1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Cyclohexanone
Product Number: 398241
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich
3059 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone: +1 636-325-8322
Fax: +1 636-325-5052
Emergency Phone #: (314) 778-6555
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-6956

2. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Combustible Liquid, Target Organ Effect, Harmful by ingestion, Irritant
Target Organs
Liver, Kidney, Central nervous system, Lungs
GHS Classification
Flammable liquids (Category 3)
Acute toxicity, Oral (Category 4)
Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Skin Irritation (Category 2)
Serious eye damage (Category 1)
GHS Label elements, including precautionary statements
Pictogram
Signal word: Danger
Hazard statement(s)
H226: Flammable liquid and vapour.
H302 + H312 + H332: Harmful if swallowed, in contact with skin or if inhaled
H315: Causes skin irritation.
H318: Causes serious eye damage.
Precautionary statement(s)
P200: Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: C₈H₁₄O
Molecular Weight: 109.18 g/mol
Component | Concentration
---|---
Cyclohexanone | 99 - 100%

4. FIRST AID MEASURES

General advice
Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.
If Inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heatsparks/open flame/ hot surface. No smoking.
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.
Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES
7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.

Conditions for safe storage
Keep containers tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexalure</td>
<td>108-94-1</td>
<td>TWA</td>
<td>20 ppm</td>
<td>USA. OSHA Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

**Remarks**
- Eye & Upper Respiratory Tract irritant
- Confirmed animal carcinogen with unknown relevance to humans
- Danger of cutaneous absorption

| STEL | 50 ppm | USA. OSHA Threshold Limit Values (TLV) |
| TWA | 25 ppm | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |

**Skin notation**
- The value in mg/m3 is approximate
- TWA: 50 ppm | 200 mg/m3
- USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
- USA. NIOSH Recommended Exposure Limits

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- Form: clear, liquid
- Colour: colourless

**Safety Data**
- pH: no data available
- Melting point/range: -47 °C (-53 °F) - 85 °C (185 °F)
- Boiling point: 155 °C (311 °F) - 185 °C (367 °F)
- Flash point: 44 °C (111 °F) - closed cup
- Ignition temperature: 420 °C (788 °F)
- Auto-ignition temperature: 420 °C (788 °F) at 1.013 hPa (760 mmHg)
- Lower explosion limit: 1.1 % (V)
- Upper explosion limit: 9.4 % (V)
- Vapour pressure: 4.5 hPa (3.4 mmHg) at 20 °C (68 °F)
- Density: 0.947 g/cm3 at 25 °C (77 °F)
- Water solubility: 96 g/l at 20 °C (68 °F)
- Partition coefficient: log Pow: 9.61
- Relative vapour density: 3.59 (-Air = 1.0)

**Personal protective equipment**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**
Handwear must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Oxidizing agents, Plastics

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
LD50 Oral - rat - 1,534 mg/kg

Inhalation LC50
LC50 Inhalation - rat - 4 h - > 6.2 mg/l

Dermal LD50
LD50 Dermal - rabbit - 794 - 3,160 mg/kg

Other Information on acute toxicity
no data available

Skin corrosion/irritation
Skin - rabbit - Irritating to skin - OECD Test Guideline 404

Serious eye damage/eye irritation
Eyes - rabbit - Risk of serious damage to eyes - 24 h

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
Genotoxicity in vitro - Ames test - S. typhimurium - with and without metabolic activation - negative
Genotoxicity in vitro - Human - fibroblast - with and without metabolic activation - Laboratory experiments have shown mutagenic effects.

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Cyclohexanone)
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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

Reproductive toxicity
Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion: Harmful if swallowed.
Skin: Harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.

Signs and Symptoms of Exposure
Chronic toxicity: Chronic exposure may cause damage to the central nervous system (CNS) with symptoms of confusion, headache, and memory loss. Long-term exposure may result in neurotoxic effects.

Synergistic effects
no data available

Additional Information
RTCS: GM105000

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 820 mg/l - 24 h
and other aquatic invertebrates

Purification and degradability
Biodegradability Result: 90 - 100 % - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but vent extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.
14. TRANSPORT INFORMATION

DOT (US)
UN number: 1915  Class: 3
Proper shipping name: Cyclohexanone
Packing group: III

IMDG
UN number: 1915  Class: 3
Proper shipping name: CYCLOHEXANONE
Packing group: III
EMS-No: F-E, S-D

IATA
UN number: 1915  Class: 3
Proper shipping name: Cyclohexanone
Packing group: III

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Target Organ Effect, Harmful by Ingestion, Irritant

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

SARA 313 Components
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.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further Information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide.
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