

Section 1. Product and Company Identification

Product Name Diethylamine Anhydrous
CAS Number 109-89-7

Parchem - fine & specialty chemicals

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Collect Calls Accepted

Section 2. Hazards Identification

Classification of the substance or mixture

Flam. Liq. 2: Flammable liquids

Acute Tox. 4: (Inhalation - vapor) Acute toxicity

Acute Tox. 4: (oral) Acute toxicity

Acute Tox. 3: (dermal) Acute toxicity

Skin Corr./Irrit. 1A : Skin corrosion/irritation

Eye Dam./Irrit. 1: Serious eye damage/eye irritation

STOT SE 3: (irritating to respiratory system) Specific target organ toxicity - single exposure

Aquatic Acute 2: Hazardous to the aquatic environment - acute

GHS Label Elements

Pictograms:



Signal word: DANGER

Hazard and precautionary statements

Hazard Statement

H225: Highly flammable liquid and vapor.

H311: Toxic in contact with skin.

H332: Harmful if inhaled.

H302: Harmful if swallowed.

H335: May cause respiratory irritation.

H314: Causes severe skin burns and eye damage.

H401: Toxic to aquatic life.



Precautionary Statements (Prevention)

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P271: Use only outdoors or in a well-ventilated area.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243: Take precautionary measures against static discharge.
P273: Avoid release to the environment.
P260: Do not breathe dust/gas/mist/vapors.
P241: Use explosion-proof electrical/ventilating/lighting/equipment.
P264: Wash with plenty of water and soap thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P242: Use only non-sparking tools.
P240: Ground/bond container and receiving equipment.

Precautionary Statements (Response)

P310: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340: If inhaled: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P303 + P361 + P352: If on skin (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.
P301 + P330 + P331: If swallowed: rinse mouth. Do NOT induce vomiting.
P370 + P378: In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.

Precautionary Statements (Storage)

P403 + P235: Store in a well-ventilated place. Keep cool.
P233: Keep container tightly closed.
P405: Store locked up.

Precautionary Statements (Disposal):

P501: Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified: If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

Emergency Overview

Danger: Extremely flammable. Corrosive liquid. Toxic if absorbed through skin. Harmful if swallowed. Harmful if inhaled. Corrosive to skin and/or eyes. Risk of serious damage to eyes. Causes respiratory tract irritation. Use with local exhaust ventilation. Wear NIOSH-certified chemical goggles. Wear protective clothing. Eye wash fountains and safety showers must be easily accessible. Wear full face shield if splashing hazard exists. Wear a NIOSH-certified (or equivalent) organic vapor respirator.

Section 3. Composition / Information on Ingredients

Common Name Diethylamine Anhydrous
Formula C₄H₁₁N
CAS Number 109-89-7

COMPONENT	CAS NUMBER	CONCENTRATION
Diethylamine Anhydrous	109-89-7	99.5 – 100%

Section 4. First Aid Measures

Description of first-aid measures

General advice: First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position).

Immediately remove contaminated clothing.

Inhalation: Keep patient calm, remove to fresh air, and seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

Skin Contact: Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

Eye Contact: Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

Ingestion: Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labelling and/or in section 11. Further symptoms are possible.

Note to physician

Indication of any immediate medical attention and special treatment needed: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

Section 5. Firefighting Measures

Firefighting Measures

Suitable extinguishing media: Water spray, dry powder, foam, carbon dioxide

Unsuitable extinguishing media for safety reasons: Water jet

Special hazards arising from the substance or mixture:

Hazards during firefighting: Substance/product is dangerous when exposed to heat or flames. If product is heated above decomposition temperature, toxic vapors will be released.



Advice for firefighters

Protective equipment for firefighting: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information: If exposed to fire, keep containers cool by spraying with water. Contain contaminated water/firefighting water.

Impact Sensitivity: Based on the chemical structure there is no shock-sensitivity.

Section 6. Accidental Release Measures

Accidental release measures

Personal precautions, protective equipment and emergency procedures: Extinguish sources of ignition nearby and downwind. Wear suitable personal protective clothing and equipment. Wear a NIOSH-certified self-contained breathing apparatus or full face supplied air respirator. Remove personal protective equipment and decontaminate prior to reuse.

Environmental precautions Substance/product is RCRA hazardous due to its properties. This product is regulated by CERCLA ('Superfund'). Do not discharge into waterways or sewer systems without proper authorization.

Methods and material for containment and cleaning up: Spills should be contained, solidified, and placed in suitable containers for disposal.

