

## Section 1: Product and Company Identification

**Absolute Accuracy**  
4591 S Wayside Dr  
Houston, TX 77087  
(832) 571-2387

Product Code: 2722

**Synonyms:**  
**Recommended Use:**  
**Usage Restrictions:**

## Section 2: Hazards Identification



**Danger**

### Hazard Classification:

Aspiration Hazard (Category 1)  
Flammable (Category 1)  
Gases Under Pressure  
Reproductive Toxicity (Category 2)  
Specific target organ toxicity (Repeated Exposure) (Category 2)  
Specific target organ toxicity (Single Exposure) (Category 3)

### Hazard Statements:

Contains gas under pressure; may explode if heated  
Extremely flammable gas  
May be fatal if swallowed and enters airways  
May cause damage to organs through prolonged or repeated exposure  
May cause respiratory irritation;  
Suspected of damaging fertility or the unborn child  
Toxic to aquatic life with long lasting effects

### Precautionary Statements

#### Prevention:

Do not breathe dust/fume/gas/mist/ vapors/spray..  
[In case of inadequate ventilation] wear respiratory protection.  
Do not handle until all safety precautions have been read and understood.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves, protective clothing, eye protection and face protection.  
Obtain special instructions before use.  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

**Response:**

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
 Immediately call a poison center or doctor.  
 Eliminate all ignition sources if safe to do so.  
 Do NOT induce vomiting.  
 If swallowed: Rinse mouth. Do NOT induce vomiting.  
 If exposed or concerned: Get medical advice/attention.  
 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
Isobutane	75-28-5	0.03
iso-Pentane	78-78-4	0.1 %
n-Pentane	109-66-0	0.1 %
Hexane	110-54-3	0.1 %
Nitrogen	7727-37-9	0.2 %
N-Butane	106-97-8	0.4 %
Carbon Dioxide	124-38-9	0.6 %
Propane	74-98-6	1.2 %
Ethane	74-84-0	3 %
Methane	74-82-8	balance

	Chemical Substance	Chemical Family	Trade Names
Isobutane	ISOBUTANE	Hydrocarbons, Aliphatic, Saturated	2-METHYL PROPANE; TRIMETHYL METHANE; UN 1969; C4H10
iso-Pentane	ISOPENTANE	Hydrocarbons, Aliphatic, Saturated	2-METHYLBUTANE; ETHYLDIMETHYLMETHANE; ISOAMYLHYDRIDE; BUTANE,2-METHYL-; 1,1,2-TRIMETHYLETHANE; C5H12
n-Pentane	N-PENTANE	Hydrocarbons, Aliphatic, Saturated	PENTANE; AMYL HYDRIDE; UN 1265; C5H12
Hexane	HEXANE	Hydrocarbons, Aliphatic, Saturated	N-HEXANE; 1-HEXANE; HEXYL HYDRIDE; 1-HEXANE; NORMAL HEXANE; SKELLYSOLVE B; UN 1208; CAPROYL HYDRIDE; C6H14
Nitrogen	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2
N-Butane	Butane	Hydrocarbons, Aliphatic, Saturated	N-BUTANE; LIQUIFIED PETROLEUM GAS; NORMAL BUTANE; BUTYL HYDRIDE; LPG; UN 1011; C4H10
Carbon Dioxide	CARBON DIOXIDE, GAS	Inorganic gases	CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2
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
Ethane	ETHANE	Hydrocarbons, Aliphatic, Saturated	BIMETHYL; ETHANE, COMPRESSED; METHYLMETHANE; DIMETHYL; ETHYL HYDRIDE; UN 1035; C2H6

	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

## Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
<b>isobutane</b>	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.
<b>iso-Pentane</b>	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.	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. Get immediate medical attention.	None
<b>n-Pentane</b>	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
<b>Hexane</b>	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.	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. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Long-term exposure to n-hexane can cause damage to the peripheral nervous system.
<b>Nitrogen</b>	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.

