



Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300 or 202-483-7616

MATERIAL SAFETY DATA SHEETS

Part Number/Trade Name: Cyclohexanone
This MSDS is valid for all grades and catalog numbers

General Information

Company's Name: PHARMCO PRODUCTS, INC.

Company's Street: 58 VALE RD.

Company's City: BROOKFIELD

Company's State: CT

Company's Zip Code: 06804

Company's Emerg Ph #: (203) 740-3471

Company's Info Ph #: (203) 740-3471

Date MSDS Revised: 4/5/00

Safety Data Review Date: 4/5/00

Preparer's Company: PHARMCO PRODUCTS, INC.

Preparer's St Or P. O. Box: 58 VALE RD.

Preparer's City: BROOKFIELD

Preparer's State: CT

Preparer's Zip Code: 06804

Ingredients/Identity Information

Ingredient: Cyclohexanone

Synonyms: Pimelic ketone; Cyclohexyl ketone; Ketohexamethylene

Sequence Number: 01

Percent: 99-100%

Hazardous: Yes

NIOSH (RTECS) Number: GW1050000

CAS Number: 108-94-1

Molecular weight: 98.14

Chemical Formula: C₆H₁₀O

OSHA PEL: S, 50 ppm

ACGIH TLV: S, 25 ppm; 9293

Physical/Chemical Characteristics

Appearance: Clear, colorless to slightly yellow, oily liquid

Odor: Odor is like acetone and peppermint.

Boiling Point: 155C (311°F)

Melting Point: -31C (-24°F)

Vapor Pressure (mm Hg): 5 @ 26C (79°F)

Vapor Density (Air=1): 3.4

Specific Gravity: 0.95 @ 25C/4C

PH: No information found

Evaporation Rate (BuAc=1): 0.29

Solubility In Water: 15% in water @ 10C (50°F)
Percent Volatiles By Volume @ 21C (70°F): 100

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Fire and Explosion Hazard Data
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WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Flash Point: 43.9C (111°F)

Lower Explosive Limit: 1.1

Auto-ignition Temperature: 420C (788°F)

Upper Explosive Limit: 9.4

Extinguishing Media: Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

Special Fire Fighting Procedure: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

Unusual Fire And Explosion Hazards:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition sources and flash back. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. Sensitive to static discharge.

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Reactivity Data
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Stability: Stable under ordinary conditions of use and storage.

Cond To Avoid (Stability): Heat, flames, ignition sources and incompatibles.

Materials To Avoid: Strong oxidizing agents. May cause spontaneous ignition and violent reaction. May attack plastics, resins and rubber.

Hazardous Decomp Products: Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Poly Occur: Will not occur.

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Health Hazard Data
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Health Rating: 2 – Moderate

Flammability Rating: 2- Moderate

Reactivity Rating: 1 – Slight

Contact Rating: 2 – Moderate

Lab Protective Equipment: Goggles; Lab Coat; Vent Hood; Proper Gloves; Class B Extinguisher.

Storage Color Code: Red (Flammable)

Route Of Entry - Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. High concentrations have a narcotic effect. Irritation effects normally prevent exposure high enough to cause systemic effects.

Route Of Entry - Skin: Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.

Route Of Entry - Ingestion: May produce abdominal pain and nausea. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms expected to parallel inhalation.

Route Of Entry – Eyes: Vapors may cause irritation. Contact may cause corneal injury.

Explanation Carcinogenicity:

Signs/Symptoms Of Overexp: Prolonged or repeated exposure may cause skin rash or dermatitis. Damage to the liver and kidneys may occur.

Med Cond Aggravated By Exp: Persons with pre-existing skin, eye or central nervous system disorders, or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this substance.

Emergency/First Aid Procedure:

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician: In small ingestions, the major concern is aspiration and gastrointestinal decontamination is not recommended. With larger ingestions, there is potential for systemic toxicity from gastrointestinal absorption and decontamination is suggested, keeping in mind that aspiration is still a concern.

