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megaloid.ca



**Responsible Care®**  
Our commitment to sustainability.



**RDC**  
Responsible Distribution Canada  
Leaders in Chemicals and Ingredients

## 1. IDENTIFICATION

**Name:** Diethanolamine, 99%

**Synonyms:** N,N-diethanolamine; 2,2'-dihydroxydiethylamine

**Product Uses:** Removal of CO<sub>2</sub> & H<sub>2</sub>S from natural gas, biogas, syngas, etc; corrosion inhibitor; additive in detergent formulations, emulsifiers, defoamers and various resins

**Supplier Identifier:** Megaloid Laboratories Limited  
5515 North Service Road # 306  
Burlington, ON L7L 6G4

**EMERGENCY INFORMATION:** Call CHEMTREC - (800) 424-9300  
(CCN# 693764)

## 2. HAZARD IDENTIFICATION

GHS Class (category)	oral, acute (4)	skin irritant (2)	eye corrosion (1)	STOT (2)
<b>Signal Word</b>	<b>DANGER</b>			
<b>Hazard Statements</b>	Harmful if swallowed (H302)	Causes skin irritation (H315)	Causes serious eye damage (318)	May cause damage to liver or kidneys on oral or skin exposure (H373)

### Hazardous Pictograms



### GHS Precautionary Statements for Labelling

**Prevention:**

**P260** Do not breathe dust or vapours

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<b>P264</b>	<i>Wash hands thoroughly after handling.</i>
<b>P270</b>	<i>Do not eat, drink or smoke when using this product.</i>
<b>P280</b>	<i>Wear protective gloves/eye protection/face protection.</i>
<b>Response:</b>	
<b>P301 + P310</b>	<i>IF SWALLOWED: call a doctor if you feel unwell</i>
<b>P305 + P351 + P338</b>	<i>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</i>
<b>P337 + P313</b>	<i>If eye irritation persists: Get medical advice or attention.</i>
<b>P332, P313</b>	<i>If skin irritation occurs: Get medical advice or attention</i>
<b>P362, P364</b>	<i>Take off contaminated clothing and wash before reuse.</i>
<b>P304 + P340</b>	<i>IF INHALED: Remove person to fresh air and keep comfortable for breathing.</i>
<b>Storage:</b>	
<b>P403 + P233</b>	<i>Store in a well-ventilated place. Keep container tightly closed.</i>
<b>P405</b>	<i>Store locked up.</i>
<b>Disposal:</b>	
<b>P501</b>	<i>Dispose of contents and container in accordance with local, regional, national and international regulations.</i>

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<b>Chemical Name:</b>	<b>CAS No.</b>	<b>%</b>	<b>Other Identifiers</b>
<i>Diethanolamine</i>	<i>111-42-2</i>	<i>100</i>	<i>EC# 203-868-0</i>

### 4. FIRST-AID MEASURES

#### **Inhalation**

Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

#### **Skin Contact**

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

### **Eye Contact**

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

### **Ingestion**

Give plenty of water to dilute product. Do not induce vomiting. Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

### **Most Important Symptoms and Effects, Acute and Delayed**

Symptoms of exposure may include coughing, wheezing, sore throat, chest pain. Causes severe irritation and cause eye damage. May result in blindness if treatment is delayed. Causes severe skin irritation. Symptoms include local pain, redness and swelling.

### **Notes to physician**

Assess airway if inhaled and/or ingested.

Do not induce vomiting because of corrosive effects. However, if vomiting occurs spontaneously, maintain open airway.

Provide oxygen and/or ventilation assistance, if needed.

Treat skin and eye burns or irritation conventionally after decontamination.

Treat symptomatically

### **First-aid Comments**

*Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.*

## **5. FIRE FIGHTING MEASURES**

### **Suitable Extinguishing Media**

Alcohol-resistant foam, dry chemical, water fog or spray

### **Unsuitable Extinguishing Media**

None known

### **Specific Hazards Arising from the Product**

Carbon monoxide, nitrogen oxides, smoke, ammonia, highly toxic hydrogen cyanide, nitriles, isocyanates, nitrosamines, formaldehyde

### **Special Protective Equipment and Precautions for Fire-fighters**

Firefighters must wear SCBA Full Bunker Gear.

### **Static Charge Accumulation**

Cannot accumulate a static charge on agitation or pumping

## **6. ACCIDENTAL RELEASE MEASURES**

### **Personal precautions, protective equipment and emergency procedures**

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Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel.

### Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

### Methods and materials for containment and cleaning up

Leak Precaution: dyke to control spillage and prevent environmental contamination.