	<b>Skin Contact</b>	<b>Eye Contact</b>	<b>Ingestion</b>	<b>Inhalation</b>	<b>Note to Physicians</b>
<b>N-Butane</b>	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.
<b>Carbon Dioxide</b>	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.	Do not induce vomiting.	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.
<b>Propane</b>	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.
<b>Ethane</b>	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.
<b>Methane</b>	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
<b>Isobutane</b>	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes	<ul style="list-style-type: none"> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Any self-contained breathing apparatus with a full facepiece.</li> </ul>
<b>iso-Pentane</b>	Foam, dry chemical, carbon dioxide. Water may be ineffective.	Oxides of carbon	<ul style="list-style-type: none"> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Any self-contained breathing apparatus with a full facepiece.</li> </ul>
<b>n-Pentane</b>	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	<ul style="list-style-type: none"> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Any self-contained breathing apparatus with a full facepiece.</li> </ul>
<b>Hexane</b>	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	<ul style="list-style-type: none"> <li>Any appropriate escape-type, self-contained breathing apparatus.</li> <li>Protective material types: rubber</li> </ul>
<b>Nitrogen</b>	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	<ul style="list-style-type: none"> <li>Respiratory protection may be needed for frequent or heavy exposure.</li> </ul>
<b>N-Butane</b>	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes.	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>NA</li> <li>NA</li> </ul>
<b>Carbon Dioxide</b>	Non-flammable	Non-flammable	<ul style="list-style-type: none"> <li>Any appropriate escape-type, self-contained breathing apparatus.</li> <li>Non-flammable</li> </ul>
<b>Propane</b>	Regular dry chemical, high expansion foam Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes	<ul style="list-style-type: none"> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Any self-contained breathing apparatus with a full facepiece.</li> </ul>
<b>Ethane</b>	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Toxic gases	<ul style="list-style-type: none"> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Any self-contained breathing apparatus with a full facepiece.</li> </ul>
<b>Methane</b>	Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide, water	<ul style="list-style-type: none"> <li>Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.</li> <li>Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.</li> </ul>

## Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
<b>Isobutane</b>	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.

	Personal Precautions	Environmental Precautions	Methods for Containment
<b>iso-Pentane</b>	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.
<b>n-Pentane</b>	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.
<b>Hexane</b>	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.
<b>Nitrogen</b>	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.
<b>N-Butane</b>	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.
<b>Carbon Dioxide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material.	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.	Stop leak if possible without personal risk.
<b>Propane</b>	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.
<b>Ethane</b>	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.
<b>Methane</b>	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.

	Methods for Cleanup	Other Information
<b>Isobutane</b>	Contact emergency personnel. Avoid ignition sources.	None
<b>iso-Pentane</b>	Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	None
<b>n-Pentane</b>	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
<b>Hexane</b>	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.	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).
<b>Nitrogen</b>	N/A	N/A
<b>N-Butane</b>	Stop leak, evacuate area. Use protective equipment. Contact emergency personnel.	None
<b>Carbon Dioxide</b>	Stop leak, evacuate, remove source of ignition.	None
<b>Propane</b>	Contact emergency personnel	None
<b>Ethane</b>	Contact emergency personnel immediately.	Not available
<b>Methane</b>	Not available	Not available

## Section 7: Handling and Storage

	Handling	Storage
<b>Isobutane</b>	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
<b>iso-Pentane</b>	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 125F (52C). 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
<b>n-Pentane</b>	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 125F (52C). 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.
<b>Hexane</b>	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 125F (52C). 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
<b>Nitrogen</b>	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.
<b>N-Butane</b>	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.
<b>Carbon Dioxide</b>	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
<b>Propane</b>	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.
<b>Ethane</b>	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.

	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.

## Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Isobutane	ISOBUTANE: 800 ppm (1900 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m <sup>3</sup> ) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (1800 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
iso-Pentane	ISOPENTANE: 600 ppm ACGIH TWA
n-Pentane	PENTANE: 1000 ppm (2950 mg/m <sup>3</sup> ) OSHA TWA 600 ppm (1770 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 750 ppm (2210 mg/m <sup>3</sup> ) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 600 ppm ACGIH TWA 120 ppm (350 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) 610 ppm (1800 mg/m <sup>3</sup> ) NIOSH recommended ceiling 15 minute(s)
Hexane	N-HEXANE: 500 ppm (1800 mg/m <sup>3</sup> ) OSHA TWA 50 ppm (180 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 50 ppm ACGIH TWA (skin) 50 ppm (180 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s)
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)
N-Butane	N-BUTANE: 800 ppm (1900 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 800 ppm (1900 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m <sup>3</sup> ) OSHA TWA 1000 ppm (1800 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
Carbon Dioxide	CARBON DIOXIDE, GAS: CARBON DIOXIDE: 5000 ppm (9000 mg/m <sup>3</sup> ) OSHA TWA 10000 ppm (18000 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 30000 ppm (54000 mg/m <sup>3</sup> ) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 5000 ppm ACGIH TWA 30000 ppm ACGIH STEL 5000 ppm (9000 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) 30000 ppm (54000 mg/m <sup>3</sup> ) NIOSH recommended STEL
Propane	PROPANE: 1000 ppm (1800 mg/m <sup>3</sup> ) OSHA TWA 1000 ppm (1800 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m <sup>3</sup> ) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (1800 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
Ethane	TLV-TWA: 1000ppm (Aliphatic hydrocarbon gases: Alkane C1 - C4) (ACGIH)



	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

## Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Isobutane	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.
iso-Pentane	Wear splash resistant safety goggles with a face shield. 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.
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.
Hexane	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any appropriate escape-type, self-contained breathing apparatus.
Nitrogen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.
N-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.
Carbon Dioxide	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 appropriate escape-type, self-contained breathing apparatus.
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.
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.
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.

## 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
<b>Isobutane</b>	Gas	Colorless	Colorless	N/A	Gas	Petroleum odor	N/A
<b>iso-Pentane</b>	Liquid	Colorless	Colorless	N/A	Liquid	Gasoline like	N/A
<b>n-Pentane</b>	Liquid	Clear	Colorless	N/A	Liquid	Gasoline odor	N/A
<b>Hexane</b>	Liquid	Clear	Colorless	N/A	Liquid	Faint odor, gasoline odor	N/A
<b>Nitrogen</b>	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless
<b>N-Butane</b>	Gas	Colorless	Colorless	NA	Gas	Unpleasant odor	NA
<b>Carbon Dioxide</b>	Gas	Colorless	Colorless	N/A	Gas	Odorless	Acid taste
<b>Propane</b>	Gas	Clear	Colorless	N/A	Gas	Gasoline odor	N/A
<b>Ethane</b>	Gas	Colorless	Colorless	N/A	Gas	Sweet odor	N/A
<b>Methane</b>	Gas	Colorless	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
<b>Isobutane</b>	-126 F (-88 C) (CC)	Not available	Not available	864 F (462 C)	0.084	0.018
<b>iso-Pentane</b>	<-60 F (<-51 C) (CC)	IA	Not available	788 F (420 C)	0.076	0.014
<b>n-Pentane</b>	<-40 F (<-40 C) (CC)	IA	Not available	500 F (260 C)	0.078	0.014
<b>Hexane</b>	-9.4 F (-23 C) (CC); -7 F (-21.7 C) (CC)	IB	139315.68 (log = 5.148) (estimated from water solubility)	437 F (225 C)	0.075	0.011
<b>Nitrogen</b>	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable
<b>N-Butane</b>	-76 F (-60 C) (CC)	NA	630.96 (log = 2.80) (estimated from water solubility)	549 F (287 C)	0.085	0.019
<b>Carbon Dioxide</b>	Not flammable	Not available	N/A	Nonflammable	Nonflammable	Nonflammable
<b>Propane</b>	-157 F (-105 C)	Not available	Not available	842 F (450 C)	0.095	0.021
<b>Ethane</b>	-211 F (-135 C) (CC)	Not available	912.01 (log = 2.97) (estimated from water solubility)	882 F (472 C)	0.125	0.03
<b>Methane</b>	-369 F (-223 C)	Not available	724.44 (log = 2.87) (estimated from water solubility)	999 F (537 C)	15%	5%

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
<b>Isobutane</b>	10 F (-12 C)	-254 F (-159 C)	3.1 atm @ 21 C	2 (Air=1)	0.549 @ 20 C	Slightly soluble	Not applicable	Not available	Not applicable	0.0077 cP @ 25 C
<b>iso-Pentane</b>	82 F (28 C)	-256 F (-160 C)	Not available	2.5 (Air=1)	0.6201	Insoluble	Not available	Not available	Not available	Not available

