# Safety Data Sheet

1214700989

**Coastal Specialty Gas**
55 N 4th Street
PO Box 3029
Beaumont, Texas 77704 - 3029
Medical Emergency: INFOTRAC (800)535-5053
Chemical Emergency: INFOTRAC (800)535-5053
Hours of Operation: M-F 8:00 - 5:00
http://www.coastalws.com

## Section 1: Product and Company Identification

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Product Code: 1214700989
Part Number: 1214700989
**Synonyms:**
**Recommended Use:**
**Usage Restrictions:**

## Section 2: Hazards Identification

**Danger**

### Hazard Classification:

Aspiration Hazard (Category 1)
Gases Under Pressure
Specific target organ toxicity (Single Exposure) (Category 3)

### Hazard Statements:

Contains gas under pressure; may explode if heated
May be fatal if swallowed and enters airways
May cause respiratory irritation;
Toxic to aquatic life with long lasting effects

### Precautionary Statements

**Prevention:**
Use only outdoors or in a well-ventilated area.
Avoid breathing dust/fume/gas/mist/ vapors/spray.
[In case of inadequate ventilation] wear respiratory protection.

**Response:**

Do NOT induce vomiting.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Immediately call a poison center or doctor.
If inhaled: Remove person to fresh air and keep comfortable for breathing.

**Storage:**
Store in a well-ventilated place. Keep container tightly closed.
Protect from sunlight.
Store locked up.

**Disposal:**
Dispose of contents and/or container in accordance with applicable regulations.

## Section 3: Composition/Information on Ingredients

| | CAS # | Concentration |
|---|---|---|
| **Methane** | 74-82-8 | 50 PPM |
| **Ethane** | 74-84-0 | 50 PPM |
| **Propane** | 74-98-6 | 50 PPM |
| **Butane** | 106-97-8 | 50 PPM |
| **n-Pentane** | 109-66-0 | 50 PPM |
| **Nitrogen** | 7727-37-9 | BALANCE |

| | Chemical Substance | Chemical Family | Trade Names |
|---|---|---|---|
| **Methane** | METHANE, COMPRESSED GAS | Hydrocarbons, Aliphatic, Saturated | FIRE DAMP; MARSH GAS; METHYL HYDRIDE; NATURAL GAS; METHANE; UN 1971; R50; CH4 |
| **Ethane** | ETHANE | Hydrocarbons, Aliphatic, Saturated | BIMETHYL; ETHANE, COMPRESSED; METHYLMETHANE; DIMETHYL; ETHYL HYDRIDE; UN 1035; C2H6 |
| **Propane** | PROPANE | Hydrocarbons, Aliphatic, Saturated | N-PROPANE; DIMETHYLMETHANE; PROPYL HYDRIDE; R-290; PROPYLHYDRIDE; LIQUEFIED PETROLEUM GAS; LPG; >96% NATURAL GRADE; >99.9% PURE GRADE; UN 1978; C3H8 |
| **Butane** | BUTANE | Hydrocarbons, Aliphatic, Saturated | N-BUTANE; LIQUIFIED PETROLEUM GAS; NORMAL BUTANE; BUTYL HYDRIDE; LPG; UN 1011; C4H10 |
| **n-Pentane** | N-PENTANE | Hydrocarbons, Aliphatic, Saturated | PENTANE; AMYL HYDRIDE; UN 1265; C5H12 |
| **Nitrogen** | NITROGEN, COMPRESSED GAS | Inorganic gases | DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2 |

## Section 4: First Aid Measures

| | Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
|---|---|---|---|---|---|
| **Methane** | Wash exposed skin with soap and water. | Flush eyes with plenty of water. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |
| **Ethane** | If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |

| | Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
|---|---|---|---|---|---|
| **Propane** | If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |
| **Butane** | If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | Not likely route of exposure. | 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. | For inhalation, consider oxygen. |
| **n-Pentane** | Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. | Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | 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. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention. | Not available |
| **Nitrogen** | Wash exposed skin with soap and water. | Flush eyes with plenty of water. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |

