

Safety data sheet Dimethylamine

Creation date : 28.01.2005
Revision date : 07.11.2011

Version : 1.4

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

1.1. Product identifier

Product name
Dimethylamine

EC No (from EINECS): 204-697-4
CAS No: 124-40-3
Index-Nr. 612-001-00-9

Chemical formula C₂H₇N
REACH Registration number:
01-2119475495-27

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

Relevant identified uses

Industrial and professional. Perform risk assessment prior to use.

Uses advised against

Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification

BOC, PO Box 1201, Bluebell, Dublin
E-Mail Address ReachSDS@boc.com

1.4. Emergency telephone number

Emergency phone numbers (24h): 1850 333 435

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.

Flam. Gas 1 - Extremely flammable gas.

Acute Tox. 4 - Harmful if inhaled.

STOT SE 3 - May cause respiratory irritation.

Skin Irrit. 2 - Causes skin irritation.

Eye Dam. 1 - Causes serious eye damage.

Classification acc. to Directive 67/548/EEC & 1999/45/EC

F+; R12 | Xn; R20 | Xi; R37/38, R41

Extremely flammable.

Harmful by inhalation.

Irritating to respiratory system and skin.

Risk of serious damage to eyes.

Risk advice to man and the environment

Liquefied gas.

Contact with liquid may cause cold burns/frost bite.

2.2. Label elements

- Labelling Pictograms



- Signal word

Danger

- Hazard Statements

H280

Contains gas under pressure; may explode if heated.

H220

Extremely flammable gas.

H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H315 Causes skin irritation.
H318 Causes serious eye damage.

- Precautionary Statements

Precautionary Statement Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260 Do not breathe gas, vapours.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P304+P340+P315 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention.
P305+P351+P338+P315 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

Precautionary Statement Storage

P403 Store in a well-ventilated place.

Precautionary Statement Disposal

None.

2.3. Other hazards

Contact with liquid may cause cold burns/frost bite.

SECTION 3: Composition/information on ingredients

Substance / Mixture: Substance.

3.1. Substances

Dimethylamine

CAS No: 124-40-3

Index-Nr.: 612-001-00-9

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REACH Registration number:

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Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures

First Aid General Information:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Inhalation:

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Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Skin / Eye:

May cause irritation to skin. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product. Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical assistance.

First Aid Ingestion:

Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

May cause irritation to skin. May cause severe chemical burns to cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product. Irritation of respiratory tract

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance. Treat with a corticosteroid spray as soon as possible after inhalation. May result in pulmonary oedema.

SECTION 5: Fire fighting measures

5.1. Extinguishing media

Suitable extinguishing media

Dry powder. Carbon dioxide. Foam. Water fog. Use water spray or fog to control fire fumes.

Unsuitable extinguishing media

Do not use a solid water stream.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Exposure to fire may cause containers to rupture/explode. Can form violent, spontaneously explosive mixture in air.

Hazardous combustion products

If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:

Nitric oxide, Nitrogen dioxide, Carbon monoxide.

5.3. Advice for fire-fighters

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Prevent water used in emergency cases from entering sewers and drainage systems.

Special protective equipment for fire-fighters

Gas tight chemically protective clothing (Type 1) in combination with self contained breathing apparatus.

Guideline:

EN 943-2:2002: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for gas-tight (Type 1) chemical protective suits for emergency teams (ET).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Use self-contained breathing apparatus and chemically protective clothing. Consider the risk of potentially explosive atmospheres. Prevent from entering sewers, basements and

workpits, or any place where its accumulation can be dangerous. EN 137 Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking.

6.2. Environmental precautions

Try to stop release. Reduce vapour with fog or fine water spray.

6.3. Methods and material for containment and cleaning up

Ventilate area. Hose down area with water. Wash contaminated equipment or sites of leaks with copious quantities of water. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Only experienced and properly instructed persons should handle gases under pressure. The substance must be handled in accordance with good industrial hygiene and safety procedures. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid exposure, obtain special instructions before use. Take precautionary measures against static discharges. Purge air from system before introducing gas. Keep away from ignition sources (including static discharges). Do not smoke while handling product. Assess the risk of a potentially explosive atmosphere and the need for explosion-proof equipment. Consider the use of only non-sparking tools. Ensure the complete gas system has been (or is regularly) checked for leaks before use. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Avoid suckback of water, acid and alkalis. Refer to supplier's handling instructions. Do not allow backfeed into the container. Protect containers from physical damage; do not drag, roll, slide or drop. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Ensure equipment is adequately earthed. Do not remove or deface labels provided by the supplier for the identification of the container contents.

