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**** MATERIAL SAFETY DATA SHEET ****

Cyclohexane
05870

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Cyclohexane

Catalog Numbers:

C552-1, C553 4, C553-4, C5534, C555 1, C555 4, C555-1, C555-4, C5551, C5554
C556 1, C556 4, C556 500, C556-1, C556-4, C556-500, C5561, C5564, C556500,
C556J4, C620 1, C620 4, C620-1, C620-4, C6201, C6204, C620J4, C620SK 1,
C620SK 4, C620SK-1, C620SK-4, C620SK1, C620SK4, O2093 20, O2093 4, O2093-20,
O2093-4, O209320, O20934

Synonyms:

Benzene hexahydride, hexahydrobenzene, hexamethylene,
hexanaphthalene.

Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
110-82-7	Cyclohexane	99%	203-806-2

Hazard Symbols: F

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: Colorless liquid. Flash Point: -4 F.

Danger! Extremely flammable liquid. May cause central nervous system depression. Aspiration hazard. May cause eye and skin irritation. May cause respiratory and digestive tract irritation. May cause liver and kidney damage.

Target Organs: Kidneys, central nervous system, liver, cardiovascular system.

Potential Health Effects

Eye:

May cause mild eye irritation.

Skin:

May be absorbed through the skin in harmful amounts. May cause irritation with burning pain, itching and redness.

Ingestion:

Ingestion of large amounts may cause gastrointestinal irritation. 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 cause vascular collapse and damage. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. May cause respiratory tract irritation. May be fatal if exposed to high concentrations.

Chronic:

Prolonged or repeated skin contact may cause defatting and dermatitis.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid. Do NOT allow victim to rub or keep eyes closed.

Skin:

Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion:

Do NOT induce vomiting. Possible aspiration hazard. 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.

Notes to Physician:

Treat symptomatically and supportively.

Antidote:

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No specific antidote exists.

**** 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 can travel to a source of ignition and flash back. Extremely flammable. Material will readily ignite at room temperature. Use water spray to keep fire-exposed containers cool.

Extinguishing Media:

Use foam, dry chemical, or carbon dioxide. Water may be ineffective. This material is lighter than water and insoluble in water. The fire could easily be spread by the use of water in an area where the water cannot be contained.

Autoignition Temperature: 473 F (245.00 C)

Flash Point: -4 F (-17.78 C)

NFPA Rating: health-1; flammability-3; reactivity-0

Explosion Limits, Lower: 1.3

Upper: 8.0

**** 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., dry sand or earth), then place into a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well ventilated area. Do not reuse this container. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, sparks or open flames. Keep container tightly closed. Avoid contact with heat, sparks and flame. Do not get on skin or in eyes. Avoid ingestion and inhalation.

Storage:

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Chemical Name	Exposure Limits		
	ACGIH	NIOSH	OSHA - Final PELs
Cyclohexane	300 ppm ; 1030 mg/m3	300 ppm TWA; 1050 mg/m3 TWA	300 ppm TWA; 1050 mg/m3 TWA

OSHA Vacated PELs:

Cyclohexane:
300 ppm TWA; 1050 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin:

Wear neoprene gloves, apron, and/or clothing. Wear nitrile-latex gloves, apron, and/or clothing.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:

Liquid

Appearance:

Colorless liquid.

Odor:

Sweet chloroform-like.

