

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00188  
**Chemical Name:** Cyclohexanone  
**CAS Number:** 108-94-1  
**Additional CAS No. (for hydrated forms):** Not applicable  
**Chemical Formula:** C<sub>6</sub>H<sub>10</sub>O  
**Chemical Family:** Ketones  
**Intended Use:** Laboratory Use

---

## 2. HAZARDS IDENTIFICATION

**GHS Classification:**

**Hazard categories:** Flammable Liquids: Flam. Liq. 3 Acute Toxicity: Acute Tox. 4-Inh

**GHS Label Elements:**



**Hazard statements:** Flammable liquid and vapour. Harmful if inhaled.

**Precautionary statements:** Avoid breathing dust/fume/gas/mist/vapours/spray. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. In case of fire: Use dry sand or extinguishing powder for extinction.

**HMIS:**

**Health:** 2

**Flammability:** 2

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 2

**Reactivity:** 0

**Symbol:** Not applicable

**WHMIS Hazard Classification:** Class B, Division 3 - Combustible liquids Class D, Division 1, Subdivision B - Toxic material (immediate effects)

**WHMIS Symbols:** Acute Poison Flammable / Combustible

---

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Hazardous Components according to GHS:**

Cyclohexanone

**CAS Number:** 108-94-1  
**Chemical Formula:** C<sub>6</sub>H<sub>10</sub>O  
**GHS Classification:** Flam. Liq. 3, H226; Acute Tox. 4-Inh, H332  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**PEL:** 25 ppm - skin  
**TLV:** 25 ppm - skin

**WHMIS Symbols:** Acute Poison Flammable / Combustible

---

#### 4. FIRST AID MEASURES

**General Information:** In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

**Advice to doctor:** Treat symptomatically.

**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.

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

**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.

---

#### 5. FIRE FIGHTING MEASURES

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

**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.

**Extinguishing Media:** Carbon dioxide Dry chemical. Alcohol foam. Water spray to cool containers

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

**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

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

---

#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

**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. If permitted by regulation, Cover with an inert material, such as sand. Use only non-sparking tools. Sweep up material. Incinerate material at a government approved hazardous waste facility. Decontaminate the area of the spill with a soap solution. Otherwise, Pick up spill for disposal and place in a closed container. Dispose of in accordance with local, state and federal regulations or laws.

**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.

**DOT Emergency Response Guide Number:** 127

---

#### 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 alkalies oxidizers reducers  
**Flammability Class:** Class II

---

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**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 Protection:** disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. 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

**For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:**

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** 98.14 g/mol

**Odor:** Peppermint

**Odor Threshold:** 0.12-100 ppm

**pH:** Not determined

**Metal Corrosivity:**

**Corrosivity Classification:** Not classified as corrosive to metals according to GHS criteria.

**Steel:** Not determined

**Aluminum:** Not determined

**Specific Gravity/ Relative Density (water = 1; air =1):** 0.948

**Viscosity:** 2.02 cP @ 25 °C

**Solubility:**

**Water:** Slightly soluble, 24 g/L @ 20 °C

**Acid:** Not determined

**Other:** Soluble in ethanol and most organic solvents

**Partition Coefficient (n-octanol / water):** 0.81

**Coefficient of Water / Oil:** Not determined

**Melting Point:** -26°C

**Decomposition Temperature:** Not applicable

**Boiling Point:** 155.6 °C (312.1 °F)

**Vapor Pressure:** 136 mmHg @ 100 °C

**Vapor Density (air = 1):** 3.4

**Evaporation Rate (water = 1):** 0.29

**Volatile Organic Compounds Content:** 100 %

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

**Flash Point:** 44 °C (111 °F)

**Method:** Closed cup

**Flammability Limits:**

**Lower Explosion Limits:** 1.1 %

**Upper Explosion Limits:** 8.1 %

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

**Explosive Properties:**

Not applicable Not classified according to GHS criteria.

**Oxidizing Properties:**

Not applicable Not classified according to GHS criteria.

**Reactivity Properties:**

Not applicable Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

**Gas under Pressure:**

Not classified according to GHS criteria.

---

## 10. STABILITY AND REACTIVITY

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

**Mechanical Impact:** None reported

**Static Discharge:** None reported.

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

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

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

---

## 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, Metabolism and Distribution:**

Cyclohexanone is metabolized to cyclohexanol, which is conjugated with glucuronic acid and excreted mainly in urine.

