



# MATERIAL SAFETY DATA SHEET

according to the Global Harmonized System

Date of issue: 02/04/2013

Version 1.0

## SECTION 1. Identification

### Product identifier

Product number 803116  
Product name Diethanolamine for synthesis

### Relevant identified uses of the substance or mixture and uses advised against

Identified uses Chemical for synthesis

### Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821,  
United States of America | SDS Phone Support: +1-978-715-1335 |  
General Inquiries: +1-978-751-4321 | Monday to Friday, 9:00 AM to  
4:00 PM Eastern Time (GMT-5)  
  
e-mail: mm\_sds@merckgroup.com

Emergency telephone 613-996-6666 CANUTEC (Canada)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

## SECTION 2. Hazards identification

### GHS Classification

Acute toxicity, Category 4, Oral, H302  
Specific target organ systemic toxicity - repeated exposure, Category 2, H373  
Skin irritation, Category 2, H315  
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

*Hazard pictograms*



*Signal Word*  
Danger

*Hazard Statements*  
H302 Harmful if swallowed.

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H373 May cause damage to organs through prolonged or repeated exposure.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.

*Precautionary Statements*

P280 Wear eye protection.  
P314 Get medical advice/ attention if you feel unwell.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Other hazards**

None known.

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**SECTION 3. Composition/information on ingredients**

Formula	NH(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>2</sub>	C <sub>4</sub> H <sub>11</sub> NO <sub>2</sub> (Hill)
CAS-No.	111-42-2	
Molar mass	105.14 g/mol	

**Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

*diethanolamine (>= 90 % - <= 100 % )*

111-42-2

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**SECTION 4. First aid measures**

**Description of first-aid measures**

*Inhalation*

After inhalation: fresh air. Consult a physician.

*Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

*Eye contact*

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

*Ingestion*

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

irritant effects

**Indication of any immediate medical attention and special treatment needed**

No information available.

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**SECTION 5. Fire-fighting measures**

**Extinguishing media**

*Suitable extinguishing media*

Water, Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

**Special hazards arising from the substance or mixture**

Combustible material, Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

nitrous gases, nitrogen oxides

**Advice for firefighters**

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6. Accidental release measures**

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

Advice for non-emergency personnel: Avoid inhalation of vapors/aerosols or dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

**Environmental precautions**

Do not empty into drains.

**Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Depending on the state of matter, take up with suitable equipment or with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

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**SECTION 7. Handling and storage**

**Precautions for safe handling**

Observe label precautions.

**Conditions for safe storage, including any incompatibilities**

Tightly closed.

Store at +15°C to +25°C (+59°F to +77°F).

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**SECTION 8. Exposure controls/personal protection**

**Exposure limit(s)**

*Ingredients*

Basis	Value	Threshold limits	Remarks
<i>diethanolamine 111-42-2</i>			
CAD AB OEL	Time Weighted Average (TWA): Skin designation:	2 mg/m <sup>3</sup>	Can be absorbed through the skin.
CAD BC OEL	Time Weighted Average (TWA): Skin designation:	2 mg/m <sup>3</sup>	Can be absorbed through the skin.
CAD MB OEL	Time Weighted Average (TWA): Skin designation:	1 mg/m <sup>3</sup>	Form of exposure: Inhalable fraction and vapor. Can be absorbed through the skin. Form of exposure: Inhalable fraction and vapor.
CAD ON OEL	Time Weighted Average (TWA): Skin designation:	1 mg/m <sup>3</sup>	Form of exposure: Inhalable fraction and vapor. Can be absorbed through the skin. Form of exposure: Inhalable fraction and vapor.
OEL (QUE)	Time Weighted Average (TWA): Skin designation:	3 ppm 13 mg/m <sup>3</sup>	Can be absorbed through the skin.

**Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

**Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

*Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

*Eye/face protection*

Tightly fitting safety goggles

*Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

*Other protective equipment:*

protective clothing

*Respiratory protection*

required when dusts/vapors/aerosols are generated.

