

Material Safety Data Sheet Cyclohexylamine

Section 1 - Product Identification

Synonyms : Cyclohexanamine, Hexahydrobenzenamine
Chemical Formula : $C_6H_{13}N$
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Recommended use : Cyclohexylamine is used in particular in rubber industry for production of the vulcanisation accelerator, corrosion inhibitor, synthetic sweeteners and for water treatment

Section 2 – Hazards Identification

2.1 Classification

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3), H226

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Dermal (Category 3), H311

Skin corrosion (Sub-category 1B), H314

Serious eye damage (Category 1), H318

Reproductive toxicity (Category 2), H361fd

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Signal Word Danger

Hazard Statements

Flammable liquid and vapor

Harmful if swallowed

Toxic in contact with skin

Causes severe skin burns and eye damage

May cause respiratory irritation

Suspected of damaging fertility

Precautionary Statements

Obtain special instructions before use

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

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Do not breathe dust/fume/gas/mist/vapors/spray

Use only outdoors or in a well-ventilated area

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

Keep container tightly closed

Ground/bond container and receiving equipment

Use explosion-proof electrical/ventilating/lighting/equipment

Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

2.3 Other hazards

The substance is not identified as persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) under Annex XIII of Regulation 1907/2006/ES.

Section 3 – Composition/Information on Ingredients

3.1 Composition comments

Formula : C₆H₁₃N
Molecular weight : 99.18 g/mol
CAS-No. : 108-91-8
EC-No. : 203-629-0
Index-No. : 612-050-00-6

| Chemical Name | EC No/CAS No | Purity, % |
|-----------------|--------------|-----------|
| Cyclohexylamine | 108-91-8 | max. 99.9 |

Section 4 – First-Aid Measures

4.1. Description of first aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

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

Causes burns by all exposure routes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

N.A.

Section 5 – Fire Fighting Measures

5.1. Suitable Extinguishing media

Carbon dioxide (CO₂) Foam Dry powder

5.2. Specific hazards arising from the chemical

Carbon oxides, Nitrogen oxides (NO_x), Sulfur oxides Combustible.

5.3. Special protective actions for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Section 6 – Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

6.2. Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7 – Handling and Storage

7.1. Precautions for safe Handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Keep away from heat, sparks and flame.

Section 8 – Exposure Controls/Personal Protection

8.1. Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

8.2. Individual protection measures, such as personal protective equipment (PPE)

Eye/face Protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tight sealing safety goggles. Face protection shield.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State Liquid

Appearance Colorless

Odor Fishy

Odor Threshold No information available

pH 11.5 100 g/L aq.sol

Melting Point/Range -17 °C / 1.4 °F

Boiling Point/Range 133 - 134 °C / 271.4 - 273.2 °F

Flash Point 27 °C / 80.6 °F

Method - CC (closed cup)

Evaporation Rate No information available

Flammability (solid,gas) Not applicable

Flammability or explosive limits

Upper No data available

Lower No data available

Vapor Pressure 13 mbar @ 20 °C

Vapor Density No information available

Specific Gravity 0.867

Solubility Soluble

Partition coefficient; n-octanol/water No data available

Autoignition Temperature 293 °C / 559.4 °F

Decomposition Temperature No information available

Viscosity 2.4 mPa.s @ 20°C

Molecular Formula C6 H13 N

Molecular Weight 99.18

Section 10 – Stability and Reactivity

10.1. Reactivity

N.A

10.2. Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3. Possibility of hazardous reactions

Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitrosamines! Violent reactions possible with: Strong oxidizing agents, Acid chlorides, Acid anhydrides, halogens, organic nitro compounds, sodium hypochlorite, acids

10.4. Conditions to avoid:

Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NO_x), Thermal decomposition can lead to release of irritating gases and vapors.

Section 11 – Toxicological Information

11.1 Acute toxicity: category 3

- LD50 (oral, rat) approx. 432 mg.kg-1
- LD50 (oral, rat: 1 – 4 % solution) = 350 ml.kg-1 (i.e. 300 mg.kg-1)/7 days
- LC50 (inhal., rat) > 700 mg.m-3/4 hours
- LD50 (derm., rabbit) = 275 mg.kg-1

11.2 Irritation

Dermal irritation (rabbit): corrosive

Eye irritation (rabbit): corrosive

11.3 Sensitisation

Skin sensitisation: the substance is corrosive, was not tested

Mutagenicity (in vitro and in vivo studies): not mutagenic

Carcinogenicity: not carcinogenic

Reproductive toxicity (oral., rat): causes fertility – NOAEL = 100 mg.kg-1/day

STOT– single exposure: not classified

Specific target organs toxicity – repeated exposure: not classified

Aspiration hazard: data not available

Section 12 – Ecological Information

12.1.Toxicity

Do not empty into drains. Contains a substance which is:. Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment

12.2. Bioaccumulative potential

N.A.

12.3. Mobility in soil

Will likely be mobile in the environment due to its water solubility

12.4. Persistence and Degradability

Persistence is unlikely

Section 13 – Disposal Considerations

13.1. Disposal methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Section 14 – Transport Information

14.1. Transport Information

DOT Classification : CLASS 8: Corrosive liquid.

Identification : Corrosive liquids n.o.s. : UN2357 PG: II

Special Provisions for Transport : Not available.

Section 15 – Regulatory Information

15.1. Safety, health and environmental regulations

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : FLAMMABLE LIQUIDS

Other Regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable. Take note of Dir 94/33/EC on the protection of young people at work.

Section 16 : Additional Information

16.1. List of abbreviation and acronyms used in this MSDS

SDS : Safety Data Sheets

Index N° : atomic number of the element most characteristic of the properties of the substance

CAS No : Chemical Abstracts Service number

EC No : EINECS Number : European Inventory of Existing Commercial Substances

Repr. Cat. 2 : Substance presumed human reproductive toxicant

Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.

GHS : Globally Harmonised System of Classification and Labelling

LD₅₀ : Median Lethal Dose

LC₅₀ : Lethal Concentration, 50%

N.A. : Not Applicable

OSHA : Occupational Safety & Health Administration

Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)

PEL : Permissible Exposure Limits

ACGIH : American Conference of Governmental Industrial Hygienists

TLV : Threshold Limit Value

Japanese MITI : Japanese Ministry of International Trade and Industry

EC₅₀ : Half maximal effective concentration

UN : United Nations

U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the authority of the Environmental Protection Agency

Canadian DSL: Canadian Domestic Substances List

16.2. List of relevant hazard statements and precautionary statements used in this MSDS

Hazard Statement

H361 d: Suspected of damaging the unborn child

H319: Causes serious eye irritation

H303: May be harmful if swallowed

Precautionary Statements

Prevention

P201: Obtain special instructions before use.

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

P281: Use personal protective equipment as required.

P264: Wash eyes thoroughly after handling.

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

Response

P308 + P313: If exposed or concerned: get medical advice/attention.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

Storage

P405: Store locked up.

Disposal

P501: Dispose of contents/container to in accordance with local regulations.

16.3. References

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- For general information on the toxicology of borates see ECETOC Technical Report No. 63 (1995); Patty's Industrial Hygiene and Toxicology, 4th Edition Vol. II, (1994) Chap. 42, 'Boron'.

16.4. Disclaimer of Liability

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