## Section 5: Fire Fighting Measures

| | Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
|---|---|---|---|
| **Methane** | Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray. | Carbon monoxide, carbon dioxide, water | ▪ Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.<br>▪ Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece. |
| **Ethane** | Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray. | Toxic gases | ▪ Any self-contained breathing apparatus with a full facepiece.<br>▪ Any self-contained breathing apparatus with a full facepiece. |
| **Propane** | Regular dry chemical, high expansion foam Large fires: Flood with fine water spray. | Carbon monoxide, carbon dioxide, water and toxic and irritating fumes | ▪ Any self-contained breathing apparatus with a full facepiece.<br>▪ Any self-contained breathing apparatus with a full facepiece. |
| **Butane** | Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray. | Carbon monoxide, carbon dioxide, water and toxic and irritating fumes. | ▪ 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.<br>▪ 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. |
| **n-Pentane** | Regular dry chemical, carbon dioxide, water, regular foam Large fires: Use regular foam or flood with fine water spray. | Carbon monoxide, carbon dioxide and toxic and irritating fumes | ▪ Any self-contained breathing apparatus with a full facepiece.<br>▪ Any self-contained breathing apparatus with a full facepiece. |

| | Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
|---|---|---|---|
| **Nitrogen** | Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat. | Non-flammable | ▪ Respiratory protection may be needed for frequent or heavy exposure. |

## Section 6: Accidental Release Measures

| | Personal Precautions | Environmental Precautions | Methods for Containment |
|---|---|---|---|
| **Methane** | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| **Ethane** | Keep unnecessary people away, isolate hazard area and deny entry. Do not touch spilled material. Ventilate closed spaces before entering. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| **Propane** | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| **Butane** | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| **n-Pentane** | Keep unnecessary people away, isolate hazard area and deny entry. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| **Nitrogen** | Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. | No significant effects from contamination expected. | Stop leak if possible without personal risk. |

| | Methods for Cleanup | Other Information |
|---|---|---|
| **Methane** | Not available | Not available |
| **Ethane** | Contact emergency personnel immediately. | Not available |
| **Propane** | Contact emergency personnel | None |
| **Butane** | Stop leak, evacuate area. Use protective equipment. Contact emergency personnel. | None |
| **n-Pentane** | Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. | Not available |
| **Nitrogen** | N/A | N/A |

## Section 7: Handling and Storage

| | Handling | Storage |
|---|---|---|
| **Methane** | 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. | Keep separated from incompatible substances. |
| **Ethane** | 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. | Keep separated from incompatible substances. |
| **Propane** | 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. | Keep separated from incompatible substances. |
| **Butane** | Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances. | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. |
| **n-Pentane** | Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods. | Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier. |
| **Nitrogen** | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. | Keep separated from incompatible substances. |

# Section 8: Exposure Controls/Personal Protection

| | Exposure Guidelines |
|---|---|
| **Methane** | METHANE, COMPRESSED GAS: ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA METHANE: No occupational exposure limits established. ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA |
| **Ethane** | TLV-TWA: 1000ppm (Aliphatic hydrocarbon gases: Alkane C1 - C4) (ACGIH) |
| **Propane** | 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 |
| **Butane** | 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 (1800 mg/m3) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA |
| **n-Pentane** | 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) |
| **Nitrogen** | NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant) |

### Engineering Controls

Handle only in fully enclosed systems.

| | Eye Protection | Skin Protection | Respiratory Protection |
|---|---|---|---|
| **Methane** | Eye protection not required, but recommended. | Protective clothing is not required. | Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece. |
| **Ethane** | For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | Any self-contained breathing apparatus with a full facepiece. |
| **Propane** | For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | Any self-contained breathing apparatus with a full facepiece. |
| **Butane** | For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | 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. |
| **n-Pentane** | Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | Wear appropriate chemical resistant clothing. | Any self-contained breathing apparatus with a full facepiece. |
| **Nitrogen** | Eye protection not required, but recommended. | Protective clothing is not required. | Respiratory protection may be needed for frequent or heavy exposure. |

### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

# Section 9: Physical and Chemical Properties

| | Physical State | Appearance | Color | Change in Appearance | Physical Form | Odor | Taste |
|---|---|---|---|---|---|---|---|
| **Methane** | Gas | Colorless | Colorless | N/A | Gas | Odorless | Tasteless |
| **Ethane** | Gas | Colorless | Colorless | N/A | Gas | Sweet odor | N/A |
| **Propane** | Gas | Clear | Colorless | N/A | Gas | Gasoline odor | N/A |
| **Butane** | Gas | Colorless | Colorless | N/A | Gas | Faint petroleum-like odor | N/A |
| **n-Pentane** | Liquid | Clear | Colorless | N/A | Liquid | Gasoline odor | N/A |
| **Nitrogen** | Gas | Clear | Colorless | N/A | Gas | Odorless | Tasteless |

| | Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|---|---|---|---|---|---|---|

| | Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|---|---|---|---|---|---|---|
| **Methane** | -369 F (-223 C) | Not available | 724.44 (log = 2.87) (estimated from water solubility) | 999 F (537 C) | 15% | 5% |
| **Ethane** | -211 F (-135 C) (CC) | Not available | 912.01 (log = 2.97) (estimated from water solubility) | 882 F (472 C) | 0.125 | 0.03 |
| **Propane** | -157 F (-105 C) | Not available | Not available | 842 F (450 C) | 0.095 | 0.021 |
| **Butane** | -76 F (-60 C) (CC) | Not available | 630.96 (log = 2.80) (estimated from water solubility) | 549 F (287 C) | 0.085 | 0.019 |
| **n-Pentane** | <-40 F (<-40 C) (CC) | IA | Not available | 500 F (260 C) | 0.078 | 0.014 |
| **Nitrogen** | Not flammable | Not available | Not available | Nonflammable | Nonflammable | Nonflammable |

| | Boiling Point | Freezing Point | Vapor Pressure | Vapor Density | Specific Gravity | Water Solubility | pH | Odor Threshold | Evaporation Rate | Viscosity |
|---|---|---|---|---|---|---|---|---|---|---|
| **Methane** | -260 F (-162 C) | -297 F (-183 C) | 760 mmHg @ -161 C | 0.555 (Air=1) | Not applicable | 3.5% @ 17 C | Not applicable | Not available | Not applicable | 0.01118 cP @ 27 C |
| **Ethane** | -128 F (-89 C) | -297 F (-183 C) | 28842 mmHg @ 21 C | 1.05 (Air =1) | Not applicable | 4.7% @ 20 C | Not applicable | 899 ppm | Not applicable for gas. Refrigerated liquefied ethane will evaporate rapidly at room temperature | 0.00852 cP @ 0 C |
| **Propane** | -40 F (-40 C) | -310 F (-190 C) | 6398 mmHg @ 21.1 C | 1.55 (Air=1) | 0.5853 @ -45 C | Very slightly soluble | Not applicable | 5000-20000 ppm | Not applicable | Not available |
| **Butane** | 30 F (-1 C) | -216 F (-138 C) | 1557 mmHg @ 20 C | 2.1 (Air=1) | 0.5788 @ 0 C | 0.15 | Not applicable | 6.16 ppm | Not applicable for gas. Liquefied n-butane will evaporate rapidly at room temperature | Not available |
| **n-Pentane** | 96.93 F (36.07 C) | -201.5 F (-129.7 C) | 400 mmHg @ 18.5 C | 2.5 (Air=1) | 0.626 | 0.0004 | Not available | 2.2-5000 ppm | 28.6 (butyl acetate=1) | <32 SUS |
| **Nitrogen** | -321 F (-196 C) | -346 F (-210 C) | 760 mmHg @ -196 C | 0.967 (Air=1) | Not applicable | 1.6% @ 20 C | Not applicable | Not available | Not applicable | 0.01787 cP @ 27 C |

