1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Diethylamine

Product Number : 471216
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Harmful by ingestion., Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H302 + H332 Harmful if swallowed or if inhaled.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H402 Harmful to aquatic life.

Precautionary statement(s)
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves.
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.

HMIS Classification
Health hazard: 3
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 0

NFPA Rating
Health hazard: 3
Fire: 3
Reactivity Hazard: 0

Potential Health Effects
Inhalation  May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Skin  Toxic if absorbed through skin. Causes skin burns.

Eyes  Causes eye burns.

Ingestion  Harmful if swallowed. Causes burns.

3. COMPOSITION INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Formula</th>
<th>Molecular Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₄H₁₁N</td>
<td>73.14 g/mol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>109-89-7</td>
<td>203-716-3</td>
<td>612-003-00-X</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice  Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled  If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

In case of skin contact  Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact  Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed  Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media  For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire fighters  Wear self contained breathing apparatus for fire fighting if necessary.

Further information  Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions  Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions  Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up  Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling  Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Flash back possible over considerable distance. Container explosion may occur under fire conditions. Keep away from sources of ignition. No smoking. Take measures to prevent the build up of electrostatic charge.

**Conditions for safe storage**
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylamine</td>
<td>109-89-7</td>
<td>TWA</td>
<td>5 ppm</td>
<td>2007-01-01</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

**Remarks**

Eye & Upper Respiratory Tract irritation Not classifiable as a human carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories. Danger of cutaneous absorption

| STEL   | 15 ppm | 2007-01-01 | USA. ACGIH Threshold Limit Values (TLV) |

**Remarks**

Eye & Upper Respiratory Tract irritation Not classifiable as a human carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories. Danger of cutaneous absorption

<table>
<thead>
<tr>
<th>TWA</th>
<th>10 ppm 30 mg/m3</th>
<th>1989-01-19</th>
<th>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEL</td>
<td>25 ppm 75 mg/m3</td>
<td>1989-01-19</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td>TWA</td>
<td>25 ppm 75 mg/m3</td>
<td>1997-08-04</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

The value in mg/m3 is approximate.

**Personal protective equipment**

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**
Handle with gloves.

**Eye protection**
Tightly fitting safety goggles. Faceshield (8-inch minimum).

**Skin and body protection**
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- Form: liquid

**Safety data**
- **pH**: 13 at 100 g/l at 20 °C (68 °F)
- **Melting point**: -50 °C (-58 °F)
- **Boiling point**: 55 °C (131 °F)
- **Flash point**: -23 °C (-9 °F) - closed cup
- **Ignition temperature**: 312 °C (594 °F)
- **Lower explosion limit**: 1.8 %(V)
- **Upper explosion limit**: 10.1 %(V)
- **Vapour pressure**: 241.936 hPa (181.467 mmHg) at 20 °C (68 °F)
  - 974.637 hPa (731.038 mmHg) at 55 °C (131 °F)
- **Density**: 0.707 g/mL at 25 °C (77 °F)
- **Water solubility**: soluble
- **Partition coefficient**:
  - n-octanol/water: log Pow: 0.58
- **Relative vapour density**: 2.53 - (Air = 1.0)

10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
Vapours may form explosive mixture with air.

**Conditions to avoid**
Heat, flames and sparks.

**Materials to avoid**
Aldehydes, Alcohols, Dicyanofurazan, Ketones, phenols, Acids, Halogenated hydrocarbon, Oxidizing agents, Epoxides

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**
- LD50 Oral - rat: 540 mg/kg
- LC50 Inhalation - rat - 4 h: 4000 ppm
- LD50 Dermal - rabbit: 577 mg/kg

**Skin corrosion/irritation**
Skin - rabbit - Severe skin irritation

**Serious eye damage/eye irritation**
no data available

**Respiratory or skin sensitization**
May cause allergic respiratory and skin reactions

**Germ cell mutagenicity**
no data available

**Carcinogenicity**
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure (GHS)

no data available

Specific target organ toxicity - repeated exposure (GHS)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed. Causes burns.

Skin: Toxic if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns.

Signs and Symptoms of Exposure

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Lachrymation

Additional Information

RTECS: HZ8750000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish

LC50 - Oncorhynchus mykiss (rainbow trout) - 25 - 198 mg/l - 96 h

LC50 - Oncorhynchus mykiss (rainbow trout) - 25 - 198 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates

EC50 - Daphnia magna (Water flea) - 56 mg/l - 48 h

EC50 - Daphnia magna (Water flea) - 56 mg/l - 48 h

Toxicity to algae

EC50 - Algae - 20 mg/l - 96 h

EC50 - Pseudokirchneriella subcapitata (green algae) - 20 mg/l - 96 h

Toxicity to bacteria

- Bacteria - 47 mg/l - 17 h

Persistence and degradability

Biodegradability: Biotic/Aerobic

Result: 75% - Readily biodegradable.

Bioaccumulative potential

no data available

Mobility in soil

no data available
PBT and vPvB assessment
no data available

Other adverse effects
Do not empty into drains.

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1154  Class: 3 (8)   Packing group: II
Proper shipping name: Diethylamine
Reportable Quantity (RQ): 100 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 1154  Class: 3 (8)   Packing group: II
Proper shipping name: Diethylamine
Marine pollutant: No

EMS-No: F-E, S-C

IATA
UN-Number: 1154  Class: 3 (8)   Packing group: II
Proper shipping name: Diethylamine

15. REGULATORY INFORMATION

OSHA Hazards
Flammable liquid, Harmful by ingestion., Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

DSL Status
All components of this product are on the Canadian DSL list.

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

SARA 313 Components
SARA 313: 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 311/312 Hazards
Fire Hazard, Acute Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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</table>
California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
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