

# MATERIAL SAFETY DATA SHEET

## Diethanolamine

<b>MSDS Name:</b>	Diethanolamine, 99%
<b>Synonyms:</b>	2,2'-Iminodiethanol

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### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#
111-42-2	Diethanolamine	99%	203-868-0

<b>Hazard Symbols:</b>	XN
	
<b>Risk Phrases:</b>	22 38 41 48/22

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

*Harmful if swallowed. Irritating to skin. Risk of serious damage to eyes. Harmful: danger of serious damage to health by prolonged exposure if swallowed. Moisture- sensitive.*

#### Potential Health Effects

<b>Eye:</b>	Causes severe eye irritation. May result in corneal injury. May cause eye burns.
<b>Skin:</b>	Causes mild skin irritation. May be absorbed through the skin. Causes redness and pain.
<b>Ingestion:</b>	Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause headache.
<b>Inhalation:</b>	May cause respiratory tract irritation. May cause severe throat irritation. Inhalation of vapors will cause coughing or breathing difficulty.
<b>Chronic:</b>	Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage.

### Section 4 - First Aid Measures

<b>Eyes:</b>	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Do NOT allow victim to rub eyes or keep eyes closed.
<b>Skin:</b>	Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
<b>Ingestion:</b>	Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
<b>Inhalation:</b>	Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
<b>Notes to Physician:</b>	

## Section 5. - Fire Fighting Measures

<b>General Information:</b>	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
<b>Extinguishing Media:</b>	Use foam, dry chemical, or carbon dioxide.

## Section 6. - Accidental Release Measures

<b>General Information:</b>	Use proper personal protective equipment as indicated in Section 8.
<b>Spills/Leaks:</b>	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

## Section 7. - Handling and Storage

<b>Handling:</b>	Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.
<b>Storage:</b>	Store in a cool, dry place. Store in a tightly closed container.

## Section 8. - Exposure Controls, Personal Protection

<b>Engineering Controls:</b>	
	Use adequate ventilation to keep airborne concentrations low.
<b>Exposure Limits</b>	CAS# 111-42-2:
	Belgium - TWA: 0.46 ppm VLE; 2 mg/m3 VLE
	France - VME: 3 ppm VME; 15 mg/m3 VME
	Germany: 15 mg/m3 TWA (inhalable fraction) Germany: skin notation
	Malaysia: 0.46 ppm TWA; 2 mg/m3 TWA
	Netherlands: 0.46 ppm MAC; 2 mg/m3 MAC
	Spain: 0.46 ppm VLA-ED; 2 mg/m3 VLA-ED
<b>Personal Protective Equipment</b>	
<b>Eyes:</b>	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
<b>Skin:</b>	Wear appropriate protective gloves to prevent skin exposure.
<b>Clothing:</b>	Wear appropriate protective clothing to prevent skin exposure.
<b>Respirators:</b>	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

<b>Physical State:</b>	Clear liquid
<b>Color:</b>	colorless, oily - APHA: 15 max
<b>Odor:</b>	ammonia-like - mild odor
<b>pH:</b>	11 @ 100 g/l aq soln (20°C)
<b>Vapor Pressure:</b>	< .01 mm Hg @20 deg C
<b>Viscosity:</b>	352 mPas 30 deg C
<b>Boiling Point:</b>	268 deg C @ 760 mmHg ( 514.40°F)
<b>Freezing/Melting Point:</b>	27 - 30 deg C
<b>Autoignition Temperature:</b>	370 deg C ( 698.00 deg F)
<b>Flash Point:</b>	179 deg C ( 354.20 deg F)

<b>Explosion Limits: Lower:</b>	2.1 vol %
<b>Explosion Limits: Upper:</b>	10.6 vol %
<b>Decomposition Temperature:</b>	
<b>Solubility in water:</b>	miscible
<b>Specific Gravity/Density:</b>	0.874 g/cm <sup>3</sup>
<b>Molecular Formula:</b>	C <sub>4</sub> H <sub>11</sub> NO <sub>2</sub>
<b>Molecular Weight:</b>	105.14

## Section 10 - Stability and Reactivity

<b>Chemical Stability:</b>	Stable under normal temperatures and pressures.
<b>Conditions to Avoid:</b>	Incompatible materials, exposure to moist air or water.
<b>Incompatibilities with Other Materials</b>	Oxidizing agents, acids, aluminum, copper, copper alloys, galvanized iron, zinc.
<b>Hazardous Decomposition Products</b>	Nitrogen oxides, carbon monoxide, carbon dioxide.
<b>Hazardous Polymerization</b>	Will not occur.

## Section 11 - Toxicological Information

<b>RTECS#:</b>	CAS# 111-42-2: KL2975000
<b>LD50/LC50:</b>	RTECS: <b>CAS# 111-42-2:</b> Dermal, guinea pig: LD50 = 11900 uL/kg; Draize test, rabbit, eye: 5500 mg Severe; Draize test, rabbit, eye: 750 ug/24H Severe; Draize test, rabbit, skin: 500 mg/24H Mild; Oral, mouse: LD50 = 3300 mg/kg; Oral, rabbit: LD50 = 2200 mg/kg; Oral, rat: LD50 = 620 microL/kg; Skin, rabbit: LD50 = 7640 microL/kg; Other:
<b>Carcinogenicity:</b>	Diethanolamine - IARC: Group 3 (not classifiable)
<b>Other:</b>	See actual entry in RTECS for complete information. Mutagenicity: Ames-test: negative.

## Section 12 - Ecological Information

<b>Ecotoxicity:</b>	Fish: Pimephals prome: LC50: 1460 mg/l; 96 H; Daphnia: EC50: 55 mg/l; 48 H; Algae: EC50: 75 mg/l; 72 H;
<b>Other:</b>	Readily biodegradable. log Pow: -2.18

## Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

## Section 14 - Transport Information

	IATA	IMO	RID/ADR
<b>Shipping Name:</b>	Not regulated as a hazardous material	Not regulated as a hazardous material	Not regulated.
<b>Hazard Class:</b>			
<b>UN Number:</b>			
<b>Packing Group:</b>			

USA RQ: CAS# 111-42-2: 100 lb final RQ; 45.4 kg final RQ

## Section 15 - Regulatory Information

### European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

#### Risk Phrases:

- R 22 Harmful if swallowed.
- R 38 Irritating to skin.
- R 41 Risk of serious damage to eyes.
- R 48/22 Harmful : danger of serious damage to health by prolonged exposure if swallowed.

#### Safety Phrases:

- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S 46 If swallowed, seek medical advice immediately and show this container or label.

#### WGK (Water Danger/Protection)

- CAS# 111-42-2: 1

#### Canada

- CAS# 111-42-2 is listed on Canada's DSL List

#### US Federal

- TSCA
- CAS# 111-42-2 is listed on the TSCA Inventory.

## Section 16 - Other Information

**MSDS Creation Date:**

July 22, 2015

**Revision #0 Date**

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