| | Molecular Weight | Molecular Formula | Density | Weight per Gallon | Volatility by Volume | Volatility | Solvent Solubility |
|---|---|---|---|---|---|---|---|
| **Methane** | 16.04 | C-H4 | 0.717 g/L @ 0 C | Not available | Not applicable | Not applicable | Soluble: Alcohol, ether, benzene, organic solvents |
| **Ethane** | 30.07 | C-H3-C-H3 | 1.242 g/L @ 25 C | Not available | Not available | 1 | Soluble: Benzene, ethanol |
| **Propane** | 44.11 | C-H3-C-H2-C-H3 | 0.116 | Not available | Not available | Not applicable | Soluble: Absolute alcohol, ether, chloroform, benzene, turpentine |
| **Butane** | 58.12 | C-H3-(C-H2)2-C-H3 | Not available | Not available | 100% | Not applicable | Soluble: Alcohol, ether, chloroform |
| **n-Pentane** | 72.15g/mol | C5-H12 | Not available | Not available | Not available | Not available | Soluble: Alcohol, ether, acetone, benzene, chloroform |
| **Nitrogen** | 28.0134 | N2 | 1.2506 g/L | Not available | 100% | 1 | Soluble: Liquid ammonia |

## Section 10: Stability and Reactivity

| | Stability | Conditions to Avoid | Incompatible Materials |
|---|---|---|---|

| | Stability | Conditions to Avoid | Incompatible Materials |
|---|---|---|---|
| **Methane** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Halogens, oxidizing materials, combustible materials |
| **Ethane** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Oxidizing materials, halogens, |
| **Propane** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Oxidizing materials, combustible materials, halogen compounds, |
| **Butane** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Oxidizing materials, halogen compounds |
| **n-Pentane** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Oxidizing materials, combustible materials, halogen compounds |
| **Nitrogen** | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Metals, oxidizing materials |

| | Hazardous Decomposition Products | Possibility of Hazardous Reactions |
|---|---|---|
| **Methane** | Oxides of carbon | Will not polymerize. |
| **Ethane** | Oxides of carbon | Will not polymerize. |
| **Propane** | Oxides of carbon | Will not polymerize. |
| **Butane** | Oxides of carbon. | Will not polymerize. |
| **n-Pentane** | Oxides of carbon | Will not polymerize. |
| **Nitrogen** | Oxides of nitrogen | Will not polymerize. |

# Section 11: Toxicology Information

### Acute Effects

| | Oral LD50 | Dermal LD50 | Inhalation |
|---|---|---|---|
| **Methane** | Not available | Not available | Nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, mood swings, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma |
| **Ethane** | Not available | Not available | Irritation, nausea, vomiting, irregular heartbeat, headache, dizziness, disorientation, emotional disturbances, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma |
| **Propane** | LC50 Inhalation Gas. Rat >800000 ppm 15 minutes | Not available | Nausea, vomiting, irregular heartbeat, headache, symptoms of drunkenness, diorientation, suffocation, convulsions, coma |
| **Butane** | LC(50): 658 mg/l (270,000 ppm) butane (4 hour-rat) | Not established | Irritation, nausea, vomiting, headache, drowsiness, symptoms of drunkenness, tingling sensation, suffocation, convulsions, coma, can displace oxygen at high concentrations |
| **n-Pentane** | >2000 mg/kg oral-rat LD50 | Not available | Irritation, nausea, difficulty breathing, headache, drowsiness, dizziness, disorientation, mood swings, loss of coordination, central nervous system depression, asphyxiant |
| **Nitrogen** | Not available | Not available | Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma |

| | Eye Irritation | Skin Irritation | Sensitization |
|---|---|---|---|
| **Methane** | No information on significant adverse effects | No information on significant adverse effects | Difficulty breathing |
| **Ethane** | Frostbite | Frostbite | Difficulty breathing |
| **Propane** | Liquid: frostbite, blurred vision | Liquid: blisters, frostbite | Central nervous system depression, difficulty breathing |
| **Butane** | Frostbite, blurred vision | Blisters, frostbite | Central nervous system depression, difficulty breathing |
| **n-Pentane** | Irritation | Irritation | Respiratory tract irritation, skin irritation, aspiration hazard, central nervous system depression |
| **Nitrogen** | Contact with rapidly expanding gas may cause burns or frostbite | No information on significant adverse effects | Difficulty breathing |