Handling Spill: ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep, shovel & store in closed containers for recycling or disposal.

***NOTE: Hot spilled liquid solidifies on contact with cool surfaces, minimising escape from spill site.***

## 7. HANDLING & STORAGE

### Precautions for Safe Handling

This product reacts with carbon dioxide or oxygen in the air and may form hazardous products. Always ensure that containers, empty or full, are tightly sealed unless in use. Avoid generating or breathing product vapour. Install adequate ventilation if handling hot product. Always ensure that containers, whether empty or full, are tightly sealed unless in use.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

### Conditions for Safe Storage

Store away from sources of ignition, heat & substances listed in Part 10. ***This product is usually stored at 50°C/122°F. However, the shipping temperature may be considerably hotter! Handling may require insulated protective gloves and clothing.*** If the product has solidified, warm gently, avoiding hot spots which could cause decomposition.

## 8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWA EV	0.23ppm / 1mg/m <sup>3</sup> ("skin"; inhalable fraction & vapour)	Ontario STEV	Not listed
AGGIH TLV	0.23ppm / 1mg/m <sup>3</sup> ("skin"; inhalable fraction & vapour)	ACGIH STEL	Not listed
OSHA PEL	3ppm / 15mg/m <sup>3</sup>	OSHA STEL	Not listed

<b>Ventilation</b>	very low vapour pressure – no ventilation required unless product is strongly heated
<b>Hands</b>	butyl, neoprene or nitrile gloves – other types may also protect; confirm suitability with supplier. <b><i>NOTE: Liquid product may be sufficiently hot to present a burning hazard. Wear insulated gloves when handling the hot liquid.</i></b>
<b>Eyes</b>	safety glasses with side shields – always protect the eyes

<b>Clothing</b>	use <u>impermeable (above) &amp; insulated</u> apron, boots, & long sleeves if splashing of hot material is possible
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*Handling procedures should eliminate or minimise the possibility of splash or skin contact.*

## 9. PHYSICAL & CHEMICAL PROPERTIES

<b>Odour &amp; Appearance</b>	clear, colourless to pale yellow, hygroscopic liquid with mild amine (fishy) odour <b>OR</b> white crystalline (prisms) solid with mild amine odour
<b>Odour threshold</b>	~3ppm – variable
<b>pH</b>	11.5 (1 molar = ~10% solution)
<b>Melting point/Freezing point</b>	27oC to 28oC / 80oF to 82oF – supercools readily
<b>Initial boiling point/boiling range</b>	268oC to 271oC / 514oF to 520oF
<b>Flash point</b>	138oC / 280oF (closed cup); also 166oC / 330oF & 176oC / 349oF (closed cup)
<b>Evaporation rate</b> ( <i>Butyl Acetate = 1</i> )	below 0.01 – very low volatility
<b>Flammability (solid; gas)</b>	no data available
<b>Lower flammable/explosive limit</b>	1.6%
<b>Upper flammable/explosive limit</b>	9.8%
<b>Vapour pressure</b>	0.0003mmHg / 0.002kPa (25oC / 77oF)
<b>Vapour density</b> ( <i>air = 1</i> )	3.6
<b>Relative density</b> ( <i>water = 1</i> )	1.1
<b>Water Solubility</b>	complete
<b>Log Pow</b> ( <i>octanol/water partition</i> )	-1.43
<b>Auto ignition temperature</b>	375oC1 / 707oF & 662oC / 1224oF
<b>Decomposition temperature</b>	decomposition begins to occur at 200oC / 392oF
<b>Viscosity</b>	352 & 391centipoise (30oC / 86oF)
<b>Conversion Factor</b>	1ppm = 4.29mg/m3
<b>Molecular Weight</b>	105grams per mole
<b>Molecular Formula</b>	C4-H8-O2

## 10. STABILITY AND REACTIVITY

### Dangerously Reactivity with

Strong oxidising agents; vigorous reaction with strong acids

### Also Reactive With

Nitrating agents, diazotization agents, nitromethane, nitrophenols & mercury forming explosive substances; alkali or alkaline earth metals release hydrogen; reactive with halogens (bromine, iodine); corrosive to aluminum at high temperature

### Chemical Stability

Stable; will not polymerize – but may induce polymerisation of epoxides, vinyl chloride, vinyl acetate, acrylic monomers, acrolein, or acrylonitrile

### Possibility of Hazardous Reactions

Polymerization will not occur

### Conditions to avoid

Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid moisture.