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pH: Not available.
Vapor Pressure: 95 mm Hg
Vapor Density: 0.7786 at 68F.
Evaporation Rate: 6.1 (Butyl acetate=1)
Viscosity: 1.02 cP at 63F.
Boiling Point: 177.3 F
Freezing/Melting Point: 44 F
Decomposition Temperature: Not available.
Solubility: Practically insoluble in water.
Specific Gravity/Density: 0.8 (Water=1)
Molecular Formula: CH₂(CH₂)₄CH₂
Molecular Weight: 84.084

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:
Incompatible materials, ignition sources.
Incompatibilities with Other Materials:
Incompatible with oxidizing materials.
Hazardous Decomposition Products:
Oxides of carbon.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 110-82-7: GU6300000
LD50/LC50:
CAS# 110-82-7: Oral, mouse: LD50 = 813 mg/kg; Oral, rat: LD50 = 12705 mg/kg.
Carcinogenicity:
Cyclohexane -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No information available.
Teratogenicity:
No information available.
Reproductive Effects:
No information available.
Neurotoxicity:
No information available.
Mutagenicity:
DNA damage; E. coli, 10 umol/L
Other Studies:
None.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Fathead minnow, LC50=95 mg/L/1H at 18-22C. Bluegill, TLM=43-34 mg/L/24-96H Goldfish, TLM=42.3 mg/L/24-96H
Environmental Fate:
In air, substance reacts with hydroxyl radicals.
Physical/Chemical:
No information available.
Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants: Not listed.
RCRA D-Series Chronic Toxicity Reference Levels: Not listed.
RCRA F-Series: Not listed.
RCRA P-Series: Not listed.
RCRA U-Series: waste number U056 (ignitable waste)
This material is banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: CYCLOHEXANE
Hazard Class: 3
UN Number: UN1145
Packing Group: II
IMO
No information available.
IATA
No information available.
RID/ADR
No information available.
Canadian TDG
Shipping Name: CYCLOHEXANE
Hazard Class: 3(9.2)
UN Number: UN1145
Other Information: FLASHPOINT -20 C

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**** SECTION 15 - REGULATORY INFORMATION ****

FEDERAL

TSCA

CAS# 110-82-7 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 110-82-7: Effective Date: December 19, 1985
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

Section 302 (RQ)
final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 110-82-7: acute, chronic, flammable.
Section 313
This material contains Cyclohexane (CAS# 110-82-7, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depleters.
This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 110-82-7 is listed as a Hazardous Substance 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

Cyclohexane 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.

INTERNATIONAL

European Labeling in Accordance with EC Directives

Hazard Symbols: F

Risk Phrases:

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 33 Take precautionary measures against static discharges.
S 9 Keep container in a well-ventilated place.

Canada

CAS# 110-82-7 is listed on Canada's DSL/NDSL List.
CAS# 110-82-7 is listed on Canada's Ingredient Disclosure List.

Exposure Limits:

CAS# 110-82-7: OEL-AUSTRALIA:TWA 300 ppm (1050 mg/m³). OEL-AUSTRIA:TWA 300 ppm (1050 mg/m³). OEL-BELGIUM:TWA 300 ppm (1030 mg/m³). OEL-DENMARK:TWA 300 ppm (1050 mg/m³). OEL-FINLAND:TWA 300 ppm (1050 mg/m³). STEL 375 ppm (1315 mg/m³). OEL-FRANCE:TWA 300 ppm (1050 mg/m³). OEL-GERMANY:TWA 300 ppm (1050 mg/m³). OEL-HUNGARY:TWA 500 mg/m³; STEL 1000 mg/m³. OEL-JAPAN:TWA 150 ppm (520 mg/m³). OEL-THE NETHERLANDS:TWA 300 ppm (1050 mg/m³). OEL-POLAND:TWA 80 mg/m³. OEL-RUSSIA:TWA 150 ppm; STEL 80 mg/m³. OEL-SWEDEN:TWA 300 ppm (1000 mg/m³). STEL 370 ppm (1300 mg/m³). OEL-SWITZERLAND:TWA 300 ppm (1050 mg/m³). STEL 600 ppm. OEL-TURKEY:TWA 300 ppm (1050 mg/m³). OEL-UNITED KINGDOM:TWA 300 ppm (1050 mg/m³). STEL 375 ppm. OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

Additional Information:

No additional information available.

MSDS Creation Date: 12/16/1994 Revision #5 Date: 8/14/1996

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