### Chronic Effects

| | Carcinogenicity | Mutagenicity | Reproductive Effects | Developmental Effects |
|---|---|---|---|---|
| **Methane** | Not available | Not available | Not available | No data |
| **Ethane** | Not Listed. | Not available | Not available | No data |
| **Propane** | Not available | Not available | Not available | No data |
| **Butane** | None | Not established | Not established | No data |
| **n-Pentane** | Not available | Not available | Not available | No data |
| **Nitrogen** | Not hazardous | Not available | Not available | No data |

# Section 12: Ecological Information

### Fate and Transport

| | Eco toxicity | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
|---|---|---|---|---|
| **Methane** | Fish toxicity: Not available<br>Invertibrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Relatively non-persistent in the environment. Moderately volatile from water. | Accumulates very little in the bodies of living organisms. | Not expected to leach through the soil or the sediment. |
| **Ethane** | Fish toxicity: Not available<br>Invertibrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Relatively non-persistent in the environment. Highly volatile from water. | Accumulates very little in the bodies of living organisms. | Leaches through the soil or the sediment at a slow rate. |
| **Propane** | Fish toxicity: Not available<br>Invertibrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Not available | Not available | Not available |
| **Butane** | Fish toxicity: Not available<br>Invertibrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Expected to exist entirely in the vapor phase in ambient air. | Not available | Not available | Not available |
| **n-Pentane** | Fish toxicity: Not available<br>Invertibrate toxicity: 3000000 ug/L 48 week(s) (Mortality) Pacific oyster (Crassostrea gigas)<br>Algal toxicity: 1000 ug/L 8 year(s) EC50 (Photosynthesis) Algae,phytoplankton,algal mat (Algae)<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Not available | Not available | Not available |
| **Nitrogen** | Fish toxicity: Not available<br>Invertibrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Not available | Not available | Not available |

# Section 13: Disposal Considerations

| | |
|---|---|
| **Methane** | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. |
| **Ethane** | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. |
| **Propane** | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. |
| **Butane** | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. |
| **n-Pentane** | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. |
| **Nitrogen** | Dispose in accordance with all applicable regulations. |

# Section 14: Transportation Information

## U.S. DOT 49 CFR 172.101

### DOT Information For This Mixture

| | |
|---|---|
| **Shipping Name** | Compressed gas, n.o.s. (Nitrogen, n-Pentane) |
| **UN Number** | UN1956 |

| | |
|---|---|
| **Hazard Class** | 2.2 |
| **Hazard Information** | Non-Flammable Gas |

### Individual Component Information

| | Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|---|---|---|---|---|---|---|---|---|
| **Methane** | Methane, compressed | UN1971 | 2.1 | Not applicable | 2.1 | Forbidden | 150 kg | N/A |
| **Ethane** | Ethane | UN1035 | 2.1 | Not applicable | 2.1 | Forbidden | 150 kg | N/A |
| **Propane** | Propane | UN1978 | 2.1 | Not applicable | 2.1 | Forbidden | 150 kg | N/A |
| **Butane** | Butane | UN1011 | 2.1 | Not applicable | 2.1 | Forbidden | 150 kg | N/A |
| **n-Pentane** | Pentanes | UN1265 | 3 | II | 3 | N/A | N/A | N/A |
| **Nitrogen** | Nitrogen, compressed | UN1066 | 2.2 | Not applicable | 2.2 | 75 kg or L | 150 kg | N/A |