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Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**SECTION 9. Physical and chemical properties**

Physical state	solid
Color	colorless
Odor	ammoniacal
Odor Threshold	0.27 ppm
pH	ca. 11 at 53 g/l 68 °F (20 °C)
Melting point	28 °C
Boiling point/boiling range	516 - 518 °F (269 - 270 °C) at 1,013 hPa
Flash point	349 °F (176 °C) Method: DIN 51758
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	2.1 %(V)
Upper explosion limit	10.6 %(V)
Vapor pressure	< 0.01 hPa at 77 °F (25 °C)  0.6 hPa at 212 °F (100 °C)
Relative vapor density	3.6
Relative density	1.09 g/cm <sup>3</sup> at 86 °F (30 °C) liquid
Water solubility	at 68 °F (20 °C) soluble

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Partition coefficient: n-octanol/water	log Pow: -2.18 (25 °C) OECD Test Guideline 107 Bioaccumulation is not expected (log Pow <1).
Autoignition temperature	No information available.
Decomposition temperature	> 518 °F (> 270 °C)
Viscosity, dynamic	ca.390 mPa.s at 86 °F (30 °C)
Explosive properties	Not classified as explosive.
Ignition temperature	689 - 698 °F (365 - 370 °C) Method: DIN 51794

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## SECTION 10. Stability and reactivity

### Reactivity

Forms explosive mixtures with air on intense heating.  
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### Possibility of hazardous reactions

Exothermic reaction with:  
anhydrides, Oxidizing agents, acids  
Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitosamines!

### Conditions to avoid

Strong heating.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

### Incompatible materials

bronze, Copper, Copper alloys, brass, Zinc, zinc alloys

### Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### Information on toxicological effects

*Likely route of exposure*  
Eye contact, Skin contact, Ingestion

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*Acute oral toxicity*

LD50 rat: 676 mg/kg (RTECS)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

absorption

*Acute inhalation toxicity*

Symptoms: May cause irritation of respiratory tract.

*Acute dermal toxicity*

LD50 rabbit: 8,328 mg/kg  
(RTECS)

absorption

*Skin irritation*

Causes skin irritation.

*Eye irritation*

Causes serious eye damage.

*Genotoxicity in vivo*

Mutagenicity (mammal cell test): micronucleus.

mouse

Result: negative

(IUCLID)

*Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

(National Toxicology Program)

*Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

*Specific target organ systemic toxicity - repeated exposure*

May cause damage to organs through prolonged or repeated exposure.

*Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen

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ACGIH by NTP.  
Confirmed animal carcinogen with unknown relevance to humans.  
diethanolamine 111-42-2

**Further information**

After absorption:

We have no description of any toxic symptoms.

Other information

Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.

Further data:

Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 12. Ecological information**

**Ecotoxicity**

*Toxicity to fish*

LC50 *Gambusia affinis* (Mosquito fish): 1,400 mg/l; 96 h (IUCLID)

LC50 *Leuciscus idus* (Golden orfe): 1,430 mg/l; 48 h

OECD Test Guideline 203

*Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia magna* (Water flea): 110 mg/l; 48 h (IUCLID)

*Toxicity to algae*

IC50 *Desmodesmus subspicatus* (green algae): 75 mg/l; 72 h (IUCLID)

*Toxicity to bacteria*

EC50 *Pseudomonas putida*: > 1,000 mg/l; 16 h neutral (IUCLID)

**Persistence and degradability**

*Biodegradability*

94 %; 30 d

OECD Test Guideline 301D

Readily biodegradable.

*Biochemical Oxygen Demand (BOD)*

885 mg/g (5 d)

(External MSDS)

*Chemical Oxygen Demand (COD)*

1,352 mg/g

(External MSDS)

**Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: -2.18 (25 °C)

OECD Test Guideline 107

Bioaccumulation is not expected (log Pow <1).

**Mobility in soil**

No information available.

**Other adverse effects**



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*Additional ecological information*

Biological effects:

Harmful effect due to pH shift.

When discharged properly, no impairments in the function of adapted biological wastewater treatment plants are to be expected.

Further information on ecology

Discharge into the environment must be avoided.

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**SECTION 13. Disposal considerations**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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**SECTION 14. Transport information**

**Land transport (DOT)**

Not classified as dangerous in the meaning of transport regulations.

**Air transport (IATA)**

Not classified as dangerous in the meaning of transport regulations.

**Sea transport (IMDG)**

Not classified as dangerous in the meaning of transport regulations.

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**SECTION 15. Regulatory information**

**United States of America**

**Canada**

**WHMIS Classification**

D2B Toxic Material Causing Other Toxic Effects

E Corrosive Material

Skin irritant, Corrosive to eyes

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

**Notification status**

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

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**SECTION 16. Other information**

**Training advice**

Provide adequate information, instruction and training for operators.

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**Full text of H-Statements referred to under sections 2 and 3.**

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H373	May cause damage to organs through prolonged or repeated exposure.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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