

Safety data sheet Cyclopentane.

Creation date : 25.03.2011
Revision date : 25.05.2011

Version : 1.21

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

1.1. Product identifier

Product name
Cyclopentane

EC No (from EINECS): 206-016-6
CAS No: 287-92-3
Index-Nr. 601-030-00-2
Chemical formula C5H10
REACH Registration number:
01-2119463053-47

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)

Flammable liquid: Flam. Liq. 2 – Highly flammable liquid and vapour.

Aquatic Chronic 3 - Harmful to aquatic life with long lasting effects.

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

F; R11 | R52-53

Highly flammable.

Harmful to aquatic organisms.

May cause long term adverse effects in the aquatic environment.

Risk advice to man and the environment

Contact with liquid may cause cold burns/frost bite

2.2. Label elements

- Labelling Pictograms



- Signal word

Danger

- Hazard Statements

H225 Highly flammable liquid and vapour
H412 Harmful to aquatic life with long lasting effects.

- Precautionary Statements

Precautionary Statement Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P240 Ground / bond container and receiving equipment.
P243 Take precautionary measures against static discharge.
P273 Avoid release to the environment.

Precautionary Statement Response

P233 Keep container tightly closed.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P242 Use only non-sparking tools.

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

P303/361/353 IF ON SKIN (or hair):Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P370/378 In case of fire: Use only foam or powder fire extinguishers for extinction.

Precautionary Statement Storage

P403/235 Store in a well-ventilated place. Keep cool.

Precautionary Statement Disposal

P501 Dispose of contents and container in accordance with local regulations.

2.3. Other hazards

Contact with liquid may cause cold burns/frost bite.
Repeated exposure may cause skin dryness or cracking.

SECTION 3: Composition/information on ingredients

Substance / Mixture: Substance.

3.1. Substances

CAS No: 287-92-3
Index-Nr.: 601-030-00-2
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Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable.

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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:

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:

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing.

Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance. Immediately flush eyes thoroughly with water for at least 15 minutes.

First Aid Ingestion:

Do not give victim anything to drink if they are unconscious. Do NOT induce vomiting. Get immediate medical advice/attention.

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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

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

Get immediate medical advice/attention.

SECTION 5: Fire fighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use only carbon dioxide, water, foam or powder fire extinguishers for extinction.

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.

Hazardous combustion products

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

Carbon 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

Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents.

Guideline: EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Consider the risk of potentially explosive atmospheres. Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Eliminate ignition sources. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Ventilate area. Keep away from ignition sources (including static discharges). Evacuate area. Prevent evaporation by covering with foam. Absorb excess liquid spillage on inorganic adsorbent material such as fine sand, brick dust etc. Place spent adsorbent in sealed packages and contact specialist waste disposal contractor.

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 the product. The substance must be handled in accordance with good industrial hygiene and safety procedures. Avoid contact with skin. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your supplier if in doubt. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Purge air from system before introducing product. Do not smoke while handling product. Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment. Consider the use of only non-sparking tools. Ensure the complete system has been (or is regularly) checked for leaks before use. Refer to supplier's handling instructions. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place

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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 cylinder 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 product from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers. Segregate from oxidant gases and other oxidants in store. Keep container below 49°C in a well ventilated place. Containers 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. Containers should not be stored in conditions likely to encourage corrosion.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit value

Value type	value	Note
TWA	600 ppm	(AIHA)

DNEL not available
PNEC not available

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. 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. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Keep concentrations well below occupational exposure limits. Keep concentrations well below lower explosion limits.

Personal protective equipment

Eye and face protection

Protect eyes, face and skin from liquid splashes. 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. Full-face mask recommended.

Guideline:

EN: EN136 Respiratory protective devices. Full face masks. Requirements, testing, marking.

Skin protection

Hand protection

Wear cold insulating gloves.

Guideline:

EN 511 Protective gloves against cold.

Wear working gloves and safety shoes when handling cylinders.

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, 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 cylinders. ISO 20345 Safety footwear.

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 AX

Guideline:

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

Environmental Exposure Controls

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

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information

Appearance/Colour: Colourless liquid.

Odour: Faint. Poor warning properties at low concentrations.

Odour threshold:

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

Melting point: -94 °C

Boiling point: 49 °C

Flash point: < -39 °C

Flammability range: 1,1 %(V) – 8,7 %(V)

Vapour Pressure 20 °C: 0,35 bar

Relative density, gas: 2,4

Solubility in water: 156 mg/l at 25°C

Partition coefficient: n-octanol/water: No data available.

Autoignition temperature: 361 °C

Molecular weight: 70,14 g/mol

Relative density, liquid: 0,7

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

Unreactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

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

10.4. Conditions to avoid

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

10.5. Incompatible materials

Air, Oxidiser.

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:
Carbon dioxide, Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

Value: LD50

Species: Rat

Value in non-standard unit: 11.400 mg/kg

Acute inhalation toxicity

Value: LC50

Species: Mouse

Exposure time: 2 h

Value in non-standard unit: 106 mg/l

Value: LC50

Species: Rat

Value in non-standard unit: 106.000 m³

Acute dermal toxicity

Not available

Acute toxicity other routes

May cause pneumonia if swallowed and enters airways.

Skin irritation

Irritating to skin. Repeated exposure may cause skin dryness or cracking. May cause dermatitis by skin contact.

Eye irritation

Irritating to eyes. May cause mild, short-term discomfort to eyes.

Sensitization

No data available.

Repeated dose toxicity

Suppression of weight gain.

Assessment mutagenicity

No data available

Assessment carcinogenicity

No evidence of carcinogenic effects.

Assessment toxicity to reproduction

No data available.

Assessment teratogenicity

No data available.

Experiences with human exposure

Symptoms may include dizziness, headache, nausea, unconsciousness, irritation of the mucous membranes and dry coughs.

SECTION 12: Ecological information

12.1. Toxicity

May cause long-term adverse effects in the aquatic environment.

Acute and prolonged toxicity fish

Species: Coho salmon (*Oncorhynchus kisutch*)

Exposure time: 24 h

Value type: LC50

Value in standard unit mg/l: >100 mg/l

Acute toxicity aquatic invertebrates

Species: Crustaceans

Exposure time: 24 h

Value type: EC50

Value in standard unit mg/l: 19,6 mg/l

Toxicity aquatic plants

Species: Algae

Exposure time: 3h

Value type: EC50

Value in standard unit mg/l: 116 mg/l

12.2. Persistence and degradability

Biodegradation: 0%

Time: 4 days

12.3. Bioaccumulative potential

Bioaccumulation: log Kow = 3

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Because of the partition coefficient of the contaminant in the organic fraction of the soil (log Kow), accumulation in organisms is not to be expected.

12.4. Mobility in soil

Floats on water. Evaporates within a day from water or soil surfaces.

12.5. Results of PBT and vPvB assessment

No data available

12.6. Other adverse effects

None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste product should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.

SECTION 14: Transport information

ADR/RID

14.1. UN number

1146

14.2. UN proper shipping name

CYCLOPENTANE

14.3. Transport hazard class(es)

Class: 3

Classification Code: F1

Labels: 3

Hazard number: 33

Emergency Action Code: 3YE

Tunnel code: (D/E)

14.4. Packing group (Packing Instruction)

II

14.5. Environmental hazards

Environmentally Hazardous.

14.6. Special precautions for user

None.

IMDG

14.1. UN number

1146

14.2. UN proper shipping name

CYCLOPENTANE

14.3. Transport hazard class(es)

Class: 3

Labels: 3

EmS: FE,SD

14.4. Packing group (Packing Instruction)

II

14.5. Environmental hazards

Environmentally Hazardous

14.6. Special precautions for user

None.

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

Substance name: CYCLOPENTANE

Ship type required: 2

Pollution category: Y

IATA

14.1. UN number

1146

14.2. UN proper shipping name

CYCLOPENTANE

14.3. Transport hazard class(es)

Class: 3

Labels: 3

14.4. Packing group (Packing Instruction)

II

14.5. Environmental hazards

Environmentally Hazardous.

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 cylinder 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.

15.2. Chemical safety assessment

CSA has not been carried out

SECTION 16: Other information

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Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. 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.

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).

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