### Canadian Transportation of Dangerous Goods

| | Shipping Name | UN Number | Class | Packing Group / Risk Group |
|---|---|---|---|---|
| **Methane** | Methane, compressed | UN1971 | 2.1 | Not applicable |
| **Ethane** | Ethane | UN1035 | 2.1 | Not applicable |
| **Propane** | Propane | UN1978 | 2.1 | Not applicable |
| **Butane** | Butane | UN1011 | 2.1 | Not applicable |
| **n-Pentane** | Pentanes | UN1265 | 3 | II |
| **Nitrogen** | Nitrogen, compressed | UN1066 | 2.2 | Not applicable |

## Section 15: Regulatory Information

### U.S. Regulations

| | CERCLA Sections | SARA 355.30 | SARA 355.40 |
|---|---|---|---|
| **Methane** | Not regulated. | Not regulated. | Not regulated. |
| **Ethane** | Not regulated. | Not regulated. | Not regulated. |
| **Propane** | Not regulated. | Not regulated. | Not regulated. |
| **Butane** | Not regulated. | Not regulated. | Not regulated. |
| **n-Pentane** | Not regulated. | Not regulated. | Not regulated. |
| **Nitrogen** | Not regulated. | Not regulated. | Not regulated. |

### SARA 370.21

| | Acute | Chronic | Fire | Reactive | Sudden Release |
|---|---|---|---|---|---|
| **Methane** | Yes | No | Yes | No | Yes |
| **Ethane** | Yes | No | Yes | No | Yes |
| **Propane** | Yes | No | Yes | No | Yes |
| **Butane** | Yes | No | Yes | No | Yes |
| **n-Pentane** | Yes | No | Yes | No | No |
| **Nitrogen** | Yes | No | No | No | Yes |

### SARA 372.65

| | |
|---|---|
| **Methane** | Not regulated. |
| **Ethane** | Not regulated. |
| **Propane** | Not regulated. |
| **Butane** | Not regulated. |
| **n-Pentane** | Not regulated. |
| **Nitrogen** | Not regulated. |

### OSHA Process Safety

| | |
|---|---|
| **Methane** | Not regulated. |
| **Ethane** | Not regulated. |
| **Propane** | Not regulated. |
| **Butane** | Not regulated. |
| **n-Pentane** | Not regulated. |
| **Nitrogen** | Not regulated. |

### State Regulations

| | CA Proposition 65 |
|---|---|
| **Methane** | Not regulated. |
| **Ethane** | Not regulated. |
| **Propane** | Not regulated. |
| **Butane** | Not regulated. |
| **n-Pentane** | Not regulated. |
| **Nitrogen** | Not regulated. |

### Canadian Regulations

| | WHMIS Classification |
|---|---|
| **Methane** | A, B1 |
| **Ethane** | A, B1. |
| **Propane** | A, B1. |
| **Butane** | A,B1 |
| **n-Pentane** | B2 |
| **Nitrogen** | A |

### National Inventory Status

| | US Inventory (TSCA) | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
|---|---|---|---|
| **Methane** | Listed on inventory. | Not listed. | Listed on inventory. |
| **Ethane** | Listed on inventory. | Not listed. | Listed on inventory. |
| **Propane** | Listed on inventory. | Not listed. | Listed on inventory. |
| **Butane** | Listed on inventory. | Not listed. | Listed on inventory. |
| **n-Pentane** | Listed on inventory. | PENTANE CAS NUMBER: 109-66-0 SECTION 4 | Listed on inventory. |
| **Nitrogen** | Listed on inventory. | Not listed. | Listed on inventory. |

## Section 16: Other Information

| | NFPA Rating |
|---|---|
| **Methane** | HEALTH=1 FIRE=4 REACTIVITY=0 |
| **Ethane** | HEALTH=2 FIRE=4 REACTIVITY=0 |
| **Propane** | HEALTH=1 FIRE=4 REACTIVITY=0 |
| **Butane** | HEALTH=1 FIRE=4 REACTIVITY=0 |
| **n-Pentane** | HEALTH=2 FIRE=4 REACTIVITY=0 |
| **Nitrogen** | HEALTH=1 FIRE=0 REACTIVITY=0 |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard