

SAFETY DATA SHEET



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CYCLOHEXENE

SDS No. M0047

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Cyclohexene

Synonyms: 1,2,3,4-Tetrahydrobenzene; Benzene Tetrahydride

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Skin Irritation: GHS Category 3

Eye Irritation: GHS Category 2B

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor..

H305 – .May be harmful if swallowed.

H315 - .Causes skin irritation.

H320 – Causes eye irritation.

H333 – May be harmful if inhaled.

H336 – May cause drowsiness and dizziness.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

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

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Emergency Overview

Harmful if swallowed or inhaled. Affects central nervous system. May cause irritation to eyes, skin, and respiratory tract
Highly flammable liquid and vapor. Vapor may cause flash fire. Target Organs: Central nervous system and skin.

Clear focus. Consistent results. Complete confidence.

HMIS Rating:

Health – 1 Flammability – 4 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Cyclohexene	110-83-8	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact: Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 244° C (471° F)

Flash Point: <-7° C (<19° F)

Flammable Limits: Lower Limit – 1.2 vol %, Upper Limit – 4.8 vol %

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide and carbon dioxide) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. May accumulate static electric charge and may cause ignition of its own vapors. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Material floats on water and may travel to a source of ignition and spread fire.

Specific Explosion Hazards: Containers may explode in the heat of a fire.

Fire Fighting Media: Water may be ineffective. Material is lighter than water and insoluble in water. Fire could easily be spread by use of water where run-off cannot be contained. Do not use straight streams of water. Use dry chemical, carbon dioxide, or appropriate foam. Solid streams of water may be ineffective and spread material. For large fires, use water spray, fog, or regular foam. For small fires, use dry chemical, carbon dioxide, water spray, or regular foam. Cool containers with flooding quantities of water until well after the fire is out.

National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking tools and equipment. A vapor suppressing foam may be used. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 100 ppm TWA

NIOSH – 300 ppm TWA; 1015 mg/m³ TWA; 200 ppm IDLH

OSHA Final PELs – 300 ppm TWA; 1015 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: sweet odor

Molecular Formula: C₃H₆O

Molecular Weight: 82.15

Auto-ignition Temperature: 244° C (471° F)

Flash Point: <-7° C (<19° F)

Flammable Limits: Lower Limit – 1.2 vol %, Upper Limit – 4.8 vol %

pH: Not available.

Boiling Point: 83° C @ 760 mm Hg

Freezing/Melting Point: -103.7° C

Decomposition Temperature: Not available

Specific Gravity: 0.81 g/cm³ @ 20° C

Vapor Density (Air=1): 2.8

Vapor Pressure: 160 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): Not available

Viscosity: Not available

Solubility: Insoluble in water

10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage. Readily auto oxidizes in air at room temperature to form peroxide. Sufficient peroxide can be formed to be hazardous if the material is distilled, especially if vacuum distilled.

Conditions to Avoid: Heat, flame, ignition sources, air, incompatibles.

Incompatibility With Various Substances: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon, dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: May cause irritation to the respiratory tract. Symptoms may include coughing, sore throat, labored breathing, and chest pain. High concentrations have a narcotic effect. High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness.

INGESTION HAZARD: May produce abdominal pain, nausea. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms expected to parallel inhalation.

SKIN CONTACT HAZARD: May cause irritation with redness and pain.

EYE CONTACT HAZARD: May cause irritation, redness and pain.

Chronic Exposure Hazards: Repeated or prolonged skin contact may defat the skin and produce irritation and dermatitis.

Animal Toxicity: No information available

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available

Environmental Fate: When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

US DOT < IATA, IMO

Proper Shipping Name: Cyclohexene

Hazard Class: 3

UN Number: UN2256

Packing Group: II

Canada TDG

Additional Information: < -7 C

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 110-82-7 is listed on the TSCA Inventory.

Health and Safety Reporting List: Not listed.

Chemical Test Rules: Not listed.

Section 12b: CAS# 110-82-7 is not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: Does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 110-82-7 – acute, chronic, fire

Section 313: Cyclohexene (CAS# 110-82-7) is not subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 110-82-7 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 110-82-7 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 110-82-7 is on the following state right-to-know lists: Pennsylvania and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDSL: CAS# 110-82-7 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 110-82-7 is listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: X; F

Risk Phrases: R11 – Highly Flammable; R38 – Irritating to skin; R65 – Harmful, may cause lung damage if swallowed; R67 – Vapors may cause drowsiness and dizziness.

Safety Phrases: S16 – Keep away from sources of ignition-no smoking; S25 – Avoid contact with eyes; S33 – Take precautionary measures against static discharge; S9 – Keep container in well ventilated place; S60 – This material and its container must be disposed of as hazardous waste; S62 – If swallowed, do not induce vomiting, seek medical advice immediately and show this container or label.

WGK (Water Danger/protection): CAS# 110-82-7: No information available

16. OTHER INFORMATION

Originally Prepared: 1/1/2006

Last Revised: 12/16/2011 – Converted to GHS format.

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