111-46-6	Not Applicable	Not Applicable

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information:

Component
Diethylene Glycol
111-46-6 (100)

WHMIS 2015 Hazard Classification
Acute toxicity - Oral - Category 4: H302 Harmful if swallowed.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class

D1B Toxic materials

Components
Diethylene Glycol

WHMIS 1988
D1B

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Product code: D1027

Product name: DIETHYLENE
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Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Diethylene Glycol	111-46-6	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Diethylene Glycol	111-46-6	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Diethylene Glycol	111-46-6	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Diethylene Glycol	111-46-6	Acute toxicity - Oral - Acute Tox. 4: H302 Harmful if swallowed. (Minimum classification)603-140-00-6

EU - CLP (1272/2008)

R-phrase(s)

not determined (not applicable)

S -phrase(s)

none

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Diethylene Glycol	111-46-6	Xn; R22	No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

None.

16. OTHER INFORMATION

Preparation Date: 10/18/2017
Revision Date: 10/18/2017
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet