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## Cyclohexanone

### MATERIAL SAFETY DATA SHEET

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

##### **Matheson Tri-Gas, Inc.**

*The telephone numbers listed below are  
emergency numbers,  
please contact your local branch for routine  
inquiries.*

<u>USA</u>	<u>Canada</u>
959 Route 46 East Parsippany, New Jersey 07054-0624 USA	530 Watson Street Whitby, Ontario L1N 5R9 Canada
Phone: 973-257- 1100	Phone: 905-668-3570

**EMERGENCY  
CONTACT**  
**24 Hour - USA**

**CHEMTREC 1-800-424-9300**

**EMERGENCY  
CONTACT**  
**24 Hour - Canada**

**CANUTEC 613-996-6666**

**SUBSTANCE: CYCLOHEXANONE**

**SYMBOL: C<sub>6</sub>H<sub>10</sub>O**

##### **TRADE NAMES/SYNONYMS:**

ANON; ANONE; HEXANON; HYTROL O; NADONE; PIMELIC KETONE; PIMELIN KETONE;  
SEXTONE; KETOHEXAMETHYLENE; RCRA U057; STCC 4913179; UN 1915; CYCLOHEXYL  
KETONE; NCI-C55005; KETOCYCLOHEXANE; OXOCYCLOHEXANE; C6H10O; MAT05890;  
RTECS GW1050000

**CHEMICAL FAMILY:** ketones, alicyclic

CREATION DATE: Jan 24 1989

REVISION DATE: Mar 16 1999

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## 2. COMPOSITION, INFORMATION ON INGREDIENTS

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**COMPONENT:** CYCLOHEXANONE

**CAS NUMBER:** 108-94-1

**EC NUMBER (EINECS):** 203-631-1

**EC INDEX NUMBER:** 606-010-00-7

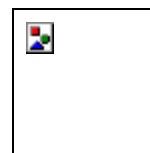
**PERCENTAGE:** 100.0

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## 3. HAZARDS IDENTIFICATION

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**NFPA RATINGS (SCALE 0-4):** HEALTH=2 FIRE=2 REACTIVITY=0



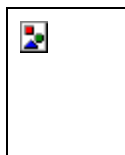
**EC CLASSIFICATION (ASSIGNED):**

Flammable

Xn Harmful

R 10-20

EC Classification may be inconsistent with independently-researched data.



### **EMERGENCY OVERVIEW:**

**COLOR:** colorless to yellow

**PHYSICAL FORM:** liquid

**ODOR:** distinct odor, pleasant odor, minty, sweet odor

**MAJOR HEALTH HAZARDS:** harmful on contact with the skin, respiratory tract irritation, skin irritation, eye irritation, central nervous system depression

**PHYSICAL HAZARDS:** Combustible liquid and vapor.

### **POTENTIAL HEALTH EFFECTS:**

#### **INHALATION:**

**SHORT TERM EXPOSURE:** irritation, nausea, headache, symptoms of drunkenness, coma

**LONG TERM EXPOSURE:** low body temperature, kidney damage

#### **SKIN CONTACT:**

**SHORT TERM EXPOSURE:** irritation (possibly severe), difficulty breathing, symptoms of drunkenness

**LONG TERM EXPOSURE:** no information on significant adverse effects

#### **EYE CONTACT:**

**SHORT TERM EXPOSURE:** irritation, tearing, eye damage

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

#### **INGESTION:**

**SHORT TERM EXPOSURE:** digestive disorders, symptoms of drunkenness, lung damage, liver damage

**LONG TERM EXPOSURE:** no information on significant adverse effects

**CARCINOGEN STATUS:**

OSHA: N

NTP: N

IARC: N

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**4. FIRST AID MEASURES**

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**INHALATION:**

Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

**SKIN CONTACT:**

Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.

**EYE CONTACT:**

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

**INGESTION:**

Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

**NOTE TO PHYSICIAN:**

For ingestion, consider gastric lavage and activated charcoal slurry.

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**5. FIRE FIGHTING MEASURES**

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**FIRE AND EXPLOSION HAZARDS:**

Moderate fire hazard. Slight explosion hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point.

**EXTINGUISHING MEDIA:**

alcohol resistant foam, carbon dioxide, regular dry chemical, water, alcohol resistant foam

Large fires: Use alcohol-resistant foam or flood with fine water spray.

**FIRE FIGHTING:**

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

**FLASH POINT:**

111 F (44 C) (CC)

**LOWER FLAMMABLE LIMIT:**

1.1% @ 100 C

**UPPER FLAMMABLE LIMIT:**

9.4%

**AUTOIGNITION:**

788 F (420 C)

**FLAMMABILITY CLASS (OSHA):**

II

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## 6. ACCIDENTAL RELEASE MEASURES

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**OCCUPATIONAL RELEASE:**

Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Reportable Quantity (RQ): Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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## 7. HANDLING AND STORAGE

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Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances. Store in a tightly closed container. Store in a cool, dry place. Store in a well-ventilated area.

