



Effective Date: 10/09/02

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT & COMPANY INFORMATION

#### PRODUCT IDENTITY: Diethylene Glycol

Chemical Name: Diethylene Glycol  
Chemical Family: Glycol  
Synonyms: DEG, Diglycol; Ethylene diglycol; Glycol ether; Glycol Ethyl Ether  
Chemical Formula:  $C_4H_{10}O_3$   
Forumula Wt: 106.14

OLD WORLD INDUSTRIES, INC.  
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### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>MATERIAL</u>	<u>CAS#</u>	<u>% BY WT</u>
Diethylene Glycol*	111-46-6	99%

\*OSHA hazardous according to 29 CFR 1910.1200

Exposure Guidelines: AIHA WEEL is 50 ppm (total); 10 mg/m<sup>3</sup> (aerosol only)

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Product Description: Diethylene glycol is a clear, colorless, mobile, syrupy liquid; essentially odorless.

Health Hazards: Inhalation of vapors or mists may cause nausea and headaches. Ingestion of large quantities may be harmful or, in extreme cases, fatal.

First Aid: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. If ingested, DO NOT induce vomiting. Seek medical assistance.

Fire Fighting: CAUTION! Foam or water can cause frothing.

**HAZARD RATING SYSTEM**

**NPFA: HEALTH: 1    FLAMMABILITY: 1    REACTIVITY: 0**

KEY: 0 - Minimal, 1 - Slight, 2 - Moderate, 3 - Serious, 4 - Severe

**POTENTIAL HEALTH EFFECTS**

Routes of Exposure: Skin, eyes, inhalation, ingestion.

Signs and Symptoms of Exposure: Incidental ingestion of small amounts of diethylene glycol is not likely to cause any significant health effects. Ingestion of large quantities may result in nausea and vomiting. Changes in urine output appearance and abdominal or back pain are evidence of severe poisoning. Human deaths have occurred at an average ingested amount of 1.2 g/kg.

**IMMEDIATE EFFECTS**

Skin: Not a skin irritant. Prolonged or repeated exposure is not likely to cause significant skin irritation.

Eyes: May be mildly irritating to eyes.

Inhalation: Harmful health effects are not expected from exposure to vapor generated at ambient temperatures. Vapor or mist from heated material may cause nausea and headaches.

Ingestion: Ingestion of large quantities may be harmful, and in extreme cases, may be fatal. Can cause kidney and liver damage.

**DELAYED/LONG TERM EFFECTS**

Carcinogenic: Based on data from long-term animal studies, diethylene glycol is not expected to pose a carcinogenic risk to humans.

Mutagenic: Not mutagenic.

Teratogenic: Not teratogenic. Diethylene glycol has not interfered with reproduction in animal studies.

Target Organ Effects: Kidney, liver, central nervous system.

Medical Conditions Aggravated by Exposure:  
Overexposure is unlikely to aggravate existing medical conditions.

#### **4. FIRST AID MEASURES**

***Ensure physician has access to this MSDS.***

Skin: Wash with soap and water after handling material. If persistent irritation develops, get medical attention.

Eyes: Immediately flush eyes with large amounts of water for 15 minutes, lifting lower and upper lids. Get medical attention as soon as possible. Contact lenses should never be worn when working with this chemical.

Inhalation: If inhaled, immediately remove victim to fresh air and call **emergency medical care**. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: If large quantities of this material are swallowed, immediately **call physician immediately. DO NOT** induce vomiting. Never give anything by mouth or induce vomiting in an unconscious person.

#### **5. FIRE FIGHTING MEASURES**

##### **FIRE & EXPLOSION HAZARD DATA**

Flammable Properties

Upper Explosive LMT: 10.6% by volume in air.

Lower Explosive LMT: 1.7% by volume in air.

Flashpoint (CC): 117.1 °C (242.6 °F)

Hazardous Products of Combustion:

Carbon monoxide.

Extinguishing Media: Use carbon dioxide or dry chemical for small fires; alcohol-type aqueous film-forming foam or water spray for large fires.