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
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
Hexane	156 F (69 C)	-139 F (-95 C)	124 mmHg @ 20 C	3 (Air=1)	0.6603	0.014% @ 20 C	Neutral	64-244 ppm	8.9 (n-butyl acetate = 1)	0.32 cP @ 25 C
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
N-Butane	30 F (-1 C)	-216 F (-138 C)	1557 mmHg @ 20 C	2.1 (Air=1)	0.5788 @ 0 C	0.15	NA	6.16 ppm	NA	NA
Carbon Dioxide	Not available	-71 F (-57 C) @ 4000 mmHg	43700 mmHg @ 21 C	1.5 (Air=1)	1.522 @ 21 C	Soluble	3.7 (saturated aqueous solution) @ 101.3 kPa (carbonic acid)	Not available	Not applicable	0.01657 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
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
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

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Isobutane	58.12	C4-H10	Not available	Not available	100%	Not applicable	Soluble: Alcohol, ether, chloroform
iso-Pentane	72.15	C-H3-C-H2-C-H-(C-H3)2	Not available	Not available	100%	Not available	Ether, alcohol, hydrocarbons, oils
n-Pentane	72.15g/mol	C5-H12	Not available	Not available	Not available	Not available	Soluble: Alcohol, ether, acetone, benzene, chloroform
Hexane	86.18	C-H3-(C-H2)4-C-H3	Not available	Not available	Not available	675 g/l VOC (w/v)	Soluble: Alcohol, ether, chloroform, acetone, organic solvents
Nitrogen	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia
N-Butane	58.12	C-H3-(C-H2)2-C-H3	NA	NA	100%	NA	Alcohol, ether, chloroform
Carbon Dioxide	44.01	C-O2	0.114	Not available	Not applicable	Not applicable	Soluble: Alcohol, acetone, hydrocarbons, organic solvents

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Propane	44.11	C-H3-C-H2-C-H3	0.116	Not available	Not available	Not applicable	Soluble: Absolute alcohol, ether, chloroform, benzene, turpentine
Ethane	30.07	C-H3-C-H3	1.242 g/L @ 25 C	Not available	Not available	1	Soluble: Benzene, ethanol
Methane	16.04	C-H4	0.717 g/L @ 0 C	Not available	Not applicable	Not applicable	Soluble: Alcohol, ether, benzene, organic solvents

## Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Isobutane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogen compounds
iso-Pentane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials
n-Pentane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, combustible materials, halogen compounds
Hexane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogens, combustible materials, chlorine dioxide, fluorine, nitrogen dioxide, potassium chlorate, chlorine, chlorosulfuric acid
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials
N-Butane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogen compounds
Carbon Dioxide	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, oxidizing materials, metal salts, reducing agents, metal carbide, metals, bases
Propane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, combustible materials, halogen compounds,
Ethane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogens,
Methane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Halogens, oxidizing materials, combustible materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Isobutane	Oxides of carbon	Will not polymerize.
iso-Pentane	Oxides of carbon	Will not polymerize.
n-Pentane	Oxides of carbon	Will not polymerize.
Hexane	Oxides of carbon	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.
N-Butane	Oxides of carbon.	Will not polymerize.
Carbon Dioxide	Carbon monoxide	Will not polymerize.
Propane	Oxides of carbon	Will not polymerize.
Ethane	Oxides of carbon	Will not polymerize.
Methane	Oxides of carbon	Will not polymerize.

## Section 11: Toxicology Information

### Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Isobutane	LC50, 1 hr, rat = 285,000 ppmv	Not available	Irritation, nausea, vomiting, headache, symptoms of drunkenness, suffocation, convulsions, coma
iso-Pentane	Not available	Not available	Irritation, difficulty breathing, symptoms of drunkenness

