



# SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 01/27/2015

Version 1.1

## SECTION 1. Identification

### Product identifier

Product number	DX1045
Product name	Diethylamine
CAS-No.	109-89-7

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

Identified uses	Reagent for analysis
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### Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation   290 Concord Road, Billerica, MA 01821, United States of America   General Inquiries: +1-978-715-4321   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Flammable liquid, Category 2, H225  
Acute toxicity, Category 4, Oral, H302  
Acute toxicity, Category 4, Inhalation, H332  
Acute toxicity, Category 3, Dermal, H311  
Skin corrosion, Category 1A, H314  
Serious eye damage, Category 1, H318  
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335  
For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

#### Hazard pictograms



Signal Word  
Danger

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## *Hazard Statements*

H225 Highly flammable liquid and vapor.

H302 + H332 Harmful if swallowed or if inhaled.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

## *Precautionary Statements*

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing.

Rinse skin with water/ shower.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/ physician.

P322 Specific measures (see supplemental first aid instructions on this label).

P361 Remove/Take off immediately all contaminated clothing.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

## **Other hazards**

None known.

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

Formula	(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NH	C <sub>4</sub> H <sub>11</sub> N (Hill)
Molar mass	73.14 g/mol	

## **Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

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

109-89-7

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Exact percentages are being withheld as a trade secret.

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### SECTION 4. First aid measures

#### Description of first-aid measures

##### *General advice*

First aider needs to protect himself.

##### *Inhalation*

After inhalation: fresh air. Call in physician.

##### *Skin contact*

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

##### *Eye contact*

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

##### *Ingestion*

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

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

Irritation and corrosion, emphysema, Diarrhea, Nausea, Vomiting, Risk of blindness!

#### 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*

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.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

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.

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## *Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Cool closed containers exposed to fire with water spray. 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 substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Keep away from heat and sources of ignition. 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. Risk of explosion.

### **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).

Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® OH<sup>-</sup>, Art. No. 101596).

Dispose of properly. Clean up affected area.

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## **SECTION 7. Handling and storage**

### **Precautions for safe handling**

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

#### *Requirements for storage areas and containers*

No aluminum, tin, or zinc containers.

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Keep locked up or in an area accessible only to qualified or authorized persons.

Store at room temperature.

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## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

#### Ingredients

Basis	Value	Threshold limits	Remarks
<i>diethylamine 109-89-7</i>			
ACGIH	Time Weighted Average (TWA):	5 ppm	Can be absorbed through the skin.
	Skin designation:		
NIOSH/GUIDE	Short Term Exposure Limit (STEL):	15 ppm	
	Recommended exposure limit (REL):	10 ppm 30 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	25 ppm 75 mg/m <sup>3</sup>	
OSHA_TRANS	PEL:	25 ppm 75 mg/m <sup>3</sup>	
Z1A	Time Weighted Average (TWA):	10 ppm 30 mg/m <sup>3</sup>	
	Short Term Exposure Limit (STEL):	25 ppm 75 mg/m <sup>3</sup>	

### 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:

Flame retardant antistatic protective clothing.

#### Respiratory protection

required when vapors/aerosols are generated.

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.

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## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	amine-like
Odor Threshold	0.02 - 37.5 ppm
pH	13 at 100 g/l 68 °F (20 °C)
Melting point	-50 °C
Boiling point/boiling range	133 °F (56 °C) at 1,013 mbar
Flash point	-9 °F (-23 °C) Method: DIN 51755 Part 1
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	2.0 %(V)
Upper explosion limit	11.8 %(V)
Vapor pressure	253 hPa at 68 °F (20 °C)
Relative vapor density	No information available.
Density	0.71 g/cm <sup>3</sup> at 68 °F (20 °C)
Relative density	No information available.
Water solubility	at 68 °F (20 °C) soluble
Partition coefficient: n-octanol/water	log Pow: 0.58 (experimental) (Lit.) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	No information available.

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Viscosity, dynamic

0.34 mPa.s  
at 77 °F (25 °C)

Explosive properties

Not classified as explosive.

Oxidizing properties

none

Ignition temperature

554 °F (290 °C)  
Method: DIN 51794

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### SECTION 10. Stability and reactivity

#### Reactivity

Vapors may form explosive mixture with air.