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Precautions for Safe Handling and Use

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Steps If Material Released/Spill: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

Precautions-Handling/Storing: Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Other Precautions:

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Control Measures

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Respiratory Protection (NIOSH Approved): If the exposure limit is exceeded, a half-face organic vapor respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Ventilation: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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Toxicological Information

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====Oral rat LD50: 1620 mg/kg; Inhalation rat LC50: 8000ppm/4-hour; Skin rabbit LD50: 1 mL/kg; Irritation: eye rabbit, Standard Draize: 20 mg, severe; skin rabbit, Open Draize: 500 mg, mild. Investigated as a tumorigen, mutagen and reproductive effector.

Cancer List

<u>Ingredient</u>	<u>-NTP Carcinogen-</u>		<u>IARC Category</u>
	<u>Known</u>	<u>Anticipated</u>	
Cyclohexanone	No	No	3

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Ecological Information

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Environmental Fate: When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into groundwater. When released into water, this material evaporates to a moderate extent. When released into water, this material may biodegrade to a moderate extent. This material has an estimated bio-concentration factor (BCF) of less than 100. This material is not expected to significantly bio-accumulate. When released into the air, this material is expected to be readily degraded by reaction with photo-chemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity: The LC50/96-hour values for fish are over 100 mg/l.

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Transportation Data

Domestic (Land, D.O.T.)

Proper Shipping Name:

CYCLOHEXANONE

Hazard Class: 3

UN/NA: UN1915

Packing Group: III

Information reported for product/size: 425 LB

International (Air, I.C.A.O.)

Proper Shipping Name: CYCLOHEXANONE

Hazard Class: 3

UN/NA: UN1915

Packing Group: III

Information Reported for Product/size: 425 LB

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Regulatory Information

====Chemical Inventory Status – Part 1

<u>Ingredient</u>	<u>TSCA</u>	<u>EC</u>	<u>Japan</u>	<u>Australia</u>
Cyclohexanone (108-94-1)	Yes	Yes	Yes	Yes

Chemical Inventory Status – Part 2

<u>Ingredient</u>	<u>Korea</u>	<u>DSL</u>	<u>NDSL</u>	<u>Phil.</u>
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Cyclohexanone (108-94-1)	Yes	Yes	Yes	Yes
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Federal, State & International Regulations – Part 1

<u>Ingredient</u>	<u>RQ</u>	<u>TPQ</u>	<u>List</u>
<u>Chemical Catg.</u>			
Cyclohexanone (108-94-1)	No	No	No

Federal, State & International Regulations – Part 2

<u>Ingredient</u>	<u>CERCLA</u>	<u>-RCRA- 261.33</u>	<u>-TSCA- 8 (d)</u>
Cyclohexanone (108-94-1)	5000	U057	No

Chemical Weapons Convention: No TSCA 12 (b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Pressure:: No Reactivity: No (Pure/Liquid)

Australian Hazchem Code: 3[Y]

Poison Schedule: No Information found.

WHMIS:

This MSDS has been prepared according to hazard criteria of the Controlled Products Regulations (CPR) and MSDS contains all of the information required by the CPR.

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Disposal Data

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Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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Label Data

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Common Name: CYCLOHEXANONE

Label Hazard Warning: WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions: Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep container closed. Keep away from heat, sparks and flame. Wash thoroughly after handling. Use only with adequate ventilation.

Label First Aid: If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use: Laboratory Reagent.

Health Hazard: 2-Moderate

Fire Hazard: 2-Moderate

Reactivity Hazard: 1-Slight

Contact Rating: 2- Moderate

Protect Eye: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Protect Skin: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Protect Respiratory (NIOSH Approved): If the exposure limit is exceeded, a half-face organic vapor respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

The information contained herein is based on data considered to be accurate. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. It is the user's obligation to determine the conditions of safe use of the product.

--Rev 2.0 12/18/01 JC