Chemical Safety Data Sheet MSDS / SDS

Dimethylamine SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Dimethylamine

CAS: 124-40-3

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.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

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

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H220 Extremely flammable gas
H315 Causes skin irritation
H318 Causes serious eye damage
H332 Harmful if inhaled
H335 May cause respiratory irritation

Precautionary statement(s)

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 which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Dimethylamine
Common names and synonyms:	Dimethylamine
CAS number:	124-40-3
EC number:	204-697-4
Concentration:	100%

SECTION 4: First aid measures

Description of necessary 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/effects, 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 immediate medical attention and special treatment needed, if necessary

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 patent 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/

SECTION 5: Firefighting measures

Suitable 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)

Special protective actions for fire-fighters

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

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 (NaHSO4). Dimethylamine, Solution

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

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/m3, 2 ppm; peak limitation category: I(2); pregnancy risk group: D.EU-OEL: 3.8 mg/m3, 2 ppm as TWA; 9.4 mg/m3, 5 ppm as STEL

Biological limit values

no data available

Appropriate engineering 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, such as personal protective equipment (PPE)

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 and safety characteristics

Physical state:	Dimethylamine, anhydrous is a colorless gas smelling of fish at low concentrations and of ammonia at higher concentrations. Shipped as a liquid under its vapor pressure. Contact with the unconfined liquid can cause frostbite by evaporative cooling and chemical type burns. Density of liquid 5.5 lb / gal. The gas, which is corrosive, dissolves readily in water to form flammable corrosive solutions. The gas is heavier than air and can asphyxiate by the displacement of air. Gas is easily ignited and produces toxic oxides of nitrogen when burned. Long-term inhalation of low concentrations or short-term inhalation of low concentrations has adverse health effects. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket. Used to make other chemicals and as a solvent.
Colour:	Colorless gas ... [Note: A liquid below 44 degrees F. Shipped as a liquefied compressed gas].
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:	Lower flammable limit: 2.8% by volume; Upper flammable limit: 14.4% by volume
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:	24 % at 140° F (NIOSH, 2016)

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

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.

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.

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 CaCO3, 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

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: 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

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

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.