### Incompatible materials

Avoid contact with: Nitrites. Strong acids. Strong oxidizers

### Decomposition in the Presence of

CO<sub>2</sub> in air to thermally unstable carbamates; oxidises slowly in air to hydroxylamines

### Decomposition products

None apart from Hazardous Combustion Products and above

### Sensitive to Mechanical Impact

No

## 11. TOXICOLOGICAL INFORMATION

Acute Toxicity	
<b>Skin Contact</b>	may be moderately irritating to skin – variable results reported; corrosive on prolonged contact
<b>Skin Absorption</b>	slight; no toxic effects likely by this route
<b>Eye Contact</b>	highly irritating & corrosive to eyes; may cause permanent damage including blindness
<b>Inhalation</b>	vapour from heated product or mist irritating causing shortness of breath, wheezing, coughing
<b>Ingestion</b>	may irritate mouth & throat; stomach pain, nausea, vomiting – not a route of industrial exposure
<b>LD50 (oral)</b>	680-1820 & 2350mg/kg (rat), 3300mg/kg (mouse), 2200mg/kg (rabbit), 2000mg/kg (guinea pig),
<b>LD50 (skin)</b>	8180, 10,800, 12,200 & 12,970mg/kg (rabbit), 13,090mg/kg (guinea pig)

<b>LC50 (inhalation)</b>	>200mg/m <sup>3</sup> – no mortality – LC50 is higher than the saturated vapour concentration
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## 11. TOXICOLOGICAL INFORMATION, CONTINUED

### General

Prolonged skin exposure may cause dry skin, even dermatitis; chronic absorption (skin/oral may damage the kidneys or liver)

### Sensitising

Not a sensitiser in humans or animals (one case of respiratory sensitisation recorded)

### Carcinogen/Tumorigen

Not a tumorigen in humans or animals; DEA exposure to nitrites can cause formation of nitroso compounds (carcinogens causing slight excess of cancer in people working with DEA containing machining fluids. IARC rates DEA a possible human carcinogen; ACGIH rates it an animal carcinogen; not considered a carcinogen by NTP criteria.)

### Reproductive Effect

No known effect in humans; long-term ingestion in rats reduced sperm count

### Mutagen

No known effect on humans or animals

### Synergistic With

Nitrites may react with DEA to create nitroso compounds – some are suspect carcinogens

## 12. ECOLOGICAL INFORMATION

<b>Bioaccumulation</b>	DEA is highly water soluble so cannot bioaccumulate
<b>Biodegradation</b>	DEA biodegrades readily & rapidly in the presence of oxygen; 50-90% in 20 days; 93% in 28 days, 96% in 10 days
<b>Abiotic Degradation</b>	DEA reacts with atmospheric hydroxyl radicals; estimated ½-life in air is ~4 hours
<b>Mobility in soil, water</b>	DEA is water soluble and may move readily in soil and water; DEA adsorbs to soil humic acid, or water insoluble neutral salts of DEA may form – both reducing mobility <b>NOTE: If spilled (hot) product solidifies rapidly, movement in soil may be arrested</b>
<b>Aquatic Toxicity</b>	
<b>LC50 (Fish, 96hr)</b>	589mg/litre (Cyprinodon variegatus), 1400mg/litre (Gambusia affinis), 600-1000mg/litre (Lepomis macrochirus), 1370-1550, 1460 & 1664mg/litre (Pimephales promelas)
<b>EC50 (Crustacea, 24hr)</b>	2800mg/litre (Artemia salina), 55, 171, 180 & 289mg/litre (Daphnia magna), 30-90mg/litre (Ceriodaphnia dubia)

<b>EC50 (Algae, 72hr)</b>	2.2 & 9.5mg/litre (Pseudokirchnerella subcapitata), 548mg/litre (Skeletonema costatum), 33 & >100mg/litre (Ankistrodesmus bibraianus), 7.8 & 75mg/litre (Scenedesmus subspicatus) 87mg/litre (Phaeodactylum tricornutum)
<b>TT (Algae, 72hr)</b>	16mg/litre (Microcystis aeruginosa)
<b>TGK* (Bacteria)</b>	1137mg/litre (Chilomonas paramecium), 157mg/litre (Entosiphon sulcatum), 17mg/litre (Microcystis aeruginosa), 16 & 17mg/litre (Pseudomonas putida), >1000mg/litre (domestic sewage sludge)

### 13. DISPOSAL

#### Waste Disposal

**Do not flush to sewer**, recycle solvent if possible, local regulations may permit disposal in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

