

## Chemical Safety Data Sheet MSDS / SDS

## Dimethylamine

Revision Date:2025-02-01 Revision Number:1

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

## Product identifier

Product name : Dimethylamine  
CBnumber : CB8852986  
CAS : 124-40-3  
EINECS Number : 204-697-4  
Synonyms : Dimethylamine,(CH<sub>3</sub>)<sub>2</sub>NH

## 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 : 400-158-6606

## SECTION 2: Hazards identification

## Classification of the substance or mixture

Gases under pressure: Liquefied gas  
Flammable gases, Category 1A, Flammable gas  
Skin irritation, Category 2  
Serious eye damage, Category 1  
Acute toxicity - Category 4, Inhalation  
Specific target organ toxicity – single exposure, Category 3

## Label elements

## Pictogram(s)

□□□□

Signal word : Danger

## Hazard statement(s)

H220 Extremely flammable gas  
H225 Highly Flammable liquid and vapour  
H280 Contains gas under pressure; may explode if heated

H301 Toxic if swallowed  
H302 Harmful if swallowed  
H311 Toxic in contact with skin  
H314 Causes severe skin burns and eye damage  
H315 Causes skin irritation  
H318 Causes serious eye damage  
H331 Toxic if inhaled  
H332 Harmful if inhaled  
H333 May be harmful if inhaled  
H335 May cause respiratory irritation  
H351 Suspected of causing cancer  
H370 Causes damage to organs  
H412 Harmful to aquatic life with long lasting effects

#### **Precautionary statement(s)**

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P311 Call a POISON CENTER or doctor/physician.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
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. Continue rinsing.  
P370+P378 In case of fire: Use ... for extinction.  
P405 Store locked up.  
P403+P235 Store in a well-ventilated place. Keep cool.  
P410+P403 Protect from sunlight. Store in a well-ventilated place.

#### **Prevention**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P264 Wash ... thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P271 Use only outdoors or in a well-ventilated area.

#### **Response**

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 In case of leakage, eliminate all ignition sources.  
P302+P352 IF ON SKIN: Wash with plenty of water/...  
P321 Specific treatment (see ... on this label).  
P332+P317 If skin irritation occurs: Get medical help.  
P362+P364 Take off contaminated clothing and wash it before reuse.  
P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

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

P319 Get medical help if you feel unwell.

#### **Storage**

P410+P403 Protect from sunlight. Store in a well-ventilated place.

P403 Store in a well-ventilated place.

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

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

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: Dimethylamine
Synonyms	: Dimethylamine,(CH <sub>3</sub> ) <sub>2</sub> NH
CAS	: 124-40-3
EC number	: 204-697-4
MF	: C <sub>2</sub> H <sub>7</sub> N
MW	: 45.08

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## 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**

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. 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. Give one or two glasses of water to drink. Refer for medical attention .

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

VAPOR: Irritating to eyes, nose and throat. If inhaled, will cause difficult breathing. LIQUID. Will burn skin and eyes. Harmful if swallowed.  
(USCG, 1999)

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

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary. Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 mg/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal. Cover skin burns with dry sterile dressings after decontamination. /Organic bases/Amines and related compounds/

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## SECTION 5: Firefighting measures

### Extinguishing media

Stop flow of gas before extinguishing fire. Use water spray to keep fire-exposed containers cool. Use water spray, dry chemical, or "alcohol resistant" foam on fires involving aqueous solutions.

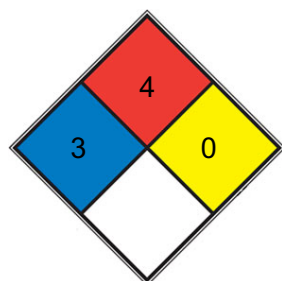
### Specific Hazards Arising from the Chemical

FLAMMABLE. Flashback along vapor trail may occur. May explode if ignited in an enclosed area. Vapors are eye, skin and respiratory irritants. (USCG, 1999)

### Advice for firefighters

Use water in large amounts, alcohol-resistant foam, dry powder, 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 4 Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily. Includes pyrophoric substances. Flash point below room temperature at 22.8 °C (73 °F). (e.g. acetylene, propane, [hydrogen gas](#))

REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N2](#))

SPEC.  
 HAZ.

