

MATERIAL SAFETY DATA SHEET

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Version 1.6

Section 1 - Product and Company Information

Product Name CYCLOHEXANONE, 99+%, A.C.S. REAGENT
Product Number 398241
Brand SIAL

Company Sigma-Aldrich
Address 3050 Spruce Street
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
CYCLOHEXANONE	108-94-1	No

Formula C6H10O
Synonyms Anone * Ciclooesanone (Italian) * Cyclohexanon (Dutch) * Cyclohexanone (ACGIH:OSHA) * Cyclohexyl ketone * Cykloheksanon (Polish) * Hexanon * Hytrol O * Ketoexamethylene * Nadone * NCI-C55005 * Pimelic ketone * Pimelin ketone * RCRA waste number U057 * Sextone

RTECS Number: GW1050000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Combustible (USA) Flammable (EU). Harmful.
Harmful by inhalation, in contact with skin and if swallowed.
Irritating to respiratory system. Risk of serious damage to eyes.
Readily absorbed through skin. Target organ(s): Liver. Kidneys.

HMIS RATING

HEALTH: 2*
FLAMMABILITY: 2
REACTIVITY: 0

NFPA RATING

HEALTH: 2
FLAMMABILITY: 2
REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is

conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

FLAMMABLE HAZARDS

Flammable Hazards: Yes

FLASH POINT

111.2 °F 44 °C Method: closed cup

EXPLOSION LIMITS

Lower: 1.1 % Upper: 9.4 %

AUTOIGNITION TEMP

420 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.
Combustible liquid.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	35.05 mN/m	20 °C
Partition Coefficient	Log Kow: 0.81	
Decomposition Temp.	N/A	
Flash Point	111.2 °F 44 °C	Method: closed cup
Explosion Limits	Lower: 1.1 % Upper: 9.4 %	
Flammability	N/A	
Autoignition Temp	420 °C	
Refractive Index	1.45	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:50 mg/ml H2O Other Solvents: SOLUBLE IN ACETONE, ETHANOL ETHYL ETHER	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Oxidizing agents, Plastics.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: Readily absorbed through skin. Harmful if absorbed through skin.

Eye Contact: Causes severe eye irritation.

Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Liver. Kidneys. Central nervous system. Lungs.

SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause: CNS depression. Incoordination. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Prolonged or repeated exposure to skin causes defatting and dermatitis.

TOXICITY DATA

Oral

Rat

1620 UL/KG

LD50

Inhalation
Rat
8,000 ppm
LC50

Intraperitoneal
Rat
1130 MG/KG
LD50
Remarks: Gastrointestinal:Other changes.

Subcutaneous
Rat
2170 MG/KG
LD50

Oral
Mouse
1400 mg/kg
LD50

Intraperitoneal
Mouse
1230 MG/KG
LD50
Remarks: Gastrointestinal:Other changes.

Skin
Rabbit
1 ML/KG
LD50

Intraperitoneal
Rabbit
1540 MG/KG
LD50
Remarks: Gastrointestinal:Other changes.

Oral
Mammal
3000 mg/kg
LD50

Inhalation
Mammal
25,000 mg/m³
LC50

IRRITATION DATA

Eyes
Human
75 ppm

Skin
Rabbit
500 mg
Remarks: Open irritation test

Eyes
Rabbit

20 mg
Remarks: Severe irritation effect

Eyes
Rabbit
0.25 mg
24H
Remarks: Severe irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: 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 CARCINOGEN LIST

Rating: Group 3

ACGIH CARCINOGEN LIST

Rating: A4

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 100 UMOL/L
Cell Type: leukocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 5 UG/L
Cell Type: lymphocyte
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 7500 UL/L
Cell Type: ovary
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 7500 UL/L
Cell Type: ovary
Mutation test: Mutation in mammalian somatic cells.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Rat
Dose: 105 MG/M3/4H
Route of Application: Inhalation
Exposure Time: (1-20D PREG)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Species: Mouse
Dose: 11 GM/KG
Route of Application: Oral
Exposure Time: (8-12D PREG)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Mouse
Dose: 1400 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-17D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Maternal Effects: Other effects. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: EC50 Daphnia
Species: Daphnia magna
Time: 24 h
Value: 820 mg/l

Test Type: LC50 Fish
Species: Leuciscus idus
Time: 48 h
Value: 536.0 - 752.0 mg/l

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 480.0 - 630.0 mg/l

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Cyclohexanone
UN#: 1915
Class: 3
Packing Group: Packing Group III
Hazard Label: Flammable liquid
PIH: Not PIH

IATA

Proper Shipping Name: Cyclohexanone
IATA UN Number: 1915
Hazard Class: 3
Packing Group: III

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 10-20
Risk Statements: Flammable. Harmful by inhalation.
S: 25
Safety Statements: Avoid contact with eyes.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Combustible (USA) Flammable (EU). Harmful.
Risk Statements: Harmful by inhalation, in contact with skin and if swallowed. Irritating to respiratory system. Risk of serious damage to eyes.

Safety Statements: Keep away from sources of ignition - no smoking. Do not breathe vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.

US Statements: Readily absorbed through skin. Target organ(s): Liver. Kidneys.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.