# Safety Data Sheet

## Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

### 1.1 Product identifier

**Product Name** | **Flammable Gas Mixture Containing the Following Components in a Nitrogen Balance Gas: n-Hexane 300 ppm, 2-Methylpentane 300 ppm, 3-Methylpentane 300 ppm, Isopentane 0.25%, n-Pentane 0.25%, Isobutane 1.0%, n-Butane 1.0%, Ethane 2.5%, Propane 2.5% and Methane 10.0%**

**Product Code** | 50107

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified use(s)** | Calibration of Monitoring and Research Equipment

### 1.3 Details of the supplier of the safety data sheet

**Manufacturer** | Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com
sds@airliquide.com

**Telephone (Technical)** | 713-896-2896

**Telephone (Technical)** | 800-819-1704

### 1.4 Emergency telephone number

**Manufacturer** | 800-424-9300 - CHEMTREC

**Manufacturer** | +1 703-527-3887 - Outside United States

## Section 2: Hazards Identification

### EU/EEC

**According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]**
**According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)**

### 2.1 Classification of the substance or mixture

**CLP** | Flammable Gases 1 - H220
Compressed Gas - H280

**DSD/DPD** | Extremely Flammable (F+)

R12

### 2.2 Label Elements

**CLP**

**DANGER**

**Hazard statements** | H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

### Precautionary statements

**Prevention** | P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
P271 - Use only outdoors or in a well-ventilated area.

**Response** | P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

**Storage/Disposal** | P403 - Store in a well-ventilated place.

**DSD/DPD**


**Risk phrases** | R12 - Extremely flammable.

**Safety phrases** | S9 - Keep container in a well ventilated place
S16 - Keep away from sources of ignition - No Smoking.

## 2.3 Other Hazards

**CLP** | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

**DSD/DPD** | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to European Directive 1999/45/EC this preparation is considered dangerous.

# United States (US)

**According to OSHA 29 CFR 1910.1200 HCS**

## 2.1 Classification of the substance or mixture

**OSHA HCS 2012** | Flammable Gases 1 - H220
Compressed Gas - H280
Simple Asphyxiant

## 2.2 Label elements

**OSHA HCS 2012**

**DANGER**

**Hazard statements** | Extremely flammable gas - H220
Contains gas under pressure; may explode if heated - H280
May displace oxygen and cause rapid suffocation.

### Precautionary statements

**Prevention** | Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210

**Response** | Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
Eliminate all ignition sources if safe to do so. - P381

CGA-PG05 - Use a back flow preventive device in the piping
CGA-PG21 - Open valve slowly
CGA-PG06 - Close valve after each use and when empty
CGA-PG10 - Use only with equipment rated for cylinder pressure
CGA-PG14 - Approach suspected leak area with caution
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

**Storage/Disposal** | Store in a well-ventilated place. - P403

### 2.3 Other hazards

**OSHA HCS 2012** | Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Canada

**According to WHMIS**

### 2.1 Classification of the substance or mixture

**WHMIS** | Compressed Gas - A
Flammable Gases - B1

### 2.2 Label elements

**WHMIS**

| Compressed Gas - A
Flammable Gases - B1

### 2.3 Other hazards

**WHMIS** | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

### 2.4 Other information

**NFPA**


## Section 3 - Composition/Information on Ingredients

### 3.1 Substances

| Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

### 3.2 Mixtures

| Composition | | | | |
|---|---|---|---|---|
| **Chemical Name** | **Identifiers** | **%** | **LD50/LC50** | **Classifications According to Regulation/Directive** |