7.2. Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well ventilated place. Segregate from oxidant gases and other oxidants in store. Cylinders should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage

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corrosion. Do not store with combustible materials, animal feedstuffs, food, or oxidizing agents.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit value

Value type	value	Note
Ireland - OELV 8 hrs (TWA)	2 ppm	
Ireland - OELV 15 min (STEL)	5 ppm	

Derived No Effect Levels

Type	Exposure	Value	Population	Effects
DNEL	Short term dermal	3,25 mg/kg bw/day	Workers	Systemic
	Short term inhalation	30,65 mg/m3	Workers	Systemic
DNEL	Short term inhalation	14,5 mg/m3	Workers	Local
DNEL	Long term dermal	0,148 mg/kg bw/day	Workers	Systemic
DNEL	Long term inhalation	1,044 mg/m3	Workers	Systemic

Predicted No Effect Concentrations

Type	Environmental Compartment	Value
PNEC	Fresh water	0,006 mg/l
PNEC	Marine	0,0006 mg/l
PNEC	Intermittent release	0,006 mg/l
PNEC	STP (Sewage Treatment Plant)	4,7 mg/l
PNEC	Fresh water sediment	0,0053 mg/kg dw
PNEC	Soil	0,046 mg/kg dw

8.2. Exposure controls

Appropriate engineering controls

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system. Keep concentrations well below occupational exposure limits. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Gas detectors should be used when toxic quantities may be released. Keep concentrations well below lower explosion limits. Gas detectors should be used when quantities of flammable gases/vapours may be released. The substance must be handled in accordance with good industrial hygiene and safety procedures.

Personal protective equipment

Eye and face protection

Protect eyes, face and skin from liquid splashes. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wear a face-shield when transfilling and breaking transfer connections. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Wear

eye protection to EN 166 when using gases. Full-face mask recommended

Guideline:

EN 136 Respiratory protective devices. Full face masks. Requirements, testing, marking

Skin protection

Hand protection

Advice: Wear working gloves and safety shoes while handling containers., Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Material: Nitrile

Guideline: EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

Body protection

Protect eyes, face and skin from contact with product. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Guideline:

EN 943: Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles.

Other protection

Wear flame resistant/retardant clothing. Take precautionary measures against static discharges. Wear working gloves and safety shoes while handling containers. EN ISO 20345 Personal protective equipment - Safety footwear. ISO/TR 2801:2007 Clothing for protection against heat and flame -- General recommendations for selection, care and use of protective clothing.

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use., Use SCBA in the event of high concentrations, The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD., When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used.

Guideline:

EN 136 Respiratory protective devices. Full face masks. Requirements, testing, marking

Material:

Filter K

Guideline:

EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking

Thermal hazards

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information

Appearance/Colour: Colourless gas.

Odour: Rotten fish Odour can persist.

Odour threshold:

Odour threshold is subjective and inadequate to warn for over exposure.

pH value: If dissolved in water pH-value will be affected.

Melting point: -92,2 °C

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Boiling point: 7 °C
Flash point: Not applicable for gases and gas mixtures.
Evaporation rate:
Not applicable for gases and gas mixtures.
Flammability range: 2,8 %(V) - 14,4 %(V)
Vapour Pressure 20 °C: 1,7 bar
Relative density, gas (Air=1): 1,5
Solubility in water: Hydrolyses.
Partition coefficient: n-octanol/water: -0,38 logPow
Autoignition temperature: 400 °C
Viscosity:
Dynamic: 0,196 mPa.s
Molecular weight: 45 g/mol
Critical temperature: 164 °C
Relative density, liquid (Water=1): 0,67

9.2. Other information

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

May react violently with oxidants., Can form potentially explosive atmosphere in air.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

10.5. Incompatible materials

Air, Oxidiser. May react violently with acids. Reacts with water to form corrosive alkalis. Moisture. For material compatibility see latest version of ISO-11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:

Nitric oxide, Nitrogen dioxide, Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

Value: LD50

Species: Rat

Value in standard unit mg/kg: 698 mg/kg

Acute inhalation toxicity

Value: LC50

Species: Rat

Exposure time: 4 h

Value in non-standard unit: > 5800 mg/m³

Acute dermal toxicity

Value: LD50

Species: Rat

Value in standard unit mg/kg: 3.900 mg/kg

Acute toxicity other routes

Ingestion is not considered a potential route of exposure.

