ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Diethylenetriamine

Revision Date:2025-06-07 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name	: Diethylenetriamine
CBnumber	: CB2852838
CAS	: 111-40-0
EINECS Number	: 203-865-4
Synonyms	: diethylenetriamine,deta

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

Relevant identified uses	: For R&D use only. Not for medicinal, household or other use.
Uses advised against	: none

Company Identification

Company	: Chemicalbook
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 010-86108875

SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 4, Oral

Acute toxicity - Category 4, Dermal

Skin corrosion, Sub-category 1B

Skin sensitization, Category 1

Label elements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H302 Harmful if swallowed

H312 Harmful in contact with skin

H314 Causes severe skin burns and eye damage

H317 May cause an allergic skin reaction

H330 Fatal if inhaled

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 May cause respiratory irritation

H360 May damage fertility or the unborn child

H402 Harmful to aquatic life

Precautionary statement(s)

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P264 Wash skin thouroughly after handling.

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

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

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

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

P284 Wear respiratory protection.

P310 Immediately call a POISON CENTER or doctor/physician.

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.

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

Continuerinsing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

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

P501 Dispose of contents/container to.....

Prevention

P264 Wash ... thoroughly after handling.

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

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

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P272 Contaminated work clothing should not be allowed out of the workplace.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P317 Get medical help.

P321 Specific treatment (see ... on this label).

P362+P364 Take off contaminated clothing and wash it before reuse.

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

P363 Wash contaminated clothing before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P316 Get emergency medical help immediately.

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

P333+P317 If skin irritation or rash occurs: Get medical help.

Storage

P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Diethylenetriamine
Synonyms	: diethylenetriamine,deta
CAS	: 111-40-0
EC number	: 203-865-4
MF	: C4H13N3
MW	: 103.17

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Rest. Refer for medical attention .

Most important symptoms and effects, both acute and delayed

Prolonged breathing of vapors may cause asthma. Liquid burns skin and eyes. A skin rash can form. (USCG, 1999)

Indication of any immediate medical attention and special treatment needed

Early treatment for corrosive burns of esophagus consists of iv fluid therapy, broad spectrum antibiotics, sedation, parenteral hydrocortisone & more importantly maintaining patency of esophagus followed by dilatation. alkalies

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SECTION 5: Firefighting measures

Extinguishing media

Use water spray, dry chemical, alcohol foam or carbon dioxide. Discharge is effective for cooling of container, dilution, prevention of spread of the fire.

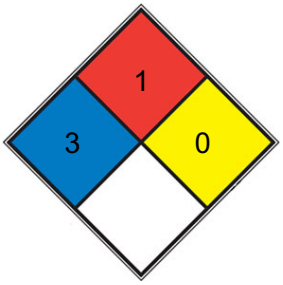
Specific Hazards Arising from the Chemical

Special Hazards of Combustion Products: Irritating vapors are generated when heated. (USCG, 1999)

Advice for firefighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

NFPA 704



■	HEALTH	3	Short exposure could cause serious temporary or moderate residual injury (e.g. liquid hydrogen, sulfuric acid, calcium hypochlorite, hexafluorosilicic acid)
■	FIRE	1	Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. Includes some finely divided suspended solids that do not require heating before ignition can occur. Flash point at or above 93.3 °C (200 °F). (e.g. mineral oil, ammonia)
■	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,N2)
□	SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Personal protection: complete protective clothing including self-contained breathing apparatus.

Environmental precautions

Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Personal protection: complete protective clothing including self-contained breathing apparatus.

Methods and materials for containment and cleaning up

Overspread sufficient sodium bisulfate and sprinkle water. Drain into the sewer with abundant water.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. Above 97°C use a closed system, ventilation and explosion-proof electrical equipment. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Separated from strong oxidants, acids, organic nitro compounds and food and feedstuffs. Keep in a well-ventilated room.Protect containers against physical damage. Store in cool, dark, well-ventilated place away from sources of ignition.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1 ppm as TWA; (skin).MAK sensitization of skin (SH)

Biological limit values

no data available

Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Liquid
Colour	Clear
Odour	AMMONIACAL ODOR
Melting point/freezing point	-39 °C. Atm. press.:101.3 kPa.