| | | | | |
|---|---|---|---|---|
| Methane | **CAS:**74-82-8<br>**EU Index:**601-001-00-4<br>**EINECS:**200-812-7 | 10% | NDA | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas-Comp., H280<br>**OSHA HCS 2012:** Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx. |
| Propane | **CAS:**74-98-6<br>**EU Index:**601-003-00-5<br>**EINECS:**200-827-9 | 2.5% | NDA | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas-Comp., H280;<br>**OSHA HCS 2012:** Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx. |
| Ethane | **CAS:**74-84-0<br>**EU Index:**601-002-00-X<br>**EINECS:**200-814-8 | 2.5% | NDA | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas-Comp., H280;<br>**OSHA HCS 2012:** Flam. Gas 1; Press. Gas - Comp; Simp. Asphyx |
| Isobutane | **CAS:**75-28-5<br>**EU Index:**601-004-00-0<br>**EINECS:**200-857-2 | 1% | Inhalation-Rat LC50 • 658000 mg/m³ 4 Hour(s) | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas-Comp., H280;<br>**OSHA HCS 2012:** Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx. |
| Butane | **CAS:**106-97-8<br>**EU Index:**601-004-00-0<br>**EINECS:**203-448-7 | 1% | Inhalation-Rat LC50 • 658 g/m³ 4 Hour(s) | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas-Comp., H280<br>**OSHA HCS 2012:** Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx. |
| Pentane | **CAS:**109-66-0<br>**EU Index:**601-006-00-1<br>**EINECS:**203-692-4 | 0.25% | Inhalation-Rat LC50 • 364 g/m³ 4 Hour(s)<br>Ingestion/Oral-Rat LD50 • >2000 mg/kg | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12 N; R51-53 Xn; R65 R66 R67<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Liq. 1, H224; Asp. Tox. 1, H304; STOT SE 3, H336; Aquatic Chronic 2, H411; EUH066<br>**OSHA HCS 2012:** Flam. Liq. 1; Asp. Tox 1. Eye Irrit. 2, Skin Irrit. 2, STOT SE 3: Narc., |
| Isopentane | **CAS:**78-78-4<br>**EC Number:**201-142-8<br>**EU Index:**601-085-00-2 | 0.25% | Inhalation-Rat LC50 • 280000 mg/m³ 4 Hour(s) | **EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12 N; R51-53 Xn; R65 R66 R67<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Liq. 1, H224; Asp. Tox. 1, H304; STOT SE 3, H336; Aquatic Chronic 2, H411; EUH066<br>**OSHA HCS 2012:** Flam Liq 1; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.; Asp. Tox. 1 |
| Hexane | **CAS:**110-54-3<br>**EC Number:**203-777-6<br>**EU Index:**601-037-00-0 | 300ppm | Ingestion/Oral-Rat LD50 • 25 g/kg<br>Inhalation-Rat LC50 • 48000 ppm 4 Hour(s) | **EU DSD/DPD:** Annex VI, Table 3.2 - F; R11; Repr. 3; R62; Xn; R65-48/20; Xi; R38; R67; N; R51-53<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Liq. 2, H225; Repr. 2, H361f; Asp. Tox. 1, H304; STOT RE 2*, H373; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Chronic 2, H411<br>**OSHA HCS 2012:** Flam. Liq. 2; Repr. 2; STOT RE 2 - CNS & Nervous System; Skin Irrit. 2; Eye Irrit. 2B; STOT SE 3: Narc. & Resp. Irrit.; Asp. Tox. 1 |
| 3-Methylpentane | **CAS:**96-14-0<br>**EINECS:**202-481-4 | 300ppm | NDA | **EU DSD/DPD:** Annex VI, Table 3.2 - F; R11 Xi; R38 N; R51-53 Xn; R65 R67<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3, H336; Aquatic Chronic 2, H411<br>**OSHA HCS 2012:** Flam Liq. 2, Asp. Tox. 1 |
| 2-Methylpentane | **CAS:**107-83-5<br>**EC Number:**203-523-4 | 300ppm | NDA | **EU DSD/DPD:** Annex VI, Table 3.2 - F; R11; Xn; R65; Xi; R38; R67; N; R51-53<br>**EU CLP:** Annex VI, Table 3.1 - Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3, H336; Aquatic Chronic 2, H411<br>**OSHA HCS 2012:** Eye Irrit 2A, Flam. Liq. 2 |
| Nitrogen | **CAS:**7727-37-9<br>**EINECS:**231-783-9 | Balance | NDA | **EU DSD/DPD:** Not Classified<br>**EU CLP:** Self Classified - Press. Gas - Comp., H280<br>**OSHA HCS 2012:** Press. Gas - Comp.; Simp. Asphyx. |

## Section 4 - First Aid Measures

### 4.1 Description of first aid measures

**Inhalation** | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

**Skin** | Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

**Eye** | First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If eye irritation persists: Get medical advice/attention.

