

## MATERIAL SAFETY DATA SHEET

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Version 1.8

## Section 1 - Product and Company Information

Product Name	DI(ETHYLENE GLYCOL), 99%
Product Number	H26456
Brand	ALDRICH
Company	Sigma-Aldrich
Street Address	3050 Spruce Street
City, State, Zip, Country	SAINT LOUIS MO 63103 US
Technical Phone:	314 771 5765
Emergency Phone:	414 273 3850 Ext. 5996
Fax:	800 325 5052

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
DI(ETHYLENE GLYCOL)	111-46-6	No
Formula	C4H10O3	
Synonyms	Bis(2-hydroxyethyl) ether * Brecolane ndg * Deactivator E * DEG * Dicol * Diethylenglykol (Czech) * Diglycol * Dihydroxydiethyl ether * beta,beta'-Dihydroxydiethyl ether * 2,2'-Dihydroxyethyl ether * Dissolvant APV * Ethanol, 2,2'-oxydi- * Ethylene diglycol * 3-Oxapentane-1,5-diol * 3-Oxa-1,5-pentenediol * 2,2'-Oxybisethanol * 2,2'-Oxydiethanol * 2,2'-Oxyethanol * TL4N	
RTECS Number:	ID5950000	

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Harmful.

Harmful if swallowed.

Target organ(s): Liver. Kidneys.

## HMIS RATING

HEALTH: 1\*

FLAMMABILITY: 1

REACTIVITY: 1

## NFPA RATING

HEALTH: 1

FLAMMABILITY: 1

REACTIVITY: 1

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

#### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### INHALATION EXPOSURE

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

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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### Section 5 - Fire Fighting Measures

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#### FLASH POINT

253.4 °F    123 °C    Method: closed cup

#### EXPLOSION LIMITS

Lower: 2 %    Upper: 12.3 %

#### AUTOIGNITION TEMP

228 °C

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam. Water spray.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

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### Section 7 - Handling and Storage

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#### HANDLING

User Exposure: Avoid prolonged or repeated exposure. Do not breathe vapor. Avoid contact with eyes, skin, and clothing.

#### STORAGE

Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS

Hygroscopic.

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Section 8 - Exposure Controls / PPE

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ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	10 MG/M3
Poland		NDSch	-
Poland		NDSP	-

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Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Liquid	
Property	Value	At Temperature or Pressure
Molecular Weight	106.12 AMU	
pH	5 - 8	20 °C Concentration: 500 g/l
BP/BP Range	125 - 126 °C	11 mmHg
MP/MP Range	-10 °C	
Freezing Point	N/A	
Vapor Pressure	0.03 mmHg	
Vapor Density	2.14 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.114 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	< 0.05 %	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	38 Pas	20 °C
Surface Tension	48.5 mN/m	25 °C
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	253.4 °F 123 °C	Method: closed cup
Explosion Limits	Lower: 2 % Upper: 12.3 %	
Flammability	N/A	
Autoignition Temp	228 °C	
Refractive Index	1.446	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions to Avoid: Protect from moisture.

Materials to Avoid: Strong oxidizing agents, Strong acids.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Liver. Central nervous system.

### SIGNS AND SYMPTOMS OF EXPOSURE

Prolonged exposure can cause: Nausea, headache, and vomiting.

Weakness. Confusion. Dizziness. Damage to the kidneys.

Unconsciousness. Convulsions. Pulmonary edema. Effects may be delayed.

### TOXICITY DATA

Oral  
Human  
1000 mg/kg  
LDLO

Oral  
Rat  
12565 mg/kg  
LD50

Intraperitoneal  
Rat  
7700 MG/KG  
LD50

Subcutaneous  
Rat  
18800 MG/KG  
LD50

Intravenous  
Rat  
6565 MG/KG  
LD50

Oral  
Mouse

23700 mg/kg

LD50

Remarks: Behavioral:General anesthetic. Behavioral:Muscle weakness. Liver:Other changes.

Intraperitoneal

Mouse

9719 MG/KG

LD50

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema. Kidney, Ureter, Bladder:Changes in both tubules and glomeruli. Blood:Changes in spleen.

Oral

Dog

9000 mg/kg

LD50

Oral

Cat

3300 mg/kg

LD50

Oral

Rabbit

4400 mg/kg

LD50

Remarks: Behavioral:Coma. Lungs, Thorax, or Respiration:Dyspnea. Nutritional and Gross Metabolic:Changes in:Body temperature decrease.

