



Methylcyclohexane

Version 1.4

Revision Date 2012-03-05

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : Methylcyclohexane
 Material : 1098852, 1021714, 1021712, 1028351, 1021711, 1024851, 1028352, 1024850, 1021713

Use : Chemical intermediate

Company : Specialty Chemicals
 10001 Six Pines Drive
 The Woodlands, TX 77380

Emergency telephone:

Health:

866.442.9628 (North America)
 1.832.813.4984 (International)

Transport:

North America: CHEMTREC 800.424.9300 or 703.527.3887
 Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090
 EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848
 South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
 E-mail address : MSDS@CPChem.com
 Website : www.CPChem.com

2. HAZARDS IDENTIFICATION

Emergency Overview

Danger

Form: Liquid Physical state: Liquid Color: Colorless Odor: Mild

OSHA Hazards : Flammable Liquid, Moderate skin irritant, Moderate eye irritant

GHS-Classification

: Flammable liquids, Category 2
 Reproductive toxicity, Category 2
 Acute toxicity, Category 5, Oral
 Skin irritation, Category 2
 Eye irritation, Category 2B
 Specific target organ systemic toxicity - single exposure, Category 3
 Aspiration hazard, Category 1
 Acute aquatic toxicity, Category 2
 Chronic aquatic toxicity, Category 2

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GHS-Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H225: Highly flammable liquid and vapor.
 H303: May be harmful if swallowed.
 H304: May be fatal if swallowed and enters airways.
 H315: Causes skin irritation.
 H320: Causes eye irritation.
 H336: May cause drowsiness or dizziness.
 H361: Suspected of damaging fertility or the unborn child.
 H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements

: **Prevention:**
 P210 Keep away from heat/sparks/open flames/hot surfaces.
 - No smoking.
 P243 Take precautionary measures against static discharge.
 P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
Response:
 P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
 P331 Do NOT induce vomiting.
 P370 + P378 In case of fire: Evacuate area. Use manufacturer/supplier or the competent authority to specify appropriate media for extinction.

Carcinogenicity:**IARC**

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

NTP

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

ACGIH

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

: Cyclohexylmethane
 Hexahydrotoluene
 MCH
 Methylcyclohexane (Pure Grade)

Molecular formula

: C7H14

Component	CAS-No.	Weight %
Methylcyclohexane	108-87-2	95 - 100
Toluene	108-88-3	0.1 - 1

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4. FIRST AID MEASURES

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may only appear several hours later. Do not leave the victim unattended.
- If inhaled : Move to fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

5. FIRE-FIGHTING MEASURES

- Flash point : -5.5 °C (22.1 °F)
Method: Tagliabue Open Cup
- Autoignition temperature : 285 °C (545 °F)
- Suitable extinguishing media : Dry chemical. Carbon dioxide (CO₂). Alcohol-resistant foam.
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

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Hazardous decomposition : Hydrocarbons. Carbon oxides.
products

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment. 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 : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE**Handling**

- Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.
- Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

- Requirements for storage areas and containers : No smoking. 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. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

US

Ingredients	Basis	Value	Control parameters	Note
Methylcyclohexane	ACGIH	TWA	400 ppm,	
	OSHA Z-1	TWA	500 ppm, 2,000 mg/m ³	(b).
	OSHA Z-1-A	TWA	400 ppm, 1,600 mg/m ³	

MSDS Number:100000014163

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	NIOSH REL	TWA	400 ppm, 1,600 mg/m3
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(b) The value in mg/m³ is approximate.**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant protective clothing. Footwear protecting against chemicals.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties****Appearance**

- Form : Liquid
 Physical state : Liquid
 Color : Colorless
 Odor : Mild

Safety data

- Flash point : -5.5 °C (22.1 °F)
 Method: Tagliabue Open Cup
 Lower explosion limit : 1.2 %(V)

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Upper explosion limit	: 6.7 %(V)
Oxidizing properties	: no
Autoignition temperature	: 285 °C (545 °F)
Molecular formula	: C ₇ H ₁₄
Molecular Weight	: 98.21 g/mol
pH	: No data available
Freezing point	: -127 °C (-197 °F)
Boiling point/boiling range	: 100.4 °C (212.7 °F)
Vapor pressure	: 1.60 PSI at 37.8 °C (100.0 °F)
Relative density	: 0.774, 15.6 °C(60.1 °F)
Density	: 771.7 g/l
Water solubility	: Negligible
Viscosity, dynamic	: 0.732 cP
Relative vapor density	: 3 (Air = 1.0)
Evaporation rate	: 1
Percent volatile	: > 99 %

10. STABILITY AND REACTIVITY

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	: Heat, flames and sparks.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Other data	: No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

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Acute oral toxicity

Methylcyclohexane : LD50: > 5,000 mg/kg
Species: rat
Information given is based on data obtained from similar substances.

Toluene LD50: 6,500 mg/kg
Species: rat
Sex: Not Specified

Acute inhalation toxicity

Methylcyclohexane : LC50: > 23.3 mg/l
Exposure time: 4 h
Species: rat
Test atmosphere: vapor
Information given is based on data obtained from similar substances.

Toluene LC50: 25.7 - 30 mg/l
Exposure time: 4 h
Species: rat
Test atmosphere: vapor

Acute dermal toxicity

Methylcyclohexane : LD50: > 2,000 mg/kg
Species: rabbit
Information given is based on data obtained from similar substances.

Toluene LD50: 12,400 mg/kg
Species: rabbit
Sex: Not Specified

**Methylcyclohexane
Skin irritation**

: May cause skin irritation in susceptible persons.

**Methylcyclohexane
Eye irritation**

: May cause eye irritation.
Vapors may cause irritation to the eyes, respiratory system and the skin.
Vapors may cause irritation to the eyes, respiratory system and the skin.

Sensitization

Toluene : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Methylcyclohexane : Species: rabbit
Application Route: Inhalation
Dose: 0, 1160, 3330 ppm
Exposure time: 10 wk
NOEL: 1160 ppm
Lowest observable effect level: 3330 ppm

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Toluene

Species: rat
Application Route: Inhalation
Dose: 0, 100, 625, 1250, 3000 ppm
Exposure time: 15 wk
Number of exposures: 6.5 h/d, 5 d/wk
NOEL: 625 ppm

Species: mouse
Application Route: Inhalation
Dose: 0, 100, 625, 1250, 3000 ppm
Exposure time: 14 wk
Number of exposures: 6.5 h/d, 5 d/wk
NOEL: 100 ppm

Carcinogenicity

Toluene

: Species: rat
Dose: 0, 600, 1200 ppm
Exposure time: 2 yrs
Number of exposures: 6.5 h/d, 5 d/wk
Remarks: No evidence of carcinogenicity

Species: mouse
Dose: 0, 600, 1200 ppm
Exposure time: 2 yrs
Number of exposures: 6.5 h/d, 5 d/wk
Remarks: No evidence of carcinogenicity

Reproductive toxicity

Toluene

: Species: rat
Application Route: Inhalation
Dose: 0, 100, 500, 2000 ppm
Test period: 95 d
NOAEL Parent: 2000 ppm

Teratogenicity

Toluene

: Species: rat
Application Route: Inhalation
Dose: 0, 100, 500, 2000 ppm
Test period: 95 d
NOAEL Teratogenicity: 400-750 ppm

**Methylcyclohexane
Aspiration toxicity**

: May be fatal if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards
or to be regarded as if they cause human aspiration toxicity
hazard.

**Methylcyclohexane
Further information**

: Concentrations substantially above the TLV value may cause
narcotic effects. Symptoms of overexposure may be
headache, dizziness, tiredness, nausea and vomiting.
Solvents may degrease the skin.

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12. ECOLOGICAL INFORMATION**Toxicity to fish**

Methylcyclohexane : LC50: 72 mg/l
Exposure time: 96 h
Species: Fish

Toluene LC50: 18 - 36 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates.

Toluene : EC50: 3.78 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Toxicity to algae

Toluene : EC50: 134 mg/l
Exposure time: 72 h
Species: Chlamydomonas angulosa (Green algae)

Elimination information (persistence and degradability)

Biodegradability : Expected to be biodegradable

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

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14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN2296, METHYLCYCLOHEXANE, 3, II

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)UN2296, METHYLCYCLOHEXANE, 3, II, (-5.5 °C), MARINE POLLUTANT,
(METHYLCYCLOHEXANE)**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN2296, METHYLCYCLOHEXANE, 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))UN2296, METHYLCYCLOHEXANE, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS,
(METHYLCYCLOHEXANE)**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**UN2296, METHYLCYCLOHEXANE, 3, II, ENVIRONMENTALLY HAZARDOUS,
(METHYLCYCLOHEXANE)**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**UN2296, METHYLCYCLOHEXANE, 3, II, ENVIRONMENTALLY HAZARDOUS,
(METHYLCYCLOHEXANE)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. REGULATORY INFORMATION**National legislation**

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

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CERCLA Reportable Quantity :
Toluene

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

SARA 313 Ingredients : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

US State Regulations

Pennsylvania Right To Know : Methylcyclohexane 108-87-2
: Toluene 108-88-3

New Jersey Right To Know : Methylcyclohexane 108-87-2
: Toluene 108-88-3

California Prop. 65 Ingredients : WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Notification status

Europe REACH : On the inventory, or in compliance with the inventory
United States of America US.TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : On the inventory, or in compliance with the inventory
Japan ENCS : On the inventory, or in compliance with the inventory
Korea KECI : On the inventory, or in compliance with the inventory
Philippines PICCS : On the inventory, or in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory

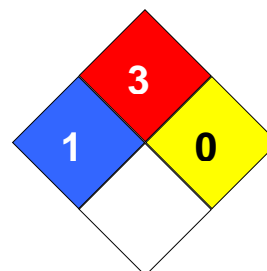
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16. OTHER INFORMATION

NFPA Classification : Health Hazard: 1
Fire Hazard: 3
Reactivity Hazard: 0

**Further information**

Legacy MSDS Number : 34310

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical	TWA	Time Weighted Average

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	Substances in China		
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		