1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER: EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

PREPARATION DATE: 03/01/91
DATE MSDS PRINTED: JUN 11, 1992

INFORMATION PHONE NUMBER: 609-354-9200
HOURS: MON. TO FRI. 8:30-5
CHEMTREC EMERGENCY NUMBER: 800-424-9300
HOURS: 24 HRS A DAY

CATALOG NUMBER(S):
CX2286 CX2290 CX2295

CHEMICAL NAME: CYCLOHEXANE
TRADE NAME: HEXAMETHYLENE
CHEMICAL FAMILY: CYCLIC HYDROCARBON
FORMULA: C6H12

MOLECULAR WEIGHT: 84.16

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS #</th>
<th>APPR %</th>
</tr>
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<tbody>
<tr>
<td>CYCLOHEXANE</td>
<td>110-82-7</td>
<td>100%</td>
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3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
EXTREMELY FLAMMABLE LIQUID AND VAPOR.
HARMFUL IF SWALLOWED OR INHALED.
MAY BE IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.
MAY CAUSE DAMAGE TO CENTRAL NERVOUS SYSTEM, LIVER, AND KIDNEYS.

APPEARANCE:
CLEAR LIQUID, PUNGENT ODOR.

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE: MSDS (CONTINUED) - CX2286 PAGE # 1
HARMFUL IF INHALED OR SWALLOWED.
MAY BE IRRITATING ON CONTACT WITH SKIN, EYES, OR MUCOUS MEMBRANES.
VAPOR IRRITATING TO EYES AND RESPIRATORY PASSAGES.
MAY CAUSE HEADACHE, DIZZINESS, NAUSEA, NARCOSIS, UNCONSCIOUSNESS,
AND POSSIBLY ASPHYXIATION.
MAY CAUSE DAMAGE TO CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.

MEDICAL CONDITION AGGRAVATED BY EXPOSURE:
LIVER, KIDNEY AND CNS CONDITIONS.

ROUTES OF ENTRY:
INHALATION, INGESTION

CARCINOGENICITY:
The material is not listed as a cancer causing agent.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
SKIN: WASH THOROUGHLY WITH SOAP AND WATER.
EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15
MINUTES.
INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF
BREATHING HAS STOPPED.
INGESTION: DO NOT INDUCE VOMITING; GET IMMEDIATE MEDICAL
ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT (F): -4 (CC)
FLAMMABLE LIMITS LEL (%): 1.30
FLAMMABLE LIMITS UEL (%): 8.00
EXTINGUISHING MEDIA:
CO2, DRY CHEMICAL, ALCOHOL FOAM.
WATER SPRAY TO DISPERSE VAPORS AND COOL EXPOSED CONTAINERS.

FIRE FIGHTING PROCEDURES:
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

FIRE & EXPLOSION HAZARDS:
DANGEROUS FIRE AND EXPLOSIVE HAZARD.
VAPORS CAN TRAVEL DISTANCES TO IGNITION SOURCE & FLASH BACK

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:
EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.
WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE /
PERSONAL PROTECTION.
ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE
MSDS (CONTINUED) - CA2286 PAGE # 2
FREE FROM EXPLOSION OR FIRE HAZARDS.
CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE
WITHOUT RISK.
TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER
DISPOSAL.
COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING
RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE
QUANTITY AND OTHER REGULATORY DATA.
EM SCIENCE RECOMMENDS SPILL-X ABSORBENT AGENTS FOR VARIOUS TYPES
OF SPILLS. ADDITIONAL INFORMATION ON THE SPILL-X PRODUCTS CAN BE
PROVIDED THROUGH THE EM SCIENCE TECHNICAL SERVICE DEPARTMENT
(609) 354-9200.
THE FOLLOWING EM SCIENCE SPILL-X ABSORBENT IS RECOMMENDED FOR
THIS PRODUCT:

SX0863     SOLVENT SPILL TREATMENT KIT

7. HANDLING AND STORAGE

HANDLING & STORAGE:
KEEP CONTAINER TIGHTLY CLOSED.
STORE IN COOL, WELL-VENTILATED AREA AWAY FROM IGNITION SOURCES AND
OXIDIZERS.
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.
ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT.
RETAINED RESIDUE MAY MAKE EMPTY CONTAINERS HAZARDOUS; USE
CAUTION!

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION
MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME
HOOD OR WITH ADEQUATE VENTILATION.
PROTECTIVE GLOVES SHOULD BE WORN TO PREVENT SKIN CONTACT
(VITON OR EQUIVALENT)
SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES.
RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT
OR ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), A NIOSH/MSHA APPROVED
AIR-SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER
ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER
NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED
CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING
AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE
EXPOSURE.

MSDS (CONTINUED) - CX2286 PAGE # 3
WORK / HYGENIC PRACTICES:
WASH THOROUGHLY AFTER HANDLING.
DO NOT TAKE INTERNALLY.
EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

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<th>COMPONENT</th>
<th>TWA</th>
<th>STEL</th>
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<tbody>
<tr>
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<td>PPM</td>
<td>MG/M³</td>
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<tr>
<td>CYCLOHEXANE</td>
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ACGIH - TLV:

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<tr>
<td>CYCLOHEXANE</td>
<td>300</td>
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9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT (C 760 MMHG): 81
MELTING POINT (C): 7
SPECIFIC GRAVITY (H₂O = 1): 0.779
VAPOR PRESSURE (MM HG): 95 20C
PERCENT VOLATILE BY VUL (%): 100
VAPOR DENSITY (AIR = 1): 2.9
EVAPORATION RATE (BUAC = 1): FAST
SOLUBILITY IN WATER (%): INSOLUBLE
APPEARANCE: CLEAR LIQUID, PUNGENT ODOR.

10. STABILITY AND REACTIVITY

STABILITY: YES
HAZARDOUS POLYMERIZATION:
DOES NOT OCCUR

MSDS (CONTINUED) - CX2286 PAGE # 4
HAZARDOUS DECOMPOSITION:
COX

CONDITIONS TO AVOID:
HEAT, SPARKS, OPEN FLAME

MATERIALS TO AVOID:

☐ WATER
☐ ACIDS
☐ BASES
☐ CORROSIVES
☒ OXIDIZERS
☒ OTHER:

NITROGEN DIOXIDE

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:
QRL-MUS LD50: 813 MG/KG

TOXICOLOGICAL FINDINGS:
TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE
ADVERSE MUTAGENIC EFFECTS.
CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS: U056  D002
TREATMENT:
INCINERATION, FUELS BLENDING OR RECYCLE. CONTACT YOUR LOCAL
PERMITTED WASTE DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT
SITES.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE
COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME:
CYCLOHEXANE
DOT ID NUMBER: UN1145

14. REGULATORY INFORMATION

MSDS (CONTINUED) - CX2286 PAGE # 5
TSCA INVENTORY

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

<table>
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<tr>
<th>COMPONENT</th>
<th>SARA EHS (302)</th>
<th>SARA EHS TPQ (LBS)</th>
<th>CERCLA RL (LBS)</th>
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<table>
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<tr>
<th>COMPONENT</th>
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15. OTHER INFORMATION

COMMENTS:
NONE

NFPA HAZARD RATINGS:
HEALTH : 1
FLAMMABILITY : 3
REACTIVITY : 0
SPECIAL HAZARDS:

REVISION HISTORY:
11/01/81  05/01/84  10/27/87  01/19/88

- = REVISED SECTION
N/A = NOT AVAILABLE
N/E = NONE ESTABLISHED

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