	Oral LD50	Dermal LD50	Inhalation
<b>n-Pentane</b>	>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
<b>Hexane</b>	>5 gm/kg oral-rat LD50	>2 gm/kg skin-rabbit LD50	Irritation, nausea, irregular heartbeat, headache, drowsiness, dizziness, mood swings, loss of coordination, lung congestion, nerve damage, brain damage, unconsciousness
<b>Nitrogen</b>	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma
<b>N-Butane</b>	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
<b>Carbon Dioxide</b>	Not established	Not established	ringing in the ears, nausea, irregular heartbeat, headache, drowsiness, dizziness, tingling sensation, visual disturbances, suffocation, convulsions, coma
<b>Propane</b>	LC50 Inhalation Gas. Rat >800000 ppm 15 minutes	Not available	Central nervous system depression, difficulty breathing, nausea, vomiting, irregular heartbeat, headache, symptoms of drunkenness, disorientation, suffocation, convulsions, coma
<b>Ethane</b>	Not available	Not available	Irritation, nausea, vomiting, irregular heartbeat, headache, dizziness, disorientation, emotional disturbances, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma
<b>Methane</b>	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

	Eye Irritation	Skin Irritation	Sensitization
<b>Isobutane</b>	Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	Respiratory tract irritation, central nervous system depression, difficulty breathing
<b>iso-Pentane</b>	Irritation	Irritation	Aspiration hazard, Category 1; H304: May be fatal if swallowed and enters airways. Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness. Hazardous to the aquatic environment, Chronic Category 2; H411: Toxic to aquatic life with long lasting effects.
<b>n-Pentane</b>	Irritation	Irritation	Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness. Aspiration hazard, Category 1; H304: May be fatal if swallowed and enters airways.
<b>Hexane</b>	Mild irritation	Irritation	Reproductive toxicity, Category 2; H361f: Suspected of damaging fertility. Aspiration hazard, Category 1; H304: May be fatal if swallowed and enters airways. Specific Target Organ Toxicity (repeated exposure), Category 2; H373: May cause damage to organs through prolonged or repeated exposure. Skin irritation, Category 2; H315: Causes skin irritation. Specific Target Organ Toxicity (single exposure), Category 3; H336: May cause drowsiness or dizziness. Hazardous to the aquatic environment, Chronic Category 2; H411: Toxic to aquatic life with long lasting effects.
<b>Nitrogen</b>	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

	Eye Irritation	Skin Irritation	Sensitization
<b>N-Butane</b>	Frostbite, blurred vision	Blisters, frostbite	Carcinogenicity, Category 1A; H350: May cause cancer. Germ cell mutagenicity, Category 1B; H340: May cause genetic defects.
<b>Carbon Dioxide</b>	Irritation, frostbite, blurred vision	Liquid: blisters, frostbite	Difficulty breathing
<b>Propane</b>	Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	No health hazards classified.
<b>Ethane</b>	Frostbite	Frostbite	Difficulty breathing
<b>Methane</b>	No information on significant adverse effects	No information on significant adverse effects	Difficulty breathing

### Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
<b>Isobutane</b>	Not available	Not available	Not available	No data
<b>iso-Pentane</b>	Not available	Not available	Not available	No data
<b>n-Pentane</b>	Not available	Not available	Not available	No data
<b>Hexane</b>	Not listed.	Available.	Available.	No data
<b>Nitrogen</b>	Not hazardous	Not available	Not available	No data
<b>N-Butane</b>	None	Not established	Not established	No data
<b>Carbon Dioxide</b>	Not available	Not established	Available.	No data
<b>Propane</b>	Not available	Not available	Not available	No data
<b>Ethane</b>	Not Listed.	Not available	Not available	No data
<b>Methane</b>	Not available	Not available	Not available	No data

## Section 12: Ecological Information

### Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
<b>Isobutane</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>iso-Pentane</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>n-Pentane</b>	Fish toxicity: Not available Invertebrate toxicity: 3000000 ug/L 48 week(s) (Mortality) Pacific oyster (Crassostrea gigas) Algal toxicity: 1000 ug/L 8 year(s) EC50 (Photosynthesis) Algae, phytoplankton,	Not available	Not available	Not available

	algal mat (Algae) Phyto toxicity: Not available Other toxicity: Not available			
<b>Hexane</b>	Fish toxicity: 2500 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas) Invertebrate toxicity: Not available Algal toxicity: 75 ug/L 28 hour(s) (Population Growth) Green algae (Chlamydomonas sp) Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Not expected to leach through the soil or the sediment.
<b>Nitrogen</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>N-Butane</b>	Fish toxicity: NA Invertebrate toxicity: NA Algal toxicity: NA Phyto toxicity: NA Other toxicity: Expected to exist entirely in the vapor phase in ambient air.	NA	NA	NA
<b>Carbon Dioxide</b>	Fish toxicity: 150000 ug/L 48 day(s) (Mortality) Brown trout (Salmo trutta) Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Moderately volatile from water.	Accumulates very little in the bodies of living organisms.	Leaches through the soil
<b>Propane</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>Ethane</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto 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.