Skin

Rabbit

11890 mg/kg

LD50

Oral

Guinea pig

7800 mg/kg

LD50

Remarks: Behavioral:General anesthetic. Behavioral:Muscle weakness. Liver:Other changes.

#### IRRITATION DATA

Skin

Human

112 mg

3D

I

Remarks: Mild irritation effect

Skin

Rabbit

500 mg

Remarks: Mild irritation effect

Eyes

Rabbit

50 mg

Remarks: Mild irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Species: Rat  
Route of Application: Oral  
Dose: 890 GM/KG  
Exposure Time: 53W  
Frequency: C  
Result: Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Tumors. Kidney, Ureter, Bladder: Changes in both tubules and glomeruli.

Species: Rat  
Route of Application: Subcutaneous  
Dose: 2500 MG/KG  
Exposure Time: 82W  
Frequency: I  
Result: Tumorigenic: Neoplastic by RTECS criteria. Blood: Tumors.

Species: Mouse  
Route of Application: Oral  
Dose: 420 MG/KG  
Exposure Time: 22W  
Frequency: I  
Result: Tumorigenic: Neoplastic by RTECS criteria. Blood: Tumors.

Species: Mouse  
Route of Application: Inhalation  
Dose: 4 MG/M3  
Exposure Time: 2H/30W-  
Frequency: I  
Result: Tumorigenic: Carcinogenic by RTECS criteria. Blood: Lymphomas including Hodgkin's disease. Skin and Appendages: Other: Tumors.

Species: Mouse  
Route of Application: Subcutaneous  
Dose: 1250 MG/KG  
Exposure Time: 66W  
Frequency: I  
Result: Tumorigenic: Neoplastic by RTECS criteria. Blood: Tumors.

Species: Rat  
Route of Application: Oral  
Dose: 1752 GM/KG  
Exposure Time: 2Y  
Frequency: C  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Kidney, Ureter, Bladder: Tumors.

Species: Rat  
Route of Application: Oral  
Dose: 584 GM/KG  
Exposure Time: 2Y  
Frequency: C  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Kidney, Ureter, Bladder: Tumors.

Species: Rat  
Route of Application: Oral  
Dose: 840 MG/KG  
Exposure Time: 81W  
Frequency: I

Result: Tumorigenic:Neoplastic by RTECS criteria. Blood:Tumors.

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 50 GM/KG  
Route of Application: Oral  
Exposure Time: (1-20D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 76420 MG/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 38212 MG/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 100 GM/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Mouse  
Dose: 343 GM/KG  
Route of Application: Oral  
Exposure Time: (MULTIGENERATION)  
Result: Maternal Effects: Parturition. Effects on Embryo or Fetus: Fetal death. Effects on Newborn: Sex ratio.

Species: Mouse  
Dose: 343 GM/KG  
Route of Application: Oral  
Exposure Time: (MULTIGENERATION)  
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ). Effects on Newborn: Other postnatal measures or effects.

Species: Mouse  
Dose: 50 GM/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Maternal Effects: Other effects.

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#### Section 12 - Ecological Information

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#### ACUTE ECOTOXICITY TESTS

Test Type: EC50 Daphnia  
Species: Daphnia magna

Time: 24 h  
Value: > 10,000 mg/l

Test Type: LC50 Fish  
Species: Leuciscus idus  
Time: 48 h  
Value: > 1,000 mg/l

Test Type: LC50 Fish  
Species: Carassius auratus (Goldfish)  
Time: 24 h  
Value: 5,000 mg/l

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### Section 13 - Disposal Considerations

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#### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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### Section 14 - Transport Information

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#### DOT

Proper Shipping Name: None  
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

#### IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

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### Section 15 - Regulatory Information

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#### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn  
Indication of Danger: Harmful.  
R: 22  
Risk Statements: Harmful if swallowed.  
S: 46  
Safety Statements: If swallowed, seek medical advice immediately and show this container or label.

#### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.  
Risk Statements: Harmful if swallowed.  
Safety Statements: If swallowed, seek medical advice immediately and show this container or label.  
US Statements: Target organ(s): Liver. Kidneys.

#### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No  
TSCA INVENTORY ITEM: Yes

#### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.  
DSL: Yes  
NDSL: No



DISCLAIMER

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WARRANTY

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