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MSDS No: M00188

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** Cyclohexanone  
**Catalog Number:** 1403332

HACH LANGE GmbH  
Willstätterstrasse 11  
40549 Düsseldorf, Germany  
+49 -(0)211 -52880

Emergency Telephone Numbers:  
(Poison Information Center Main)  
(+49 (0) 6131 19240) 24 HR

**SDS Number:** M00188

**Chemical Name:** Cyclohexanone

**Chemical Formula:** C<sub>6</sub>H<sub>10</sub>O

**Chemical Family:** Ketones

**Use of the substance/preparation:** Laboratory Reagent

**CAS No.:** 108 -94

**Hazard:** Combustible. Causes severe eye irritation. Experimental mutagen.

**Date of MSDS Preparation:**

**Day:** 12

**Month:** 01

**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32 -(0)70 -245245, France: +33 (0)1 -40370404, Italy: +39 -026101029, Netherlands: +31 -(0)30 -2748888, Switzerland: +41 -(0)1 -2515151

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Cyclohexanone

**EEC Number:** 2036311

**CAS No.:** 108 -94-1

**Percent Range:** 100,0

**Percent Range Units:** weight / weight

**Ingredient EEC Symbol:** Xn - HARMFUL

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 10 R 20/22 R 36

**TLV:** 25 ppm - skin

**PEL:** 25 ppm - skin

**EU Occupational Exposure Limits:** Recommended: 10 ppm (40,8 mg/m<sup>3</sup>); STEL 20 ppm (81,6 mg/m<sup>3</sup>), Skin notation

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** Peppermint

**EU Symbols:** Xn - HARMFUL

**R PHRASES:** R 10: Flammable. R 20/22: Harmful by inhalation and if swallowed. R 36: Irritating to eyes.

### **Protective Equipment:**

#### **Potential Health Effects:**

**Eye Contact (EC):** Causes severe irritation

**Skin Contact (EC):** Causes mild irritation

**Skin Absorption (EC):** Harmful if absorbed through the skin Effects similar to those of inhalation

**Target Organs (SA E):** Liver Kidneys

**Ingestion (EC):** Harmful May cause: central nervous system depression diarrhea dizziness drowsiness headache loss of coordination nausea vomiting weakness

**Target Organs (Ing E):** Liver Kidneys

**Inhalation:** May cause: respiratory tract irritation nausea vomiting diarrhea headache dizziness drowsiness incoordination central nervous system depression loss of consciousness death

**Target Organs (Inh E):** Liver Kidneys

**Medical Conditions Aggravated:** Pre-existing: Kidney conditions Liver conditions

**Chronic Effects:** Chronic overexposure may cause liver damage kidney damage

**Cancer / Reproductive Toxicity Information:**

IARC Group 3: Non-classifiable

Cyclohexanone

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID MEASURES

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Combustible Liquid Vapors can travel to a source of ignition and flash back.

**Hazardous Combustion Products:** Toxic fumes of: carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** Combustible liquid Do not expose to flames. Do not expose to sparks or other ignition sources. May react violently with: aldehydes strong acids strong bases strong oxidizers strong reducers

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Carbon dioxide Dry chemical. Alcohol foam.

**Extinguishing Media NOT To Be Used:** Not applicable Not applicable Not applicable

**Fire Fighting Instruction:** Containers can build up pressure if exposed to heat. As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Remove all combustible material from spill area. Remove all ignition and spark-creating sources from the spill area. Cover spilled liquid with a commercially available flammable liquid sorbent such as vapor barrier blanket or activated carbon to avoid evolution of fumes. Vapors may travel to a source of ignition and flash back. May be ignited by: heat, sparks, or flames. Material will float on water creating a fire hazard. Dike the material to create a barrier to combustibles.

**Clean-up Technique:** Eliminate all sources of ignition. Do not breathe the fumes. Cover with an inert material, such as sand. Use only non-sparking tools. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

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## 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C. Protect from: heat light Keep away from: acids alkalis oxidizers reducers

**Special Packaging Instructions:** Not applicable

**Use of the substance/preparation:** Laboratory Reagent

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin / Hand Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat light Keep away from: acids/acid fumes alkalies oxidizers reducers

**TLV:** 25 ppm - skin

**PEL:** 25 ppm - skin

**EU Occupational Exposure Limits:** Recommended: 10 ppm (40, 8 mg/m<sup>3</sup>); STEL 20 ppm (81,6 mg/m<sup>3</sup>), Skin notation

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Odor:** Peppermint

**pH:** Not determined

**Vapor Pressure:** 136 mm at 100°C

**Vapor Density (air = 1):** 3,4

**Boiling Point:** 155,6°C (312,1°F)

**Melting Point:** Not applicable

**Flash Point:** 44°C (111°F)

**Method:** Closed cup

**Autoignition Temperature:** 420°C (788°F)

**Flammability Limits:**

**Lower Explosion Limits:** 1,1 %

**Upper Explosion Limits:** 8,1 %

**Specific Gravity (water = 1):** 0,948

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** 100 %

**Partition Coefficient (n -octanol / water):** Not determined

**Solubility:**

**Water:** Slightly soluble

**Acid:** Not determined

**Other:** Soluble in most organic solvents

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Contact with heat, sparks, open flames or other ignition sources. Exposure to light.

