

SAFETY DATA SHEET

Cyclohexane

This SDS is valid for all grades and catalog #s

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: Hexahydrobenzene; Hexamethylene; Hexanaphthene
Other means of identification: CAS No. 110-82-7
EINECS No. 203-806-2

Recommended use of the chemical and restrictions on use:

Supplier Details:

Pharmco Products, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

Pharmco Products, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

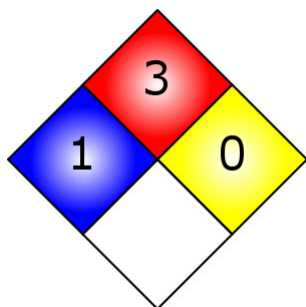
Emergency Contact: CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)

2. HAZARDS IDENTIFICATION

OSHA Hazards:
Flammable liquid, Irritant

Target Organs:
Central nervous system, Lungs

NFPA



**Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
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GHS label elements, including precautionary statements



Signal Word:
DANGER!

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273	Avoid release to the environment.
P391	Collect spillage.
P331	Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or a doctor/ physician.
P210	Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P243	Take precautionary measures against static discharge.
P280	Wear protective gloves and eye and face protection.

GHS Classification(s)

Acute aquatic toxicity (Category 1)
Aspiration hazard (Category 1)
Chronic environmental toxicity (Category 1)
Flammable Liquids (Category 2)
Skin irritation (Category 2)
Specific target organ toxicity - single exposure (Category 3)

Other hazards which do not result in classification:

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Potential Health Effects:

Organ	Description
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Inhalation	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Skin	May be harmful if absorbed through skin. Causes skin irritation.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	Cyclohexane
Common name / Synonym:	Hexahydrobenzene; Hexamethylene; Hexanaphthene
CAS number:	110-82-7
EINECS number:	203-806-2
ICSC number:	0242
RTECS #:	GU6300000
UN #:	UN1145
EC #:	601-017-00-1

% Weight	Material	CAS
100	Cyclohexane	110-82-7

4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

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5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Carbon oxides expected to be the primary hazardous combustion product.

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Unusual Fire and Explosion Hazards:

- Vapors may settle in low or confined spaces.
- Vapors may travel to source of ignition and flash back.

Flashback possible over considerable distance. Container explosion may occur under fire conditions.

Flammable Properties

Classification

OSHA/NFPA Class IB Flammable Liquid.

Flash point

-20 °C (-4 °F) - closed cup

Autoignition temperature

245 °C (473 °F)

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Wear respiratory protection. Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put the material into a convenient waste disposal container. Keep container closed.

7. HANDLING AND STORAGE

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Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. Open and handle container with care. Metal containers involved in the transfer of this material should be grounded and bonded.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits

Component	Source	Type	Value	Note
Cyclohexane	US (OSHA)	TWA	300 ppm	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants
Cyclohexane	US (ACGIH)	TWA	100 ppm	ACGIH Threshold Limit Value

Appropriate engineering controls:

General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end

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of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Liquid. Colorless, clear.
Freezing point	7 °C (45 °F)
Initial boiling point and boiling range	82 °C (179 °F)
Flash point	-20 °C (-4 °F) - closed cup
Upper / Lower flammability or explosive limits	1% (V) / 9% (V)
Vapor pressure	102.7 hPa (77.0 mmHg) at 20.0 °C (68.0 °F)
Vapor Density	2.9
Relative Density	0.779 g/cm ³ at 25 °C (77 °F)
Solubility(ies)	not soluble
Auto-ignition temperature	245 °C (473 °F)
Formula (CYCLOHEXANE)	C ₆ H ₁₂
Molecular Weight (CYCLOHEXANE)	84.16 g/mol

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid (e.g., static discharge, shock or vibration)	Heat, flames, and sparks. Extreme temperatures and direct sunlight.
Incompatible materials	Strong oxidizing agents
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

- Cyclohexane 110-82-7

Product Summary:

No data available for the mutagenic, teratogenic, or reproductive effects of the product.

Acute Toxicity:

LC50 (Inhalation)	Rat	13,900 mg/m ³	4 hours
LD50 (Dermal)	Rabbit	> 2,000 mg/kg	
LD50 (Oral)	Rat	12,705 mg/kg	

Irritation:

Eyes

Rabbit - mild eye irritation

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Skin

Rabbit - no skin irritation

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Other Hazards

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Inhalation	May be harmful if inhaled. Irritating to the respiratory tract. Vapors may cause drowsiness and dizziness.
Skin	May be harmful if absorbed through skin. Irritating to the skin.

12. ECOLOGICAL INFORMATION

- Cyclohexane 110-82-7

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (CYCLOHEXANE)

LC50 / 96 hours Bluegill - 34.7 mg/L

Acute Fish Toxicity (CYCLOHEXANE)

LC50 / 96 hours Fathead Minnow - 93 mg/L

Persistence and degradability:

This product is not readily biodegradable.

Bioaccumulative potential:

No data available

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13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	UN1145
UN proper shipping name	Cyclohexane
Transport hazard class(es)	3
Packing group (if applicable)	II

Reportable Quantity

1,000 lbs

IMDG

UN-Number: UN1145 Class: 3 Packing Group: II

EMS-No: F-E, S-D

Proper shipping name: CYCLOHEXANE

Marine pollutant: No

IATA

UN-Number: UN1145 Class: 3 Packing Group: II

Proper shipping name: Cyclohexane

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards

Flammable liquid, Irritant

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS

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United States of America	TSCA
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SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

CYCLOHEXANE CAS-No. 110-82-7 Revision Date 2007-07-01

SARA 311/312 Hazards

Acute Health Hazard

Fire Hazard

CERCLA

Cyclohexane CAS-No. 110-82-7, RQ: 1,000 lbs

Massachusetts Right To Know Components

Cyclohexane CAS-No. 110-82-7 Revision Date 2007-07-01

Pennsylvania Right To Know Components

Cyclohexane CAS-No. 110-82-7 Revision Date 2007-07-01

New Jersey Right To Know Components

Cyclohexane CAS-No. 110-82-7 Revision Date 2007-07-01

California Prop 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

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