

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
 	Flammable material; avoid heat and sources of ignition. Irritating to skin, eyes, and the respiratory system.	   

Section I. Chemical Product and Company Identification

Chemical Name	Cyclohexene		
Catalog Number	C0491	Supplier	TCl America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	1,2,3,4-Tetrahydrobenzene		
Chemical Formula	C ₆ H ₁₀		
CAS Number	110-83-8	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Cyclohexene	110-83-8	Min. 98.0 (GC)	Not available.	Rat LD ₅₀ (oral) 2400mg/kg Mouse LD ₅₀ (oral) >3200mg/kg Rat LD ₅₀ (unreported) 2000mg/kg

Section III. Hazards Identification

Acute Health Effects	Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. SEEK IMMEDIATE MEDICAL ATTENTION in case of ingestion of a radioactive material.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	243°C (469.4°F)
Flash Points	-12°C (10.4°F)	Flammable Limits	LOWER: 1% UPPER: 5%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. FORMS EXPLOSIVE PEROXIDES WITH OXYGEN UPON STORAGE.		
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Consult with local fire authorities before attempting large scale fire-fighting operations.		

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Emergency phone number (800) 424-9300

Section VI. Accidental Release MeasuresSpill Cleanup
Instructions

Flammable liquid.
Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and StorageHandling and Storage
Information

EXTREMELY FLAMMABLE. Keep away from heat and sources of ignition. Ground all equipment containing material. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.
Always store away from incompatible compounds such as oxidizing agents.

Section VIII. Exposure Controls/Personal Protection

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 station and safety shower is proximal to the work-station location.

Personal Protection

Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



Exposure Limits

Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Miscible in benzene, carbon tetrachloride, petroleum ether, ethanol, ether, acetone. 213 mg/l @ 25°C in water.
Specific Gravity	0.8098 (water=1)	Partition Coefficient	log Kow = 2.86
Molecular Weight	82.14	Vapor Pressure	11.9 kPa (@ 20°C)
Boiling Point	82°C (179.6°F) @ 760mm Hg	Vapor Density	2.8 (Air = 1)
Melting Point	-103.5°C (-154.3°F)	Volatility	100% (v/v).
Refractive Index	1.4465 @ 20°C	Odor	Sweetish.
Critical Temperature	287.4°C (549.3°F)	Taste	Not available.
Viscosity	0.625 mPa s @ 25°C		

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents.

Section XI. Toxicological Information

RTECS Number	GW2500000
Routes of Exposure	Eye contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 2400mg/kg Mouse LD ₅₀ (oral) >3200mg/kg Rat LD ₅₀ (unreported) 2000mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.
Acute Toxic Effects	Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity Not available.

Environmental Fate Cyclohexene is an anthropogenic compound used as a solvent and synthetic intermediate. It may be released to the environment as a fugitive emission during its production and use and in motor vehicle exhaust. If released to soil, cyclohexene may biodegrade in aerobic soils. It is expected to rapidly volatilize to the atmosphere and display low to moderate mobility through soil. If released to water, cyclohexene may biodegrade under aerobic conditions. Bioconcentration and adsorption to sediment and suspended organic matter are not expected to be significant process. Volatilization to the atmosphere is expected to be rapid with an estimated volatilization half-life of 8.3 hrs from a model river. If released to the atmosphere, cyclohexene is expected to undergo a rapid, aerosol-forming reaction with ozone. An experimental rate constants for this reaction of 2.04×10^{-16} cu-cm/molec-sec at 21 deg C translates to an atmospheric half-life of 1.9 hrs. Aerosol formation in this reaction, i.e. organic acid formation, was found to increase with increasing humidity. Cyclohexene is also expected to undergo a relatively rapid vapor-phase oxidation with both photochemically produced hydroxyl radicals with an estimated half-life of 8.3 hrs and nitrate radicals at night with an estimated half-life of 3.8 hrs. Cyclohexene may also undergo atmospheric removal by wet deposition processes. Occupational exposure to cyclohexene may occur by dermal contact during its production, formulation, and use. Exposure to the general population may occur by the ingestion of contaminated drinking water.

Section XIII. Disposal Considerations

Waste Disposal Recycle to process, if possible. Consult your local or regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state, and local regulations when disposing of this substance.

Section XIV. Transport Information

DOT Classification CLASS 3: Flammable liquid.

PIN Number UN2256

Proper Shipping Name Cyclohexene

Packing Group (PG) II

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) CLASS B-2: Flammable liquid.

EINECS Number (EEC) 203-807-8

EEC Risk Statements R10- Flammable.
R18- In use, may form flammable/explosive vapor-air mixture.
R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data Not available.

Section XVI. Other Information

Version 1.0

Validated on 1/8/2001.

Printed 1/28/2005.

Notice to Reader

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.