#### Containers

**Drums** should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.

**Pails** must be vented and thoroughly dried prior to crushing and recycling.

**IBCs** (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).

**Steel containers** must be inspected, pressure tested & recertified every 5 years.

***Never cut, drill, weld or grind on or near this container, even if empty***

### 14. TRANSPORT INFORMATION

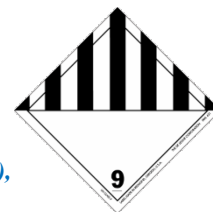
<b>Canada TDG</b>	<b>UN / PIN #</b>	Not regulated for transport	
<b>AND</b>	<b>Shipping Name</b>	Not regulated for transport	
<b>U.S.A. 49 CFR</b>	<b>Class &amp; Packing Group</b>	Not regulated for transport ( <a href="#">see below</a> )	

<b>Marine Pollutant</b>	Not a marine pollutant	
<b>ERAP Required</b>	No	
<b>Reportable Quantity (RQ – USA only)</b>	<a href="#">See below</a>	
<b>Emergency Response Guide No.</b>	<a href="#">See below</a>	



*\*NOTE: Some American suppliers ship this product as UN3082, Environmentally Hazardous Substance, Liquid, N.O.S. (diethanolamine), Class 9, Packing group III, (Reportable Quantity = 100lbs), ERG No. 171. If shipped as Class 9, this Safety Mark will be attached. No reason is given for this classification; Part 12 (above) suggests that DEA is neither particularly toxic to aquatic life nor persistent in the environment. The great majority of Europeans do not classify it as hazardous for the environment, although a small number do.*

*DOW Chemical ships DEA as, UN3077, Environmentally hazardous substances, solid, n.o.s., Molten Diethanolamine), Class 9, PG III recognising that this classification is not (or rarely) used outside North America. On the other hand, other American producers use UN-3082.*



**Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.**

## 15. REGULATORY INFORMATION

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory

### Canada Regulations:

CEPA - National Pollutant Release Inventory (NPRI)  
Part 1A

### U.S.A. Regulations:

**Allowable Tolerances:** Residues of diethanolamine are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. Use: Stabilizer, inhibitor for formulations used before crop emerges from soil.

**OSHA Standards:** Vacated 1989 OSHA PEL TWA 3 ppm (15 mg/cu m) is still enforced in some states.

**NIOSH Recommendations:** Recommended Exposure Limit: 10 Hour Time-Weighted Average: 3 ppm (15 mg/cu m).

**Threshold Limit Values:** 8 hr Time Weighted Avg (TWA): 1 mg/cu m, inhalable fraction and vapor, skin. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded. A3; Confirmed animal carcinogen with unknown relevance to humans.

**Atmospheric Standards:** Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Diethanolamine is included on this list.

**CERCLA Reportable Quantities:** Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 100 lb or 45.4 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV.D.3.b).

**TSCA Requirements:** Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA

copies and lists of unpublished health and safety studies. Diethanolamine is included on this list. Effective date: 4/13/89; Sunset date: 6/30/98.

**FIFRA Requirements:** Residues of diethanolamine are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. Use: Stabilizer, inhibitor for formulations used before crop emerges from soil.

**FDA Requirements:** Diethanolamine is an indirect food additive for use only as a component of adhesives.

**Other regulations:**

Europe EINECS	on inventory
Australia AICS	on inventory
China IECSC	on inventory
Japan ENCS	on inventory
Korea IEECS	on inventory
Philippines PICCS	on inventory

**16. OTHER INFORMATION**

<b>NFPA RATING</b>	<b>Health 3</b>	<b>Flammability 1</b>	<b>Instability 0</b>
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**Preparation Date:** November 2003

**Revision Dates:** Sept. 2006, Dec. 2007, Nov. 2013, Oct. 2015, July 2018, September 2019

<b>Key to Abbreviations</b>	<p><b>ACGIH®</b> = American Conference of Governmental Industrial Hygienists  <b>AIHA®</b> = AIHA® Guideline Foundation  <b>HSDB®</b> = Hazardous Substances Data Bank  <b>IARC</b> = International Agency for Research on Cancer  <b>NIOSH</b> = National Institute for Occupational Safety and Health  <b>NTP</b> = National Toxicology Program  <b>OSHA</b> = US Occupational Safety and Health Administration  <b>RTECS®</b> = Registry of Toxic Effects of Chemical Substances</p>
<b>References</b>	<p>CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA (“BIOVIA”). Available from Canadian Centre for Occupational Health and Safety (CCOHS).</p>
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