**Toxicologically Synergistic Products:** None reported

**Acute Toxicity:** Route Data Given Below

Oral rat LD50 from 1296 - 1600 mg/kg.

Dermal rabbit LD50 = 984 mg/kg.

Inhalation rat LC50 = 6.2 - 32.5 mg/L/4 hr

**Specific Target Organ Toxicity - Single Exposure (STOT-SE):** Liver Kidneys Central nervous system Respiratory Tract

Humans - Acute liver and kidney failure have been reported. May cause respiratory tract irritation, and disrupt the central nervous system causing narcotic effects. Spleen effects in rats has been reported.

**Specific Target Organ Toxicity - Repeat Exposure (STOT-RE):** Based on classification principles, the classification criteria are not met.

**Skin Corrosion/Irritation:** Irritating to skin.

Rabbit: Irritating to skin. (OECD Test Guideline 404)

**Eye Damage:** Corrosive to eyes. Data found is significant but not sufficient for classification.

Eye Rabbit 20 mg = SEVERE; Eye Rabbit 0.250 mg/24 hr = SEVERE; Risk of serious eye damage.

**Sensitization:** Based on classification principles, the classification criteria are not met.

**CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction):** Data insufficient for classification

IARC Group 3: Non-classifiable

Cyclohexanone

NTP Listed: No

O.S.H.A. Listed: No

**Symptoms/Effects:**

**Ingestion:** Harmful May cause: central nervous system depression diarrhea dizziness drowsiness headache loss of coordination nausea vomiting weakness liver damage spleen damage kidney failure death kidney damage

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

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

**Chronic Effects:** Chronic overexposure may cause liver damage kidney damage spleen damage symptoms of neurotoxicity respiratory tract damage narcotic effects lung damage dermatitis brain damage

**Medical Conditions Aggravated:** Pre-existing: Kidney conditions Liver conditions Chronic disorders of the skin, respiratory tract, eyes, nervous system or cardiovascular system.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** 48 hr Golden ides LC50 = 536 mg/L; 96 hr Pimephales promelas LC50 = 576 mg/L; 24 hr Daphnia magna EC50 = 820 mg/L.

Based on classification principles, not classified as hazardous to the environment. Mobility in soil: No data available  
CEPA Categorization: Not Persistent or Bioaccumulative. Not inherently toxic to aquatic organisms.

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

---

### 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D001

**Special Instructions (Disposal):** Incinerate material at an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**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.

---

### 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Cyclohexanone

--

**Hazard Class:** 3

**Subsidiary Risk:** NA

**ID Number:** UN1915

**Packing Group:** III

**T.D.G.:**

**Proper Shipping Name:** Cyclohexanone

--

**Hazard Class:** 3.3

**Subsidiary Risk:** NA

**UN Number/PIN:** 1915

**Packing Group:** III

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

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

--

**Hazard Class:** 3

**Subsidiary Risk:** NA

**ID Number:** UN1915

**Packing Group:** III

**I.M.O.:**

**Proper Shipping Name:** Cyclohexanone

--

**Hazard Class:** 3

**Subsidiary Risk:** NA

**ID Number:** UN1915

**Packing Group:** III

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

### 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Fire Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Cyclohexanone 5000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:** Not applicable

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**CAS Number:** 108-94-1

**Canadian Inventory Status:** DSL Listed: Yes

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

**Australian Inventory (AICS) Status:** Listed

**New Zealand Inventory (NZIoC) Status:** Listed

**Korean Inventory (KECI) Status:** Listed

**Japan (ENCS) Inventory Status:** Listed

**China (PRC) Inventory (MEP) Status:** Listed

---

## 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.

**Complete Text of H phrases referred to in Section 3:** H226 Flammable liquid and vapour. H332 Harmful if inhaled.

**Revision Summary:** Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

**Date of MSDS Preparation:**

**Day:** 01

**Month:** August

**Year:** 2013

**MSDS Prepared:** MSDS prepared by Product Compliance Department extension 3350

**CCOHS Evaluation Note:** It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

---

**Legend:**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Page 7  
Date Printed 10/2/13  
MSDS No: M00188

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.**

**HACH COMPANY ©2013**