Section 7. Handling and Storage

Precautions for safe handling: See Section 10 - Stability and reactivity. See Section 5 - Firefighting measures. Handle and open container with care. When filling, transferring, or emptying of containers, adequate local exhaust ventilation is necessary. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion: Provide exhaust ventilation. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Conditions for safe storage, including any incompatibilities: Segregate from acids and acid forming substances. Segregate from foods and animal feeds.

Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place. Keep container dry. Keep container tightly closed and in a well-ventilated place. Avoid extreme heat. Keep container tightly closed and in a cool place. Keep away from sources of ignition - No smoking.

Section 8. Exposure Controls / Personal Protection

Components with occupational exposure limits

Diethylamine	OSHA PEL	PEL 25 ppm 75 mg/m ³ ; STEL value 25 ppm 75 mg/m ³ ; TWA value 10 ppm 30 mg/m ³
	ACGIH TLV	TWA value 5 ppm ; STEL value 15 ppm ; Skin Designation

The substance can be absorbed through the skin.

Advice on system design: Provide local exhaust ventilation to control vapors/mists.

Personal protective equipment

Respiratory protection: Wear a NIOSH-certified (or equivalent) amine/organic vapor respirator. Do not exceed the maximum use concentration for the respirator face piece/cartridge combination.

Hand protection: Chemical resistant protective gloves, fluoroelastomer

Eye protection: Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection: Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures: Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Remove contaminated clothing immediately and dispose of safely. Personal protective equipment should be decontaminated prior to reuse. Do not eat, drink or use tobacco while working.

Section 9. Physical and Chemical Properties

Form: liquid

Odor: amine-like

Odor threshold: Not determined due to potential health hazard by inhalation.

Color: colorless to yellow

pH value: 13 (100 g/l, 20°C)

Melting point: -50°C

Boiling point: 53.5 - 56.1°C (1,013 hPa)

Flash point: -23°C

Flammability: Highly flammable.

Lower explosion limit: For liquids not relevant for classification and labelling. The lower explosion point may be 5 - 15°C below the flash point.

Upper explosion limit: For liquids not relevant for classification and labelling.

Autoignition: 312°C

Vapor pressure: 316 hPa (25°C) Literature data.

Density: 0.71 g/cm³ (20°C) Literature data.

Relative density: 0.71 (20°C)

Partitioning coefficient n-octanol/water (log Pow): 0.58 (measured) Literature data.

Self-ignition temperature: Based on its structural properties the product is not classified as self-igniting.

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Viscosity, dynamic: 0.319 mPa*s (25°C) Literature data.

Particle size: The substance / product is marketed or used in a non-solid or granular form.

Solubility in water: (25°C) miscible

Molar mass: 73.14 g/mol

Evaporation rate: Value can be approximated from Henry's Law Constant or vapor pressure.

Section 10. Stability and Reactivity

Reactivity: Vapors may form explosive mixture with air.

Corrosion to metals: No corrosive effect on metal.

Oxidizing properties: Based on its structural properties the product is not classified as oxidizing.

Reactions with water/air:

Reaction with: air

Flammable gases: yes

Formation of flammable gases

Remarks: Forms no flammable gases in the presence of water.

Chemical stability

Possibility of hazardous reactions: The product is chemically stable. Reacts with oxidizing agents.

Conditions to avoid: Avoid extreme temperatures.

Incompatible materials: mineral acids

Hazardous decomposition products

Decomposition products: Hazardous decomposition products: carbon monoxide, carbon dioxide, nitrogen oxides

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Section 11. Toxicological Information

Primary routes of exposure: Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity: Assessment of acute toxicity: Of moderate toxicity after short-term inhalation. Of moderate toxicity after single ingestion. Of pronounced toxicity after short-term skin contact.

Oral

Type of value: LD50

Species: rat (male)

Value: 540 mg/kg

Inhalation

Type of value: LC50

Species: rat (female)

Value: 17.3 mg/l

Exposure time: 4 h

Dermal

Type of value: LD50

Species: rat (male)

Value: 582 mg/kg

Assessment other acute effects

Assessment of STOT single: Causes temporary irritation of the respiratory tract.
Irritation / corrosion

Assessment of irritating effects: Highly corrosive! Damages skin and eyes.

Skin

Species: rabbit

Result: Corrosive.

Eye

Species: rabbit

Result: Risk of serious damage to eyes.

Sensitization

Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Mouse ear swelling test (MEST)

Species: mouse

Result: Non-sensitizing.

Aspiration Hazard: not applicable

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: No substance-specific organotoxicity was observed after repeated administration to animals. After repeated exposure the prominent effect is local irritation.

Genetic toxicity

Assessment of mutagenicity: The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in a test with mammals.

