

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
959 ROUTE 46 EAST
PARSIPPANY, NEW JERSEY 07054-0624

EMERGENCY CONTACT:
CHEMTREC 1-800-424-9300
INFORMATION CONTACT:
973-257-1100

SUBSTANCE: CALIBRATION GAS

TRADE NAMES/SYNONYMS:
00203305

CREATION DATE: Jul 13 1999
REVISION DATE: Sep 16 2004

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: METHANE
CAS NUMBER: 74-82-8
PERCENTAGE: 75-90

COMPONENT: ETHANE
CAS NUMBER: 74-84-0
PERCENTAGE: 3-10

COMPONENT: PROPANE
CAS NUMBER: 74-98-6
PERCENTAGE: 1-5

COMPONENT: CARBON DIOXIDE, GAS
CAS NUMBER: 124-38-9
PERCENTAGE: 0.5-5

COMPONENT: NITROGEN, COMPRESSED GAS
CAS NUMBER: 7727-37-9
PERCENTAGE: 1-5

COMPONENT: N-BUTANE
CAS NUMBER: 106-97-8
PERCENTAGE: 0.1-3

COMPONENT: ISOBUTANE
CAS NUMBER: 75-28-5
PERCENTAGE: 0.1-3

COMPONENT: PENTANE
CAS NUMBER: 109-66-0
PERCENTAGE: 0.1-3

COMPONENT: ISOPENTANE
CAS NUMBER: 78-78-4
PERCENTAGE: 0.1-3

COMPONENT: HEPTANE
CAS NUMBER: 142-82-5
PERCENTAGE: 0.01-2

COMPONENT: N-HEXANE
CAS NUMBER: 110-54-3
PERCENTAGE: 0.05-1

3. HAZARDS IDENTIFICATION

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



EMERGENCY OVERVIEW:

PHYSICAL FORM: compressed gas

MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, aspiration hazard, central nervous system depression, difficulty breathing, nerve damage

PHYSICAL HAZARDS: Flammable gas. May cause flash fire.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation, nausea, vomiting, dizziness, tingling sensation, suffocation, convulsions, coma

LONG TERM EXPOSURE: irritation, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, mood swings, muscle cramps, loss of coordination, visual disturbances, impotence, suffocation, lung congestion, blood disorders, nerve damage, paralysis, brain damage, convulsions, unconsciousness, coma

SKIN CONTACT:

SHORT TERM EXPOSURE: no information on significant adverse effects

LONG TERM EXPOSURE: irritation, skin disorders

EYE CONTACT:

SHORT TERM EXPOSURE: no information on significant adverse effects

LONG TERM EXPOSURE: irritation

INGESTION:

SHORT TERM EXPOSURE: ingestion of harmful amounts is unlikely

LONG TERM EXPOSURE: ingestion of harmful amounts is unlikely

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash exposed skin with soap and water.

EYE CONTACT: Flush eyes with plenty of water.

INGESTION: If a large amount is swallowed, get medical attention.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Containers may rupture or explode if exposed to heat.

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

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. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

FLASH POINT: -369 F (-223 C) (METHANE)

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering. 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).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. See original container for storage recommendations. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

METHANE:

No occupational exposure limits established.

ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4):

1000 ppm ACGIH TWA

ETHANE:

No occupational exposure limits established.

ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4):

1000 ppm ACGIH TWA

PROPANE:

1000 ppm (1800 mg/m³) OSHA TWA

1000 ppm (1800 mg/m³) NIOSH recommended TWA 10 hour(s)

LIQUIFIED PETROLEUM GAS (LPG):

1000 ppm (1800 mg/m³) OSHA TWA

1000 ppm ACGIH TWA

1000 ppm (1800 mg/m³) NIOSH recommended TWA 10 hour(s)

ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4):

1000 ppm ACGIH TWA

CARBON DIOXIDE, GAS:

CARBON DIOXIDE:

5000 ppm (9000 mg/m³) OSHA TWA

10000 ppm (18000 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)

30000 ppm (54000 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

5000 ppm ACGIH TWA

30000 ppm ACGIH STEL

5000 ppm (9000 mg/m³) NIOSH recommended TWA 10 hour(s)

30000 ppm (54000 mg/m³) NIOSH recommended STEL

NITROGEN, COMPRESSED GAS:

NITROGEN:

ACGIH (simple asphyxiant)

N-BUTANE:

800 ppm (1900 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
800 ppm (1900 mg/m³) NIOSH recommended TWA 10 hour(s)

LIQUIFIED PETROLEUM GAS (LPG):

1000 ppm (1800 mg/m³) OSHA TWA
1000 ppm ACGIH TWA
1000 ppm (1800 mg/m³) NIOSH recommended TWA 10 hour(s)

ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4):

1000 ppm ACGIH TWA

ISOBUTANE:

800 ppm (1900 mg/m³) NIOSH recommended TWA 10 hour(s)

LIQUIFIED PETROLEUM GAS (LPG):