**Reactivity / Incompatibility:** Incompatible with: acids alkalies oxidizers reducers

**Hazardous Decomposition:** Heating to decomposition releases toxic fumes of carbon monoxide and carbon dioxide.

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD<sub>50</sub> = 1535 mg/kg; Oral mouse LD<sub>50</sub> = 1400 mg/kg; Oral rat LD<sub>50</sub> = 1620 mg/kg; Oral rat LD<sub>50</sub> = 1840 mg/kg.

**LC50:** Inhalation rat LC<sub>50</sub> = 8000 ppm/4 hrs; Inhalation human TCl<sub>o</sub> = 75 ppm -nose, eye respiratory irritation.

**Dermal Toxicity Data:** Skin rabbit LD<sub>50</sub> = 948 mg/kg.

**Skin and Eye Irritation Data:** Skin irritation rabbit: 500 mg = MILD; Eye irritation rabbit: 20 mg = SEVERE; Eye irritation rabbit: 250 µg/24 hrs = SEVERE.

**Mutation Data:** Cytogenetic analysis in human leukocytes @ 100 µmol/l; Cytogenetic analysis in human lymphocytes @ 5 µg/l; Sister chromatid exchange in hamster ovary @ 7500 µl/l; Mutation in mammalian somatic cells in hamster ovary @ 7500 µl/l.

**Reproductive Effects Data:** Inhalation rat (female) TCl<sub>0</sub> = 105 mg/m<sup>3</sup>/4 hrs (Fertility: pre-implantation mortality); Oral mouse (female) TDLo = 11 g/kg (Effects on newborn: growth statistics).

**Ingredient Toxicological Data:** --  
Not applicable  
IARC Group 3: Non-classifiable  
Cyclohexanone

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** Aquatic toxicity: Golden fishes LC<sub>50</sub> = 536 mg/l/48 hrs; No inhibition of bacteria in effluent if properly introduced into acclimated biological treatment facility.

**Ingredient Ecological Information:** --  
Not applicable

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## 13. DISPOSAL CONSIDERATIONS

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Cyclohexanone

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**ICAO Hazard Class:** 3  
**ICAO Subsidiary Risk:** NA  
**ICAO UN/ID Number:** UN1915  
**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Cyclohexanone

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**I.M.O. Hazard Class:** 3  
**I.M.O. Subsidiary Risk:** NA  
**I.M.O. UN Number:** UN1915  
**I.M.O. Packing Group:** III

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Cyclohexanone

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**A.D.R. Hazard Class:** 3  
**A.D.R. Subsidiary Risk:** NA  
**A.D.R. UN Number:** 1915  
**A.D.R. Packing Group:** III

**Additional Information:** This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit Hazard Class: 9 UN Number 3316

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## 15. REGULATORY INFORMATION

**National Inventories:**

**EEC Inventory Status:** EINECS Listed: Yes

**EEC Number:** 2036311

**EEC LABEL COPY:**

**EU Symbols:** Xn - HARMFUL

**R PHRASES:** R 10: Flammable. R 20/22: Harmful by inhalation and if swallowed. R 36: Irritating to eyes.

**S PHRASES:** S 25: Avoid contact with eyes. S 46: If swallowed, seek medical advice immediately and show this container or label.

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## 16. OTHER INFORMATION

**References:** CCINFO MSDS/FTSS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. NIOSH Registry of Toxic Effects of Chemical Substances, 1985 -86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley Interscience Publication, 1981. Technical Judgment. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. TLV's Threshold Limit Values and Biological Exposure Indices for 1992 - 1993. American Conference of Governmental Industrial Hygienists, 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332 -2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1 -42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Vendor Information. EU Occupational Exposure Limits On Line.

**R PHRASES:** R 10: Flammable. R 20/22: Harmful by inhalation and if swallowed. R 36: Irritating to eyes.

**Use of the substance/preparation:** Laboratory Reagent

**Revision Summary:** Updates in Section(s) 14,

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### Legend:

NA - Not Applicable w/w - weight/weight

ND - Not Determined w/v - weight/volume

NV - Not Available v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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