	available Other toxicity: Not available			
<b>Methane</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available 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.

## Section 13: Disposal Considerations

<b>Isobutane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>iso-Pentane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>n-Pentane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Hexane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Nitrogen</b>	Dispose in accordance with all applicable regulations.
<b>N-Butane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Carbon Dioxide</b>	Dispose in accordance with all applicable regulations.
<b>Propane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Ethane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Methane</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

## Section 14: Transportation Information

### U.S. DOT 49 CFR 172.101

#### DOT Information For This Mixture

<b>Shipping Name</b>	Compressed gas, flammable, n.o.s. (Methane, Ethane)
<b>UN Number</b>	UN1954
<b>Hazard Class</b>	2.1
<b>Hazard Information</b>	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
Isobutane	ISOBUTANE see also PETROLEUM GASES, LIQUEFIED	UN1969	2.1	Not applicable	2.1	Forbidden	150 kg	N/A
isopentane	Pentanes (ISOPENTANE)	UN1265	3	I	3	N/A	N/A	N/A
n-Pentane	Pentanes	UN1265	3	II	3	N/A	N/A	N/A
Hexane	Hexanes	UN1208	3	II	3	5 kg or L	N/A	N/A
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A
N-Butane	Butane	UN1011	2.1	Not applicable	2.1	Forbidden	150 kg	NA
Carbon Dioxide	Carbon dioxide	UN1013	2.2	Not applicable	2.2	75 kg or L	150kg	None
Propane	Propane	UN1978	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
Methane	Methane, compressed	UN1971	2.1	Not applicable	2.1	Forbidden	150 kg	N/A

## Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Isobutane	Isobutane	UN1969	2.1	Not applicable
iso-Pentane	Pentanes	UN1265	3	I
n-Pentane	Pentanes	UN1265	3	II
Hexa	Hexanes	UN1208	3	II

ne				
<b>Nitrogen</b>	Nitrogen, compressed	UN1066	2.2	Not applicable
<b>N-Butane</b>	Butane	UN 1011	2.1	NA
<b>Carbon Dioxide</b>	Carbon dioxide	UN1013	2.2	Not applicable
<b>Propane</b>	Propane	UN1978	2.1	Not applicable
<b>Ethane</b>	Ethane	UN1035	2.1	Not applicable
<b>Methane</b>	Methane, compressed	UN1971	2.1	Not applicable

## Section 15: Regulatory Information

### U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
<b>Isobutane</b>	Not regulated.	Not regulated.	Not regulated.
<b>iso-Pentane</b>	Not regulated.	Not regulated.	Not regulated.
<b>n-Pentane</b>	Not regulated.	Not regulated.	Not regulated.
<b>Hexane</b>	5000 LBS RQ	Not regulated.	Not regulated.
<b>Nitrogen</b>	Not regulated.	Not regulated.	Not regulated.
<b>N-Butane</b>	Not regulated.	Not regulated.	Not regulated.
<b>Carbon Dioxide</b>	Not regulated.	Not regulated.	Not regulated.
<b>Propane</b>	Not regulated.	Not regulated.	Not regulated.
<b>Ethane</b>	Not regulated.	Not regulated.	Not regulated.
<b>Methane</b>	Not regulated.	Not regulated.	Not regulated.

### SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
<b>Isobutane</b>	Yes	No	Yes	No	Yes
<b>iso-Pentane</b>	Yes	No	Yes	No	No
<b>n-Pentane</b>	Yes	No	Yes	No	No
<b>Hexane</b>	Yes	Yes	Yes	No	No
<b>Nitrogen</b>	Yes	No	No	No	Yes
<b>N-Butane</b>	Yes	No	Yes	No	Yes
<b>Carbon Dioxide</b>	Yes	No	No	No	Yes
<b>Propane</b>	Yes	No	Yes	No	Yes
<b>Ethane</b>	Yes	No	Yes	No	Yes

<b>Methane</b>	Yes	No	Yes	No	Yes
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### SARA 372.65

<b>Isobutane</b>	Not regulated.
<b>iso-Pentane</b>	Not regulated.
<b>n-Pentane</b>	Not regulated.
<b>Hexane</b>	N-HEXANE
<b>Nitrogen</b>	Not regulated.
<b>N-Butane</b>	Not regulated.
<b>Carbon Dioxide</b>	Not regulated.
<b>Propane</b>	Not regulated.
<b>Ethane</b>	Not regulated.
<b>Methane</b>	Not regulated.

### OSHA Process Safety

<b>Isobutane</b>	Not regulated.
<b>iso-Pentane</b>	Not regulated.
<b>n-Pentane</b>	Not regulated.
<b>Hexane</b>	Not regulated.
<b>Nitrogen</b>	Not regulated.
<b>N-Butane</b>	Not regulated.
<b>Carbon Dioxide</b>	Not regulated.
<b>Propane</b>	Not regulated.
<b>Ethane</b>	Not regulated.
<b>Methane</b>	Not regulated.

### State Regulations

	<b>CA Proposition 65</b>
<b>Isobutane</b>	Not regulated.
<b>iso-Pentane</b>	Not regulated.
<b>n-Pentane</b>	Not regulated.
<b>Hexane</b>	WARNING: This product can expose you to chemicals including Hexane which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
<b>Nitrogen</b>	Not regulated.
<b>N-Butane</b>	Not regulated.
<b>Carbon Dioxide</b>	Not regulated.
<b>Propane</b>	Not regulated.
<b>Ethane</b>	Not regulated.
<b>Methane</b>	Not regulated.

### Canadian Regulations

	<b>WHMIS Classification</b>
<b>Isobutane</b>	A, B1.
<b>iso-Pentane</b>	B2
<b>n-Pentane</b>	B2
<b>Hexane</b>	B2, D2A, D2B
<b>Nitrogen</b>	A
<b>N-Butane</b>	A, B1
<b>Carbon Dioxide</b>	A
<b>Propane</b>	A, B1.
<b>Ethane</b>	A, B1.
<b>Methane</b>	A, B1

### National Inventory Status

	<b>US Inventory (TSCA)</b>	<b>TSCA 12b Export Notification</b>	<b>Canada Inventory (DSL/NDSL)</b>
<b>Isobutane</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>iso-</b>	Listed on inventory.	Not listed.	Listed on inventory.

<b>Pentane</b>			
<b>n-Pentane</b>	Listed on inventory.	PENTANE CAS NUMBER: 109-66-0 SECTION 4	Listed on inventory.
<b>Hexane</b>	Listed on inventory.	Not listed.	Listed on DSL.
<b>Nitrogen</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>N-Butane</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>Carbon Dioxide</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>Propane</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>Ethane</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>Methane</b>	Listed on inventory.	Not listed.	Listed on inventory.

## Section 16: Other Information

	NFPA Rating
<b>Isobutane</b>	HEALTH=1 FIRE=4 REACTIVITY=0
<b>iso-Pentane</b>	HEALTH=2 FIRE=4 REACTIVITY=0
<b>n-Pentane</b>	HEALTH=2 FIRE=4 REACTIVITY=0
<b>Hexane</b>	HEALTH=2 FIRE=3 REACTIVITY=0
<b>Nitrogen</b>	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA
<b>N-Butane</b>	HEALTH=1 FIRE=4 REACTIVITY=0
<b>Carbon Dioxide</b>	HEALTH=3 FIRE=0 REACTIVITY=0 SPECIAL=SA
<b>Propane</b>	HEALTH=2 FIRE=4 REACTIVITY=0
<b>Ethane</b>	HEALTH=3 FIRE=4 REACTIVITY=0
<b>Methane</b>	HEALTH=0 FIRE=4 REACTIVITY=0

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