#### Chemical stability

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

#### Possibility of hazardous reactions

Exothermic reaction with:

nitrites, Strong acids, Acid anhydrides, Alcohols, Aldehydes, Ketones, Esters, Halogenated hydrocarbon, phenols, Mercury

Risk of ignition or formation of inflammable gases or vapors with:

Oxidizing agents

Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitosamines!

#### Conditions to avoid

Warming.

#### Incompatible materials

Aluminum, Lead, Copper, Copper alloys, Zinc, zinc alloys, Tin

#### 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*

Inhalation, Eye contact, Skin contact

*Target Organs*

Eyes

Skin

Respiratory system

cardiovascular system

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## *Acute oral toxicity*

LD50 Rat: 540 mg/kg (RTECS)

absorption

Symptoms: Nausea, Vomiting, Diarrhea, If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

## *Acute inhalation toxicity*

LC50 Rat: 12.1 mg/l; 4 h (IUCLID)

absorption

Irritating to respiratory system.

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

## *Acute dermal toxicity*

LD50 Rabbit: 582 mg/kg  
(IUCLID)

absorption

## *Skin irritation*

Rabbit

Result: Causes severe burns.  
(IUCLID)

Causes severe burns.

## *Eye irritation*

Rabbit

Result: Causes burns.  
(External MSDS)

Causes serious eye damage.

Risk of blindness!

## *Genotoxicity in vitro*

Ames test

Result: negative  
(IUCLID)

## *Specific target organ systemic toxicity - single exposure*

May cause respiratory irritation.

## *Specific target organ systemic toxicity - repeated exposure*

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



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	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 by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

### Further information

Systemic effects:

After absorption:

Lung edema, emphysema

Damage to:

Liver

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.

Handle in accordance with good industrial hygiene and safety practice.

## SECTION 12. Ecological information

### Ecotoxicity

*Toxicity to fish*

LC50 *Oncorhynchus mykiss* (rainbow trout): 25 - 182 mg/l; 96 h (External MSDS)

*Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia*: 56 mg/l; 48 h (External MSDS)

*Toxicity to algae*

IC50 *Chlorella pyrenoidosa*: 56 mg/l; 96 h

OECD Test Guideline 201

*Toxicity to bacteria*

EC50 *Pseudomonas putida*: 47 mg/l; 17 h (External MSDS)

EC10 activated sludge: > 1,000 mg/l; 30 min (External MSDS)

### Persistence and degradability

*Biodegradability*

> 70 %; 28 d

OECD Test Guideline 301C

Readily biodegradable.

*Theoretical oxygen demand (ThOD)*

3,620 mg/g

(IUCLID)

### Bioaccumulative potential

*Partition coefficient: n-octanol/water*

log Pow: 0.58

(experimental)

(Lit.) Bioaccumulation is not expected.

### Mobility in soil

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No information available.

**Other adverse effects**

*Henry constant*

106 Pa·m<sup>3</sup>/mol

Distribution preferentially in air. (External MSDS)

*Additional ecological information*

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)**

UN number	UN 1154
Proper shipping name	DIETHYLAMINE
Class	3 (8)
Packing group	II
Environmentally hazardous	--

**Air transport (IATA)**

UN number	UN 1154
Proper shipping name	DIETHYLAMINE
Class	3 (8)
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

**Sea transport (IMDG)**

UN number	UN 1154
Proper shipping name	DIETHYLAMINE
Class	3 (8)
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-E S-C

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**SECTION 15. Regulatory information**

United States of America

SARA 313

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This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

## **SARA 302**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

## **Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

### *Ingredients*

diethylamine

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

### *Ingredients*

diethylamine

## **DEA List I**

Not listed

## **DEA List II**

Not listed

## **US State Regulations**

### **Massachusetts Right To Know**

#### *Ingredients*

diethylamine

### **Pennsylvania Right To Know**

#### *Ingredients*

diethylamine

### **New Jersey Right To Know**

#### *Ingredients*

diethylamine

### **California Prop 65 Components**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

## **Notification status**

TSCA: All components of the product are listed in the 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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## Labeling

### *Hazard pictograms*



### *Signal Word*

Danger

### *Hazard Statements*

H225 Highly flammable liquid and vapor.

H302 + H332 Harmful if swallowed or if inhaled.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

### *Precautionary Statements*

#### Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P240 Ground/bond container and receiving equipment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

#### Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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

H225 Highly flammable liquid and vapor.

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

### **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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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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