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources. Cover the spilled material with foam. Collect leaking and spilled liquid in covered containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer. Do NOT let this chemical enter the environment.

### **Environmental precautions**

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Remove all ignition sources. NEVER direct water jet on liquid. Remove gas with fine water spray. Do NOT let this chemical enter the environment.

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

Environmental considerations-land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. /SRP: If time permits, pits, ponds, lagoons, soak holes, or holding areas should be sealed with an impermeable flexible membrane liner./ Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, cement powder, or commercial sorbents. Apply "universal" gelling agent to immobilize spill. Neutralize with sodium bisulfate (NaHSO<sub>4</sub>). Dimethylamine, Solution

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## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools. 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**

Fireproof. Cool. They are extremely flammable products that should be stored in a well-ventilated area and protected from fire risk.  
Methylamines

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## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

#### **Occupational Exposure limit values**

TLV: 5 ppm as TWA; 15 ppm as STEL; (SEN); A4 (not classifiable as a human carcinogen). MAK: 3.7 mg/m<sup>3</sup>, 2 ppm; peak limitation category: I(2); pregnancy risk group: D. EU-OEL: 3.8 mg/m<sup>3</sup>, 2 ppm as TWA; 9.4 mg/m<sup>3</sup>, 5 ppm as STEL

#### **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

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Solution
Colour	Clear slightly yellow
Odour	... Ammonia or fish-like odor ...
Melting point/freezing point	-93°C
Boiling point or initial boiling point and boiling range	7°C(lit.)
Flammability	Flammable Gas
Lower and upper explosion limit/flammability limit	14.4%
Flash point	-6°C
Auto-ignition temperature	753°F
Decomposition temperature	no data available
pH	AQUEOUS SOLN OF DIMETHYLAMINE ARE HIGHLY ALKALINE, LIKE AMMONIA.
Kinematic viscosity	1.7 mPa.s at 15.5 deg C /40% Dimethylamine aqueous solution/
Solubility	very soluble in water (163 g/100 g water at 40°C); soluble in ethanol, ethyl ether, and many organic solvents
Partition coefficient n-octanol/water	log Kow = -0.38
Vapour pressure	16.97 psi ( 55 °C)
Density and/or relative density	0.68g/mLat 20°C(lit.)
Relative vapour density	1.55 (vs air)
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on burning. This produces toxic fumes including nitrogen oxides. Reacts violently with strong oxidants and mercury. This generates fire and explosion hazard. Attacks copper, zinc alloys, aluminium, galvanized surfaces and plastics. The solution in water is a strong base. It reacts violently with acid and is corrosive (see ICSC 1485 dimethylamine, aqueous solution).

The solution in water is a strong base. It reacts violently with acid and is corrosive. Reacts violently with strong oxidants and mercury. This generates fire and explosion hazard. Attacks aluminium, copper, zinc alloys, galvanized surfaces and plastic.

## Chemical stability

no data available

## Possibility of hazardous reactions

Liquid solutions are flammable. The gas is heavier than air and may travel along the ground; distant ignition possible. The vapour is heavier than air and may travel along the ground; distant ignition possible. DIMETHYLAMINE is a base, neutralizing acids in exothermic reactions, and a reducing agent. It is temperature sensitive. Reacts vigorously with mercury and chlorine (NTP, 1992). Reacts violently with strong oxidizing agents and attacks copper and copper compounds [Handling Chemicals Safely, 1980 p. 123]. Reacts with hypochlorites to give N-chloroamines, some of which are explosives when isolated [Bretherick, 1979 p. 108].

## Conditions to avoid

no data available

## Incompatible materials

Dimethylamine is a medium strong base. Reacts violently with strong oxidizers; with mercury causing fire and explosion hazard. Incompatible with acids, organic anhydrides, isocyanates, vinyl acetate, acrylates, substituted allyls, alkylene oxides, epichlorohydrin, ketones, aldehydes, alcohols, glycols, phenols, cresols, caprolactum solution. Attacks aluminum, copper, lead, tin, zinc and alloys, some plastics, rubber and coatings.

