MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: HEPTANE

TRADE NAMES/SYNONYMS:
MTG MSDS 93; NORMAL HEPTANE; DIPROPYL METHANE; HEPTYL HYDRIDE;
DIPROPYLMETHANE; N-HEPTANE; UN 1206; C7H16; MAT10680; RTECS MI7700000

CHEMICAL FAMILY: hydrocarbons, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HEPTANE
CAS NUMBER: 142-82-5
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

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

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: faint odor, gasoline odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, aspiration hazard, central nervous system depression
PHYSICAL HAZARDS: Flammable liquid and vapor. Vapor may cause flash fire.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, loss of appetite, headache, drowsiness, dizziness, emotional
disturbances, loss of coordination, suffocation, unconsciousness
LONG TERM EXPOSURE: no information is available
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
INGESTION:
SHORT TERM EXPOSURE: same as effects reported in short term inhalation, nausea, vomiting, diarrhea, stomach pain, aspiration hazard
LONG TERM EXPOSURE: no information is available

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Aspiration hazard. DO NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention. Give artificial respiration if not breathing.

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

**STORAGE:** 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.

## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**EXPOSURE LIMITS:**

### HEPTANE:

#### n-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)
- 85 ppm (350 mg/m³) NIOSH recommended TWA 10 hour(s)
- 440 ppm (1800 mg/m³) NIOSH recommended ceiling 15 minute(s)

### HEPTANE, ALL ISOMERS:
- 400 ppm ACGIH TWA
- 500 ppm ACGIH STEL

**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 air-purifying half-mask respirator equipped with organic vapor cartridge(s).
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted 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.
Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

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: 220 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:
PROPER SHIPPING NAME: Heptanes
ID NUMBER: UN1206
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: II
LABELING REQUIREMENTS: 3

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Heptanes
UN NUMBER: UN1206
CLASS: 3
PACKING GROUP/CATEGORY: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: B

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION:
HEPTANE
CAS NUMBER: 142-82-5
SECTION 4

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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