Carcinogenicity

Assessment of carcinogenicity: In long-term animal studies in which the substance was given by inhalation, a carcinogenic effect was not observed. Under certain conditions the substance can form nitrosamines. Nitrosamines are carcinogenic in animal studies.

Reproductive toxicity

Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility

impairing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Teratogenicity

Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Other Information: No experimental evidence available for genotoxicity in vitro (Ames test negative). Together with nitrosating agents (f. i. nitrites, nitrogen oxides) nitrosamines may be formed under certain conditions. Nitrosamines showed a carcinogenic effect in animal experiment.

Symptoms of Exposure The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further symptoms are possible.

Medical conditions aggravated by overexposure: Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product. See MSDS section 11 - Toxicological information.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity: Acutely toxic for aquatic organisms. Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Toxicity to fish

LC50 (96 h) 27 mg/l: *Oryzias latipes* (OECD Guideline 203, semistatic)

LC50 (96 h) 25 mg/l: *Salmo gairdneri*, syn. *O. mykiss* (static)

The statement of the toxic effect relates to the analytically determined concentration. The study was carried out in soft water. Literature data. The product will cause changes in the pH value of the test system. The result refers to a neutralized sample.

LC50 (96 h) 182 mg/l: *Salmo gairdneri*, syn. *O. mykiss* (static) The statement of the toxic effect relates to the analytically determined concentration. The study was carried out in hard water. Literature data. The product will cause changes in the pH value of the test system. The result refers to a neutralized sample.

Aquatic invertebrates:

EC50 (48 h) 56 mg/l: *Daphnia magna* (OECD Guideline 202, part 1)

EC50 (48 h) 4.6 mg/l: *Ceriodaphnia dubia* (*Daphnia* test acute, semistatic) The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants

EC50 (72 h) 54 mg/l: *Pseudokirchneriella subcapitata* (OECD Guideline 201, static)

EC50 (96 h) 20 mg/l: *Selenastrum capricornutum* (static)

No observed effect concentration (72 h) 11 mg/l, Pseudokirchneriella subcapitata (OECD Guideline 201, static)

Chronic toxicity to fish: Study scientifically not justified.

Chronic toxicity to aquatic invertebrates: No observed effect concentration (21 d) 4.2 mg/l, Daphnia magna (OECD Guideline 211)

Microorganisms/Effect on activated sludge

Toxicity to microorganisms:

OECD Guideline 209: aquatic activated sludge, domestic/EC20 (30 min): > 1,000 mg/l Nominal concentration.

DIN 38412 Part 8: aquatic bacterium/EC50 (17 h): 47 mg/l Nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an un-neutralized sample. After neutralization, it is no longer toxic.

Persistence and degradability

Assessment biodegradation and elimination (H2O): Readily biodegradable (according to OECD criteria).

Elimination information:

76 % BOD of the ThOD (28 d) (OECD Guideline 301 F) (aerobic, activated sludge, domestic).

68 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (Inoculum conforming to MITI requirements (OECD 301C))

Information on Stability in Water (Hydrolysis): According to structural properties, hydrolysis is not expected/probable.

Bioaccumulative potential

Bioaccumulation potential: Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments: The substance will slowly evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

Additional information

Other ecotoxicological advice: Do not release untreated into natural waters

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.



Section 14. Transport Information

Land transport

USDOT

Hazard class: 3

Packing group: II

ID number: UN 1154

Hazard label: 3, 8

Proper shipping name: Diethylamine

Sea transport

IMDG

Hazard class: 3

Packing group: II

ID number: UN 1154

Hazard label: 3, 8

Marine pollutant: NO

Proper shipping name: Diethylamine

Air transport

IATA/ICAO

Hazard class: 3

Packing group: II

ID number: UN 1154

Hazard label: 3, 8

Proper shipping name: Diethylamine

Section 15. Regulatory Information

Federal Regulations

Registration status: Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Acute; Fire

CERCLA RQ	CAS Number	Chemical name
5000 lbs	121-44-8	triethylamine
100 lbs	75-04-7; 64-17-5; 109-89-7	ethylamine; Ethanol; diethylamine

Reportable Quantity for release: 100 lb

State regulations

State RTK	CAS Number	Chemical name
MA, NJ, PA	109-89-7	diethylamine



CA Prop. 65: Warning: This product contains a chemical(s) known to the state of California to cause cancer and birth defects or other reproductive harm.

NFPA Hazard codes

Health: 3

Fire: 3

Reactivity: 0

Special:

HMIS III rating

Health: 3

Flammability: 3

Physical hazard: 0

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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