Fire Fighting Instructions: If the potential exists for exposure to vapors or products of combustion, wear complete personal protective equipment, including self-contained breathing apparatus with full face-piece operated in pressure demand or other positive pressure mode. Water spray can be used to reduce intensity of flames and to dilute spills to



## ***9. PHYSICAL AND CHEMICAL PROPERTIES***

Appearance:	Clear, colorless, mobile, syrupy liquid.
Odor:	Essentially odorless.
Physical State:	Liquid
Vapor Pressure:	<0.1 mm Hg @ 20°C (68°F)
Vapor Density (air = 1):	3.66 (Air = 1 @ 20°C)
Boiling Point:	245 °C (473 °F) @ 760 mmHg
Freezing Point:	-8 °C (18 °F)
Solubility:	Complete in water.
Specific Gravity:	1.118 @ 20/20 °C
Molecular Weight:	106.1

## ***10. STABILITY AND REACTIVITY***

Chemical Stability:	Stable under normal conditions of use.
Conditions to Avoid:	Heat, sparks and open flames.
Incompatibility:	Sulfuric acid and other dehydrating agents; nitric acid; oxygen, hydrogen peroxide, perchloric acid and other strong oxidizing agents.
Hazardous Decomposition Products:	Carbon monoxide.
Hazardous Polymerization:	Will not occur.

## ***11. TOXICOLOGICAL INFORMATION***

Oral toxicity:	Human deaths have occurred at an average ingested dose of 1.2 g/kg; causes adverse effects on human kidneys and may cause liver damage.
Inhalation LC50:	Slightly toxic to rodents by inhalation.
Dermal LD50:	Diethylene glycol is not readily absorbed through intact skin. Slightly toxic to animals by skin absorption. Dermal LD50, rabbits: >2 g/kg.

Chronic toxicity:

A chronic dietary feeding study with rats showed mild kidney injury at 1% while concentrations of 2% and 4% caused more marked kidney injury.

Mutagenicity:

No evidence of mutagenicity in bacterial or mammalian cells.

Carcinogenicity: In a chronic dietary feeding study with rats fed diethylene glycol at 2% and 4% in the diet, some developed benign papillary tumors in the bladder. These have been attributed to the presence of calcium oxalate stones which cause mechanical irritation and not to a direct carcinogenic effect. This occurrence is not expected in humans. No evidence for carcinogenicity was found in a chronic skin-painting with diethylene glycol in mice.

Teratogenicity: Based upon animal studies, diethylene glycol does not produce reproductive or teratogenic effects in the absence of parental toxicity

## ***12. ECOLOGICAL INFORMATION***

Fathead minnow:	LC50 > 100 ppm (96h-static test)
Mosquito fish:	TLM > 32,000 ppm (96h)
Goldfish:	LC50 > 5,000 ppm (24h)
Guppy, <i>P. reticulata</i> :	LC50 = 61,072 ppm (7d)
Water flea, <i>D. manga</i> :	LC50 = 0.3-1ppm (96h-static test)
Algae Species:	
<i>S. capricornutum</i> :	No Growth Inhibition at 100 ppm (static test)
<i>M. aeruginosa</i> :	Threshold Growth Inhibition = 1700 ppm
<i>S. quadricauda</i> :	Threshold Growth Inhibition = 2700 ppm

### **ENVIRONMENTAL FATE**

Diethylene glycol will degrade at a moderate rate. Laboratory studies show that at least 10 days are required for degradation in river water.

## ***13. DISPOSAL CONSIDERATIONS***

All notification, clean-up and disposal should be carried out in accordance with federal, state and local regulations. Preferred methods of waste disposal are incineration or biological treatment in federal/state approved facility.

## ***14. TRANSPORT INFORMATION***

### **U.S. Department of Transportation**

Proper Shipping Name:	Diethylene Glycol
ID No.:	Not regulated
Hazard Class:	Not regulated
Packaging Group:	Not regulated
Label:	Not regulated

**15. REGULATORY INFORMATION**

RECEIPIENT MUST COMMUNICATE ALL PERTINENT INFORMATION HEREIN TO EMPLOYEES AND CUSTOMERS.

**STATE REGULATIONS**

The following chemicals associated with the product are subject to the right-to-know regulations in these states:

DIETHYLENE GLYCOL (111-46-6): PA, RI

**U.S. FEDERAL REGULATIONS**

We certify that all components are either on the TSCA inventory or qualify for an exemption.

SARA 313: No components listed.

**ENVIRONMENTAL:**

SARA 311/312  
Acute health----- Yes  
Chronic health----- Yes  
Fire----- No  
Sudden release of pressure----- No  
Reactive----- No

Clean Air Act, 1990, Section 112: not listed.

**INTERNATIONAL REGULATIONS**

Listed on the chemical inventories of the following countries: Australia, Canada, Europe (EINECS), Japan and Korea.

**16. OTHER INFORMATION**

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