## Hazardous decomposition products

Products of decomposition include carbon monoxide, carbon dioxide, hydrocarbons, and toxic oxides of nitrogen as well as toxic amine vapors.

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# SECTION 11: Toxicological information

## Acute toxicity

- Oral: LD50 Rat oral 698 mg/kg
- Inhalation: LC50 Mouse inhalation (2 hr) 14.3 mg/L
- Dermal: no data available

## 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

A4; Not classifiable as a human carcinogen.

## Reproductive toxicity

no data available

### **STOT-single exposure**

The substance is corrosive to the eyes and skin. The vapour is severely irritating to the respiratory tract. Corrosive on ingestion.

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

A harmful contamination of the air will be reached very quickly on evaporation of this substance at 20°C.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 *Brachydanio rerio* /*Zebra danio*/ 396 mg/L/96 hr; static, freshwater. /Dimethylamin-Hydrochlorid

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water flea); Conditions: freshwater, static, 15 deg C, pH 7.2, hardness 320 mg/L CaCO<sub>3</sub>, dissolved oxygen >95%; Concentration: 46,000 ug/L for 96 hr (95% confidence interval: 40,100-52,800 ug/L); Effect: intoxication, immobilization

Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green algae); Conditions: freshwater, static; Concentration: 9000 ug/L for 96 hr; Effect: general growth /40% water solution

Toxicity to microorganisms: no data available

### **Persistence and degradability**

AEROBIC: 51% of the theoretical BOD was achieved for dimethylamine with an activated sludge during a 2 week incubation period(1). Dimethylamine was biodegraded 69-89% in three Saskatchewan soils during a 7 day incubation period(2). In a screening study, dimethylamine completely degraded at 10 ppm with both an activated sludge and freshwater/sediment inoculum(3); after 5 days incubation, 70 and 80% of theoretical BOD was consumed in the activated sludge and the sediment, respectively(1). Inhibition was noted at 50 ppm with the sediment inoculum and 100 ppm with the sludge inoculum(3). Another screening study that employed an activated sludge inoculum reported 100% degradation in 6 and 12 days when the concentration was 20 mg/L and 135 mg/L, respectively(4). Other screening studies give similar results and dimethylamine is confirmed to be biodegradable according to the standard test of the Japanese Ministry of Industry and Trade (MITI) that employs a mixed inoculum obtained from freshwater, soil, and sludge(5-7). In a laboratory activated sludge unit, dimethylamine was completely removed from inflows of up to 135 mg/L with retention times of 4 hr indicating that it should be readily degraded in biological treatment plants(4). When 250 ppm dimethylamine was added to a fine sand loam and sandy soil amended with sewage and nitrite-N, 50% degradation occurred in 2 days in the sand loam, while 20% degradation occurred in the sandy soil(8). N-nitrosodimethylamine was formed in the degradation(8). 50 to >90% degradation occurred in four silt loam or loam soils within 14 days(9).

### **Bioaccumulative potential**

An estimated BCF of 3 was calculated in fish for dimethylamine(SRC), using a log Kow of -0.38(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### **Mobility in soil**

The adsorption isotherm for dimethylamine in 5 soils was linear and resulted in a mean Koc of 434.9(1). A Koc value of 508 was reported for dimethylamine in lake sediment(2). According to a classification scheme(3), this Koc data suggests that dimethylamine is expected to have



moderate mobility in soil.

### **Other adverse effects**

no data available

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## 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.

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## SECTION 14: Transport information

### **UN Number**

ADR/RID: UN1160 (For reference only, please check.)

IMDG: UN1160 (For reference only, please check.)

IATA: UN1160 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: DIMETHYLAMINE AQUEOUS SOLUTION (For reference only, please check.)

IMDG: DIMETHYLAMINE AQUEOUS SOLUTION (For reference only, please check.)

IATA: DIMETHYLAMINE AQUEOUS SOLUTION (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 3 (For reference only, please check.)

IMDG: 3 (For reference only, please check.)

IATA: 3 (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

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## 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.

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## 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?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=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

Toxicity information applies to aqueous solutions containing dimethylamine over 15%, and physical properties will vary according to concentration. Physical properties of this card are for the 40% solution. See ICSC 0260 Dimethylamine gas in a cylinder.

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.