Skin irritation

Species: Rabbit

Corrosive.

Eye irritation

Species: Rabbit

Irritant

Sensitization

Not determined

Assessment mutagenicity

There is no evidence of mutagenic potential.

Assessment carcinogenicity

No evidence of carcinogenic effects.

Assessment toxicity to reproduction

No indication of toxic effects.

Other relevant toxicity information

Irritation of respiratory tract.

Aspiration hazard

Not applicable to gases and gas mixtures

SECTION 12: Ecological information

12.1. Toxicity

Acute and prolonged toxicity fish

Species: Guppy (Poecilia reticulata)

Exposure time: 24 h

Value type: LC50

Value in standard unit mg/l: 55 mg/l

Acute toxicity aquatic invertebrates

Species: Water flea (Daphnia magna)

Exposure time: 48 h

Value type: EC50

Value in standard unit mg/l: 88,7 mg/l

Toxicity aquatic plants

Species: Algae

Exposure time: 96 h

Value type: EC50

Value in standard unit mg/l: 9 mg/l

Toxicity microorganisms

Species: Bacteria

Exposure time: 0,25 h

Value type: EC50

Value in standard unit mg/l: 26,8 mg/l

12.2. Persistence and degradability

Biodegradation

Biodegradation: > 60 %

Exposure time: 13 d

Method: OECD Test Guideline 301 F (Manometric Respirometry Test)

Readily biodegradable

Physical chemical eliminability

Not determined

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

Log Koc: 2,4 - 4,7

Henry's constant at 25 °C: 1,84 Pa.m³/mol

12.5. Results of PBT and vPvB assessment

No data available.

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12.6. Other adverse effects

May cause pH changes in aqueous ecological systems.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Contact supplier if guidance is required. Must not be discharged to atmosphere. Gas may be scrubbed in sulphuric acid solution. Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods.

Gases in pressure containers (including halons) containing dangerous substances

EWC Nr. 16 05 04*

SECTION 14: Transport information

ADR/RID

14.1. UN number

1032

14.2. UN proper shipping name

Dimethylamine, anhydrous

14.3. Transport hazard class(es)

Class: 2

Classification Code: 2F

Labels: 2.1

Hazard number: 23

Tunnel restriction code: (B/D)

Emergency Action Code: 2PE

14.4. Packing group (Packing Instruction)

P200

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

IMDG

14.1. UN number

1032

14.2. UN proper shipping name

Dimethylamine, anhydrous

14.3. Transport hazard class(es)

Class: 2.1

Labels: 2.1

EmS: F-D, S-U

14.4. Packing group (Packing Instruction)

P200

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

IATA

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the container valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Seveso Directive 96/82/EC: Covered

Other regulations

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work
Directive 94/9/EC on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Directive 89/686/EEC on personal protective equipment

Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances

Directive 1999/45/EC concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations

Directive 97/23/EC on the approximation of the laws of the Member States concerning pressure equipment.

This Safety Data Sheet has been produced to comply with Regulation (EU) 453/2010.

15.2. Chemical safety assessment

CSA has not been carried out.

SECTION 16: Other information

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

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Further information

Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.

As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

References

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:

Agency for Toxic Substances and Diseases Registry (ATSDR) (<http://www.atsdr.cdc.gov/>)

European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.

European Chemical Agency: Information on Registered Substances <http://apps.echa.europa.eu/registered/registered-sub.aspx#search>

European Industrial Gases Association (EIGA) Doc. 169/11 Classification and Labelling guide.

ISO 10156:2010 Gases and gas mixtures -- Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.

International Programme on Chemical Safety (<http://www.inchem.org/>)

Matheson Gas Data Book, 7th Edition.

National Institute for Standards and Technology (NIST) Standard Reference Database Number 69

The ESIS (European chemical Substances 5 Information System) platform of the former European Chemicals Bureau (ECB) ESIS (<http://ecb.jrc.ec.europa.eu/esis/>).

The European Chemical Industry Council (CEFIC) ERICards.

United States of America's National Library of Medicine's toxicology data network TOXNET (<http://toxnet.nlm.nih.gov/index.html>)

Substance specific information from suppliers.

2010 Code of Practice for the Safety, Health and Welfare at Work (S.I. No. 619 of 2001).

End of document