

## CYCLOHEXANE

## Material Safety Data Sheet

Mallinckrodt Chemical Inc.

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## PRODUCT IDENTIFICATION:

Synonyms: Cyclohexane; hexahydrobenzene; hexamethylene

Formula CAS No.: 110-82-7

Molecular Weight: 84.16

Hazardous Ingredients: Cyclohexane

Chemical Formula: C6H12

## PRECAUTIONARY MEASURES

DANGER! EXTREMELY FLAMMABLE. HARMFUL IF SWALLOWED OR INHALED. AFFECTS  
CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION.

Keep away from heat, sparks and flame.  
 Avoid contact with eyes, skin and clothing.  
 Avoid breathing vapor.  
 Keep container closed.  
 Use with adequate ventilation.  
 Wash thoroughly after handling.

## EMERGENCY FIRST AID

In all cases call a physician immediately. Aspiration hazard. If swallowed,  
 Do Not induce vomiting. Give water to rinse mouth. Never give anything by mouth  
 to an unconscious person. If inhaled, remove to fresh air. If not breathing,  
 give artificial respiration. If breathing is difficult, give oxygen. In case of  
 contact, immediately flush eyes or skin with plenty of water for at least 15  
 minutes. In all cases call a physician.  
 SEE SECTION 5.

## Physical Data

## SECTION 1

Appearance: Clear, colorless liquid.

Odor: Characteristic odor. Faint ether odor.

Solubility: Insoluble in water.

Boiling Point: 81 C (177.8 F)

Vapor Density (Air=1): 3.9

Melting Point: 7 C (44.6 F)

Vapor Pressure (mm Hg): 76.5 @ 20 C (68  
F)

Specific Gravity : 0.8

Evaporation Rate: (Ether = 1) : 2.6

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

## Fire and Explosion

## SECTION 2

## Information

## Fire:

Extremely Flammable. Flashpoint -20 C (-4 F)  
 (CC) Autoignition temperature: 260 C (500 F).  
 Explosive limits, volume % in air : lcl 1.2uel  
 8.4.

## Explosion:

Above flash point, vapor-air mixtures are  
 explosive within flammable limits noted above.

**Fire Extinguishing Media:** Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

**Special Information:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Vapors can flow along surfaces to distant ignition source and flash back. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition.

**Reactivity Data**

**SECTION 3**

**Stability:**

Stable at room temperature in sealed containers.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:** This substance does not polymerize.

**Incompatibilities:** Strong oxidizers, heat and sources of ignition.

**Leak/Spill Disposal Information**

**SECTION 4**

Ventilate area of leak or spill. Remove all sources of ignition. Use non-sparking tools and equipment. Clean-up personnel require protective clothing and respiratory protection from vapors. Contain and recover liquid when possible. Collect as hazardous waste and atomize in a suitable RCRA approved combustion chamber, or absorb with vermiculite, dry sand, earth or similar material for disposal as hazardous waste in a RCRA approved facility. Do not flush to sewer!  
Reportable Quantity (RQ) (CWA/CERCLA) : 1000 lbs.  
Ensure compliance with local, state and federal regulations.

**Health Hazard Information**

**SECTION 5**

**A. Exposure/Health Effects**

**Inhalation:** Excessive inhalation irritates the respiratory tract. Weak anesthetic. High concentrations have a narcotic effect and may cause headache, dizziness, nausea, and unconsciousness.

**Ingestion:** No systemic poisoning reported in man. Sore throat, nausea and vomiting can be expected.

**Skin Contact:** Mildly irritating to skin. Removes natural oils similar to gasoline.

**Eye Contact:** High vapor concentration may cause irritation. Splashes may cause severe irritation.

**Chronic Exposure:** Little documentation of systemic harm to humans. In animals, material caused general vascular damage, brain and viscera lesions. Chronic exposure to skin has defatting action and can cause dermatitis.

**Aggravation of Pre-existing Conditions:** Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

## B. FIRST AID

- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: Aspiration hazard. If swallowed, Do Not induce vomiting. Give water to rinse mouth. Never give anything by mouth to an unconscious person. Get medical help immediately.
- Skin Exposure: 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 Exposure: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## C. TOXICITY (RTECS, 1986)

Oral rat LD50 29,820 mg/kg Mutation reference cited.

## Occupational Control Measures SECTION 6

Airborne Exposure Limits: -OSHA Permissible Exposure Limit (PEL): 300 ppm (TWA) -ACGIH Threshold Limit Value (TLV): 300 ppm (TWA)

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved) If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn up to the maximum use concentration specified by the respirator supplier. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

## Storage and Special Information SECTION 7

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from oxidizing materials. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment.

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Addendum to Material Safety Data Sheet

REGULATORY STATUS

This Addendum Must Not Be  
 Detached from the MSDS  
 Identifies SARA 313 substance(s)

Any copying or redistribution of the MSDS  
 must include a copy of this addendum

Hazard Categories for SARA  
 Section 311/312 Reporting

Product or Components of Product:	Acute	Chronic	Fire	Pressure	Reactive		
	----- X	----- X	----- X	----- 	----- 		
	SARA EHS Sec. 302 RQ	TPQ	SARA Sec. 313 Chemicals Name List	Chemical Category	CERCLA Sec.103 RQ lbs	RCRA Sec. 261.33	
CYCLOHEXANE (110-82-7)	No	No	Yes	No	No	No	

SARA Section 302 EHS RQ:  
 Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ:  
 Threshold Planning Quantity of Extremely Hazardous substance. An asterisk (\*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals:  
 Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103:  
 Comprehensive Environmental Response, Compensation and Liability Act (Superfund) Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA:  
 Resource Conservation and Recovery Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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