1000 ppm (1800 mg/m³) OSHA TWA
1000 ppm ACGIH TWA
1000 ppm (1800 mg/m³) NIOSH recommended TWA 10 hour(s)

ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4):

1000 ppm ACGIH TWA

PENTANE:

1000 ppm (2950 mg/m³) OSHA TWA
600 ppm (1770 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
750 ppm (2210 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
600 ppm ACGIH TWA
120 ppm (350 mg/m³) NIOSH recommended TWA 10 hour(s)
610 ppm (1800 mg/m³) NIOSH recommended ceiling 15 minute(s)

ISOPENTANE:

ALKANES (C5-C8):

350 mg/m³ NIOSH recommended TWA 10 hour(s)
1800 mg/m³ NIOSH recommended ceiling 15 minute(s)

ISOPENTANE:

600 ppm ACGIH TWA

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 ACGIH TWA
500 ppm ACGIH STEL
85 ppm (350 mg/m³) NIOSH recommended TWA 10 hour(s)
440 ppm (1800 mg/m³) NIOSH recommended ceiling 15 minute(s)

N-HEXANE:

500 ppm (1800 mg/m³) OSHA TWA
50 ppm (180 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
50 ppm ACGIH TWA (skin)
50 ppm (180 mg/m³) NIOSH recommended TWA 10 hour(s)

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. 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: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

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: gas

PHYSICAL FORM: compressed gas

ODOR: Not available

BOILING POINT: -260 F (-162 C) (METHANE)

FREEZING POINT: -297 F (-183 C) (METHANE)

VAPOR PRESSURE: 760 mmHg @ -161 C (METHANE)

VAPOR DENSITY (air=1): 0.555 (METHANE)

DENSITY: Not available

WATER SOLUBILITY: Not available

PH: Not applicable

VOLATILITY: Not applicable

ODOR THRESHOLD: Not available

EVAPORATION RATE: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: halogens, combustible materials, oxidizing materials

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: oxides of carbon

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

METHANE:

TOXICITY DATA:

50 pph/2 hour(s) inhalation-mouse LC50

ACUTE TOXICITY LEVEL:

Relatively Non-toxic: inhalation

ETHANE:

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

PROPANE:

TARGET ORGANS: central nervous system

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

CARBON DIOXIDE, GAS:

ACUTE TOXICITY LEVEL: Insufficient Data.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: heart or cardiovascular disorders, respiratory disorders

REPRODUCTIVE EFFECTS DATA: Available.

N-BUTANE:

TOXICITY DATA:

658000 mg/m³/4 hour(s) inhalation-rat LC50

ACUTE TOXICITY LEVEL:

Relatively Non-toxic: inhalation

TARGET ORGANS: central nervous system

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

ISOBUTANE:

TOXICITY DATA:

57 pph/15 minute(s) inhalation-rat LC50

LOCAL EFFECTS:

Irritant: inhalation

ACUTE TOXICITY LEVEL:

Relatively Non-toxic: inhalation

TARGET ORGANS: central nervous system

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

PENTANE:

TOXICITY DATA:

364 gm/m³/4 hour(s) inhalation-rat LC50; >2000 mg/kg oral-rat LD50

LOCAL EFFECTS:

Irritant: inhalation, skin

ACUTE TOXICITY LEVEL:

Relatively Non-toxic: inhalation

TARGET ORGANS: central nervous system

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

ADDITIONAL DATA: Alcohol may enhance the toxic effects.

ISOPENTANE:

TOXICITY DATA:

280000 mg/m³/4 hour(s) inhalation-rat LC50

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Relatively Non-toxic: inhalation

TARGET ORGANS: central nervous system

ADDITIONAL DATA: Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation.

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.

N-HEXANE:

IRRITATION DATA:

10 mg eyes-rabbit mild

TOXICITY DATA:

>3367 ppm inhalation-rat LC50; >2 gm/kg skin-rabbit LD50; >5 gm/kg oral-rat LD50

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Slightly Toxic: inhalation

Relatively Non-toxic: ingestion

TARGET ORGANS: nervous system

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

TUMORIGENIC DATA: Available.

MUTAGENIC DATA: Available.

REPRODUCTIVE EFFECTS DATA: Available.

ADDITIONAL DATA: Alcohol may enhance the toxic effects.

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Methane, compressed

ID NUMBER: UN1971

HAZARD CLASS OR DIVISION: 2.1

LABELING REQUIREMENTS: 2.1

QUANTITY LIMITATIONS:

PASSENGER AIRCRAFT OR RAILCAR: Forbidden

CARGO AIRCRAFT ONLY: 150 kg



CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Methane, compressed

UN NUMBER: UN1971

CLASS: 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

N-HEXANE: 5000 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: Yes

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):

N-HEXANE

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:

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

TSCA 12(b) EXPORT NOTIFICATION:

PENTANE

CAS NUMBER: 109-66-0

SECTION 4

HEPTANE

CAS NUMBER: 142-82-5

SECTION 4

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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