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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.

USA
959 Route 46 East
Parsippany, New Jersey
07054-0624 USA
Phone: 973-257-1100

CANADA
530 Watson Street
Whitby, Ontario
L1N 5R9 Canada
Phone: 905-668-3570

SUBSTANCE: N-HEPTANE
SYMBOL: C\textsubscript{7}H\textsubscript{16}

TRADE NAMES/SYNONYMMS:
NORMAL HEPTANE; DIPROPYL METHANE; HEPTYL HYDRIDE; SKELLYSOLVE C;
DIPROPYL METHANE; N-HEPTANE; STCC 4909190; UN 1206; H-350, H-340, O-3008, H-20;
C\textsubscript{7}H\textsubscript{16}; MAT10680; RTECS MI7700000

CHEMICAL FAMILY: hydrocarbons, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Mar 16 1999

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HEPTANE
CAS NUMBER: 142-82-5
EC NUMBER (EINECS): 205-563-8
EC INDEX NUMBER: 601-008-00-2
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2  FIRE=3  REACTIVITY=0

WHMIS CLASSIFICATION: B

EC CLASSIFICATION (ASSIGNED):
F Highly Flammable
R 11

EC Classification may be inconsistent with independently-researched data.

EMERGENCY OVERVIEW:

Color: colorless
Physical Form: volatile liquid
Odor: faint odor, gasoline odor

Major Health Hazards: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression

Physical Hazards: Flammable liquid and vapor. Vapor may cause flash fire.

POTENTIAL HEALTH EFFECTS:

INHALATION:
  Short Term Exposure: irritation, nausea, headache, symptoms of drunkenness, convulsions
  Long Term Exposure: no information is available

SKIN CONTACT:
  Short Term Exposure: irritation, itching
  Long Term Exposure: same as effects reported in short term exposure

EYE CONTACT:
  Short Term Exposure: irritation, tearing, blurred vision
  Long Term Exposure: same as effects reported in short term exposure

INGESTION:
  Short Term Exposure: nausea, vomiting, diarrhea, stomach pain, headache, symptoms of drunkenness
  Long Term Exposure: no information is available

CARCINOGEN STATUS:
OSHA: N
NTP: N
IARC: N

4. FIRST AID MEASURES

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, occasionally lifting upper and lower lids, until no evidence of chemical remains. Continue irrigating with normal saline until ready to transport to hospital. Cover with sterile bandages. Get medical attention immediately.

INGESTION:
If person is unconscious, turn head to side. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. Contact local poison control center or physician immediately. Get medical attention.
NOTE TO PHYSICIAN:
For ingestion, consider gastric lavage and activated charcoal slurry.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS:
Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

EXTINGUISHING MEDIA:
regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular 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). Water may be ineffective.

FLASH POINT:
25 F (-4 C) (CC)

LOWER FLAMMABLE LIMIT:
1.05%

UPPER FLAMMABLE LIMIT:
6.7%

AUTOIGNITION:
399 F (204 C)

FLAMMABILITY CLASS (OSHA):
IB

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other 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. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE
8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

HEPTANE:
500 ppm (2000 mg/m3) OSHA TWA
400 ppm (1640 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
500 ppm (2050 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
400 ppm (1640 mg/m3) ACGIH TWA
500 ppm (2050 mg/m3) ACGIH STEL
85 ppm (350 mg/m3) NIOSH recommended TWA 10 hour(s)
440 ppm (1800 mg/m3) NIOSH recommended ceiling

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. 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.

750 ppm
Any chemical cartridge respirator with organic vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any powered, air-purifying respirator with organic vapor cartridge(s).
Any supplied-air respirator.
Any self-contained breathing apparatus 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid

APPEARANCE: clear

COLOR: colorless
PHYSICAL FORM: volatile liquid

ODOR: faint odor, gasoline odor

MOLECULAR WEIGHT: 100.21

MOLECULAR FORMULA: C-H3-(C-H2)5-C-H3

BOILING POINT: 208 F (98 C)

FREEZING POINT: -132 F (-91 C)

VAPOR PRESSURE: 40 mmHg @ 20 C

VAPOR DENSITY (air=1): 3.45

SPECIFIC GRAVITY (water=1): 0.6837

WATER SOLUBILITY: 0.005%

PH: Not available

VOLATILITY: 100%

ODOR THRESHOLD: 200 ppm

EVAPORATION RATE: 2.80 (butyl acetate=1)

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SOLVENT SOLUBILITY:
Soluble: ethanol, ether, chloroform, acetone

10. STABILITY AND REACTIVITY

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. Keep out of water supplies and sewers.

INCOMPATIBILITIES:
oxidizing materials, combustible materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of carbon

POLYMERIZATION:
Will not polymerize.

11. TOXICOLOGICAL INFORMATION
HEPTANE:

TOXICITY DATA:
103 gm/m3/4 hour(s) inhalation-rat LC50

LOCAL EFFECTS:
Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:
Slightly Toxic: inhalation

TARGET ORGANS:
central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
respiratory disorders, skin disorders and allergies

ADDITIONAL DATA:
Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY:
375000 ug/L 96 hour(s) LC50 (Mortality) Mozambique tilapia (Tilapia mossambica)

INVERTEBRATE TOXICITY:
2500000 ug/L 96 hour(s) LC50 (Mortality) Oligochaete (Branchiura sowerbyi)

ALGAL TOXICITY:
1500 ug/L 8 year(s) EC50 (Photosynthesis) Algae, phytoplankton, algal mat (Algae)

ENVIRONMENTAL SUMMARY:
Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS;
PACKING GROUP; LABEL:
Heptanes-UN1206; 3; II; Flammable liquid

15. REGULATORY INFORMATION

U.S. REGULATIONS:
TSCA INVENTORY STATUS: Y
TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CERCLA SECTION 103 (40CFR302.4): N

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


STATE REGULATIONS:
- California Proposition 65: N

EUROPEAN REGULATIONS:

EC NUMBER (EINECS): 205-563-8

EC RISK AND SAFETY PHRASES:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>R 11</td>
<td>Highly flammable.</td>
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<tr>
<td>S 2</td>
<td>Keep out of reach of children.</td>
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<tr>
<td>S 9</td>
<td>Keep container in a well-ventilated place.</td>
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<tr>
<td>S 16</td>
<td>Keep away from sources of ignition - No smoking.</td>
</tr>
<tr>
<td>S 23</td>
<td>Do not breathe gas, fumes, vapour, or spray.</td>
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<tr>
<td>S 29</td>
<td>Do not empty into drains.</td>
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<tr>
<td>S 33</td>
<td>Take precautionary measures against static discharges.</td>
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16. OTHER INFORMATION

Matheson Tri-Gas makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty of merchantability or fitness for use. Matheson Tri-Gas shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.