Boiling point or initial boiling point and boiling range	207 °C. Atm. press.:101.3 kPa.
Flammability	Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Lower and upper explosion limit/flammability limit	1-10%(V)
Flash point	96.7 °C. Atm. press.:101.3 kPa.
Auto-ignition temperature	358 °C. Atm. press.:101.3 kPa.
Decomposition temperature	no data available
pH	>12 (100g/l, H2O, 20℃)
Kinematic viscosity	dynamic viscosity (in mPa s) = 5.05. Temperature:273.0°C.
Solubility	Very soluble (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = -1.58. Temperature:20 °C.;log Pow = -5.58. Temperature:20 °C.
Vapour pressure	0.08 mm Hg (20 °C)
Density and/or relative density	958.6 kg/m3. Temperature:20 °C.
Relative vapour density	3.6 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic and corrosive gases including nitrogen oxides. The solution in water is a strong base. It reacts violently with acid and is corrosive. Reacts violently with oxidants, nitric acid and organic nitro compounds. Attacks many metals in the presence of water.

Chemical stability

no data available

Possibility of hazardous reactions

LOW, WHEN EXPOSED TO HEAT OR FLAMEThe vapour is heavier than air.DIETHYLENETRIAMINE neutralizes acids in exothermic reactions to form salts plus water. May be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen may be generated in combination with strong reducing agents, such as hydrides.

Conditions to avoid

no data available

Incompatible materials

Explosive solutions of nitromethane in dichloromethane, sensitized by addition of 10-12% of /bis(2-aminoethyl)amine/, retained their sensitivity at -50 deg C. Presence of 0-5% of the triamine considerable increases detonation sensitivity of nitromethane.

Hazardous decomposition products

Toxic oxides of nitrogen are produced during combustion of this material.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 1080 mg/kg
- Inhalation: no data available
- Dermal: LD50 Guinea pig percutaneous 162 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation of the vapour may cause lung oedema. See Notes. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation may cause asthma.

Aspiration hazard

A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Poecilia reticulata - 0.43 g/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 64.6 mg/L - 48 h.

Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - 1 164 mg/L - 72 h.

Toxicity to microorganisms: EC50 - nitrifying bacteria - 32.7 mg/L - 3 h. Remarks:Respiration rate.

Persistence and degradability

Chemicals containing two terminal amino groups on a noncyclic compound are associated with persistance in 5-day BOD tests(4). Diamines, such as diethylenetriamine, in which the 2 nitrogen groups were not separated by at least 3 carbon atoms were recalcitrant and did not support bacterial growth as a sole source of carbon, nitrogen, and energy(6). No degradation of diethylenetriamine was observed in a 5-day BOD test using an acclimated sewage inoculum(4). Diethylenetriamine is listed as resistant to biodegradation according to the biodegradability test of the Japanese Ministry of International Trade and Industry(1). This test utilizes a mixed inoculum containing sewage, soil and surface water. The BOD was 0% of theoretical in 20 days when incubated with sewage(2). However, the BOD increased to 70% theoretical when an inoculum composed of treated petrochemical effluent, sewage and soil was used that had previously been acclimated for 45-60 days(2). In other BOD tests, 55% of the diethylenetriamine in wastewater biodegraded in 6 weeks(3) and 0% degraded in 2 weeks(5).

Bioaccumulative potential

Diethylenetriamine has a very low estimated log octanol/water partition coefficient, -2.13(1), and, therefore, would not be expected to bioconcentrate in fish(SRC).

Mobility in soil

The Koc for diethylenetriamine estimated from molecular structure is 88(1). Therefore, it would not be expected to adsorb significantly to soil or sediment. According to a suggested classification scheme(2), this estimated Koc suggests that diethylenetriamine would be highly mobile in soil(SRC).

Toxics Screening Level

The interim initial threshold screening level (ITSL) for Diethylene Triamine (DETA) is 42 µg/m3 based on a 8 hour averaging time.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN2079 (For reference only, please check.)

IMDG: UN2079 (For reference only, please check.)

IATA: UN2079 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: DIETHYLENETRIAMINE (For reference only, please check.)

IMDG: DIETHYLENETRIAMINE (For reference only, please check.)

IATA: DIETHYLENETRIAMINE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.)

IMDG: 8 (For reference only, please check.)

IATA: 8 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

PICCS

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort.Rest and medical observation are therefore essential.Immediate administration of an appropriate inhalation therapy by a doctor or a person authorized by him/her, should be considered.The odour warning when the exposure limit value is exceeded is insufficient.