Material Safety Data Sheet
Cyclohexanone, 99.8%

ACC# 95247

Section 1 - Chemical Product and Company Identification

MSDS Name: Cyclohexanone, 99.8%
Catalog Numbers: AC111190000, AC111190010, AC111190025, AC111190250
Synonyms: Ketohexamethylene; Pimelic ketone.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
108-94-1	Cyclohexanone	99.8%	203-631-1

Hazard Symbols: XN
Risk Phrases: 10 20

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 44 deg C. Causes skin irritation. Harmful if absorbed through the skin. May cause central nervous system depression. May be harmful if swallowed. Causes respiratory tract irritation. May cause severe eye irritation and possible injury. **Warning! Flammable liquid and vapor.** Harmful if inhaled.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects
Eye: May result in corneal injury. Vapors may cause eye irritation. Contact produces irritation, tearing, and burning pain.
Skin: Causes skin irritation. Harmful if absorbed through the skin.
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May be harmful if swallowed.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause liver and kidney damage. May cause narcotic effects in high concentration. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. May cause irritation of the mucous membranes.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged exposure may cause non-specific nervous system effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.
Notes to Physician: Cyclohexanol in urine can be useful in diagnosis.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
Extinguishing Media: Use water spray to cool fire-exposed containers. Water may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. For small fires, use carbon dioxide, dry chemical, dry sand, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: 44 deg C (111.20 deg F)
Autoignition Temperature: 420 deg C (788.00 deg F)
Explosion Limits, Lower:1.10 vol %
Upper: 9.4 vol %
NFPA Rating: (estimated) Health: 1; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition. Provide ventilation. Clean up residual material by washing area with a 2-5% solution of soda ash.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cyclohexanone	25 ppm TWA; skin - potential for cutaneous absorption	25 ppm TWA; 100 mg/m3 TWA 700 ppm IDLH	50 ppm TWA; 200 mg/m3 TWA

OSHA Vacated PELs: Cyclohexanone: 25 ppm TWA; 100 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: Acetone or peppermint odor
pH: Not available.
Vapor Pressure: 4.5 mbar @ 20 deg C
Vapor Density: 3.4 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 155 deg C @ 760mm Hg
Freezing/Melting Point:-47 deg C
Decomposition Temperature: Not available.
Solubility: Slightly soluble.
Specific Gravity/Density:.9470g/cm3
Molecular Formula:C6H10O
Molecular Weight:98.14

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat.
Incompatibilities with Other Materials: Red metals, lead, amines, sulfuric acid, nitric acid, oxidizing agents, strong acids, aliphatic amines, rubber, resins.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, toxic gases.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 108-94-1: GW1050000
LD50/LC50:
CAS# 108-94-1:
Draize test, rabbit, eye: 20 mg Severe;
Draize test, rabbit, eye: 250 ug/24H Severe;
Inhalation, rat: LC50 = 8000 ppm/4H;
Oral, mouse: LD50 = 1400 mg/kg;
Oral, rat: LD50 = 1620 uL/kg;

Skin, rabbit: LD50 = 1 mL/kg;

Carcinogenicity:
CAS# 108-94-1:
ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: IARC Group 3 - not classifiable
Epidemiology: Results indicate the evidence for carcinogenic activity in m arginal and the effect if any is weak.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: Irritation to human eyes has been observed after 3-5 min exp osure to 50-75 ppm.

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 90.0 mg/L; 96 Hr.; 320.0 mg/L CaCO3 Rainbow trout: LC50 = 44.0 mg/L; 96 Hr.; 20.0 mg/L CaCO3 Fathead Minnow: LC50 = 527.0 mg/L; 96 Hr.; Flow-through, 24-26 degrees C,pH7.5 flea Daphnia: EC50 = 820.0 mg/L; 48 Hr.; Unspecified : EC50 = 20.0 mg/L; 96 Hr.; Unspecified ria: Phytobacterium phosphoreum: EC50 = 18.7 mg/L; 5 minutes; Microtox Test No data available.
Environmental: This chemical is expected to rapidly volatilize based on its low melting and boiling point. Cyclohexanone is estimated to be highly mobile in soil. In view of its moderate vapor pressure and low adsorption to soil, it would be expected to volatilize from surface soil. Although data are lacking, it may also undergo direct photolysis on the soil surface. Cyclohexanone is readily biodegradable according to aerobic screening tests and therefore would be expected to biodegrade in soil.
Physical: No information found.
Other: The bioconcentration factor (BCF) for cyclohexanone can be estimated to be 2.4 based on the log Kow of 0.81 and a recommended regression equation. This BCF indicates that cyclohexanone will not bioconcentrate in aquatic organisms.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 108-94-1: waste number U057 (Ignitable waste).

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	CYCLOHEXANONE				No information available.
Hazard Class:	3				
UN Number:	UN1915				
Packing Group:	III				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 108-94-1 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 108-94-1: Effective Date: 10/4/82; Sunset Date: 10/4/92
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 108-94-1: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 108-94-1: acute, flammable, reactive.
Section 313
No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE

CAS# 108-94-1 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
Risk Phrases:
R 10 Flammable.
R 20 Harmful by inhalation.

Safety Phrases:
S 25 Avoid contact with eyes.

WGK (Water Danger/Protection)
CAS# 108-94-1: 1
Canada - DSL/NDSL
CAS# 108-94-1 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of B3, D1B, D2B.
Canadian Ingredient Disclosure List
CAS# 108-94-1 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 108-94-1: OEL-AUSTRALIA:TWA 25 ppm (100 mg/m3) OEL-AUSTRIA:TWA 50 ppm (200 mg/m3) OEL-BELGIUM:TWA 25 ppm (100 mg/m3) OEL-CZECHOSLOVAKIA:TWA 200 mg/m3;STEL 400 mg/m3 OEL-DENMARK:TWA 25 ppm (100 mg/m3) OEL-FINLAND:TWA 50 ppm (200 mg/m3);STEL 75 ppm (250 mg/m3) OEL-FRANCE:TWA 25 ppm (100 mg/m3) OEL-GERMANY:TWA 50 ppm (200 mg/m3) OEL-HUNGARY:TWA 100 mg/m3;STEL 200 mg/m3;Skin OEL-JAPAN:TWA 25 ppm (100 mg/m3) OEL-THE NETHERLANDS:TWA 50 ppm (200 mg/m3) OEL-THE PHILIPPINES:TWA 50 ppm (200 mg/m3) OEL-POLAND:TWA 2 mg/m3 OEL-RUSSIA:TWA 25 ppm;STEL 10 mg/m3 OEL-SWEDEN:TWA 25 ppm (100 mg/m3);STEL 50 ppm (20 mg/m3); Skin OEL-SWITZERLAND:TWA 25 ppm (100 mg/m3);STEL 50 pp (200 mg/m3) OEL-TURKEY:TWA 50 ppm (200 mg/m3) OEL-UNITED KINGDOM:TWA 25 ppm (100 mg/m3);STEL 10 ppm OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 6/01/1999
Revision #3 Date: 3/14/2001

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.