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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**EXPOSURE LIMITS:**

**CYCLOHEXANONE:**

50 ppm (200 mg/m<sup>3</sup>) OSHA TWA

25 ppm (100 mg/m<sup>3</sup>) OSHA TWA (skin) (vacated by 58 FR 35338, June 30, 1993)

25 ppm (100 mg/m<sup>3</sup>) ACGIH TWA (skin)

25 ppm (100 mg/m<sup>3</sup>) NIOSH recommended TWA 10 hour(s) (skin)

**VENTILATION:** Provide local exhaust or process enclosure ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** Wear appropriate chemical resistant clothing.

**GLOVES:** Wear appropriate chemical resistant gloves.

**RESPIRATOR:** The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

**625 ppm**

Any supplied-air respirator.

Any powered, air-purifying respirator with organic vapor cartridge(s).

**700 ppm**

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

Any powered, air-purifying respirator with a full facepiece and organic vapor cartridge(s).

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

**Escape -**

Any air-purifying respirator with a full facepiece and an organic vapor canister.

Any appropriate escape-type, self-contained breathing apparatus.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** liquid

**APPEARANCE:** clear

**COLOR:** colorless to yellow

**TEXTURE:** oily

**ODOR:** distinct odor, pleasant odor, minty, sweet odor

**MOLECULAR WEIGHT:** 98.2

**MOLECULAR FORMULA:** C<sub>6</sub>-H<sub>10</sub>-O

**BOILING POINT:** 313 F (156 C)

**FREEZING POINT:** -26 F (-32 C)

**VAPOR PRESSURE:** 2 mmHg @ 20 C

**VAPOR DENSITY (air=1):** 3.4

**SPECIFIC GRAVITY (water=1):** 0.948

**WATER SOLUBILITY:** slightly soluble

**PH:** Not available

**VOLATILITY:** Not available

**ODOR THRESHOLD:** 0.12-0.24 ppm

**EVAPORATION RATE:** 0.23 (butyl acetate=1)

**VISCOSITY:** 2.133 cP @ 21 C

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

**SOLVENT SOLUBILITY:**

**Soluble:** acetone, benzene, ethanol, ether, chloroform, organic solvents

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:**

Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:**

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

**INCOMPATIBILITIES:**

oxidizing materials, combustible materials

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition products: miscellaneous decomposition products

**POLYMERIZATION:**

Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**CYCLOHEXANONE:****IRRITATION DATA:**

75 ppm eyes-human; 500 mg open skin-rabbit mild; 20 mg eyes-rabbit severe; 250 ug/24 hour(s) eyes-rabbit severe

**TOXICITY DATA:**

8000 ppm/4 hour(s) inhalation-rat LC50; 1 ml/kg skin-rabbit LD50; 1620 ul/kg oral-rat LD50

**CARCINOGEN STATUS:**

IARC: Animal Inadequate Evidence, Group 3; ACGIH: A4 -Not Classifiable as a Human Carcinogen

**LOCAL EFFECTS:**

Irritant: inhalation, skin, eye

**ACUTE TOXICITY LEVEL:**

Toxic: dermal absorption

Moderately Toxic: ingestion

Slightly Toxic: inhalation

**TARGET ORGANS:**

central nervous system

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

respiratory disorders, skin disorders and allergies

**MUTAGENIC DATA:**

Available.

**REPRODUCTIVE EFFECTS DATA:**

Available.

**ADDITIONAL DATA:**

Alcohol may enhance the toxic effects.

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## 12. ECOLOGICAL INFORMATION

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**ECOTOXICITY DATA:****FISH TOXICITY:**

630000 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)

**INVERTEBRATE TOXICITY:**

1240 mg/L 24 hour(s) EC100 (Abundance) Water flea (Daphnia magna)

**ALGAL TOXICITY:**

573000 ug/L 48 hour(s) (Population Growth) Cryptomonad (Chilomonas paramecium)

**ENVIRONMENTAL SUMMARY:**

Harmful to aquatic life.

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## 13. DISPOSAL CONSIDERATIONS

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Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U057.

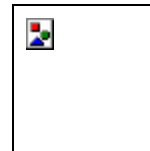
Dispose in accordance with all applicable regulations.

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS;  
PACKING GROUP; LABEL:**  
Cyclohexanone-UN1915; 3; III; Flammable liquid



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## 15. REGULATORY INFORMATION

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**U.S. REGULATIONS:**  
**TSCA INVENTORY STATUS:** Y

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.  
**CERCLA SECTION 103 (40CFR302.4):** Y  
**CYCLOHEXANONE:** 5000 LBS RQ  
**SARA SECTION 302 (40CFR355.30):** N  
**SARA SECTION 304 (40CFR355.40):** N  
**SARA SECTION 313 (40CFR372.65):** N  
**SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):**

**ACUTE:** Y

**CHRONIC:** N

**FIRE:** Y

**REACTIVE:** N

**SUDDEN RELEASE:** N

**OSHA PROCESS SAFETY (29CFR1910.119):** N

**STATE REGULATIONS:**

**California Proposition 65:** N

**EUROPEAN REGULATIONS:**

**EC NUMBER (EINECS):** 203-631-1

**EC RISK AND SAFETY PHRASES:**

R 10	Flammable.
R 20	Harmful by inhalation.
S 2	Keep out of reach of children.
S 25	Avoid contact with eyes.

**CONCENTRATION LIMITS:**

C>=25% Xn R 20

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## 16. OTHER INFORMATION

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