**Ingestion** | Ingestion is not considered a potential route of exposure.

### 4.2 Most important symptoms and effects, both acute and delayed

| Refer to Section 11 - Toxicological Information.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Notes to Physician** | All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### 4.4 Other information

| Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

## Section 5 - Firefighting Measures

### 5.1 Extinguishing media

**Suitable Extinguishing Media** | SMALL FIRES: Dry chemical or CO2.
LARGE FIRES: Water spray or fog.

**Unsuitable Extinguishing Media** | No data available

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards** | EXTREMELY FLAMMABLE
Will form explosive mixtures with air.
Vapors may travel to source of ignition and flash back.
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.

**Hazardous Combustion Products** | No data available

### 5.3 Advice for firefighters

| Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Wear positive pressure self-contained breathing apparatus (SCBA).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
Move containers from fire area if you can do it without risk.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## Section 6 - Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

**Personal Precautions**

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

**Emergency Procedures**

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile)

### 6.2 Environmental precautions

Prevent spreading of vapors through sewers, ventilation systems and confined areas.

### 6.3 Methods and material for containment and cleaning up

**Containment/Clean-up Measures**

All equipment used when handling the product must be grounded.
Stop leak if you can do it without risk.
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
Do not direct water at spill or source of leak.
Isolate area until gas has dispersed.

### 6.4 Reference to other sections

Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

## Section 7 - Handling and Storage

### 7.1 Precautions for safe handling

**Handling**

Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Use explosion-proof - electrical, ventilating and/or lighting equipment. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

### 7.2 Conditions for safe storage, including any incompatibilities

**Storage**

Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed

52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

## 7.3 Specific end use(s)

Refer to Section 1.2 - Relevant identified uses.

# Section 8 - Exposure Controls/Personal Protection

## 8.1 Control parameters

| Exposure Limits/Guidelines | | | | | | |
|---|---|---|---|---|---|---|
| | **Result** | **ACGIH** | **Canada Ontario** | **Canada Quebec** | **China** | **Europe** |
| Pentane (109-66-0) | TWAs | 600 ppm TWA (listed under Pentane, all isomers) | 600 ppm TWA | 120 ppm TWAEV; 350 mg/m3 TWAEV | 500 mg/m3 TWA (listed under Pentane (all isomers)) | 1000 ppm TWA; 3000 mg/m3 TWA |
| | STELs | Not established | Not established | Not established | 1000 mg/m3 STEL (listed under Pentane (all isomers)) | Not established |
| Isopentane (78-78-4) | TWAs | 600 ppm TWA (listed under Pentane, all isomers) | 600 ppm TWA (listed under Pentane, all isomers) | Not established | 500 mg/m3 TWA (listed under Pentane (all isomers)) | 1000 ppm TWA; 3000 mg/m3 TWA |
| | STELs | Not established | Not established | Not established | 1000 mg/m3 STEL (listed under Pentane (all isomers)) | Not established |
| Isobutane (75-28-5) | TWAs | Not established | 800 ppm TWA (listed under Aliphatic hydrocarbon gases) | Not established | Not established | Not established |
| | STELs | 1000 ppm STEL | Not established | Not established | Not established | Not established |
| Butane (106-97-8) | TWAs | Not established | 800 ppm TWA (listed under Aliphatic hydrocarbon gases) | 800 ppm TWAEV; 1900 mg/m3 TWAEV | Not established | Not established |
| | STELs | 1000 ppm STEL | Not established | Not established | Not established | Not established |
| Ethane (74-84-0) | TWAs | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA | Not established | Not established | Not established |
| Propane (74-98-6) | TWAs | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA | 1000 ppm TWAEV; 1800 mg/m3 TWAEV | Not established | Not established |
| Methane (74-82-8) | TWAs | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA | Not established | Not established | Not established |
| Hexane (110-54-3) | TWAs | 50 ppm TWA | 50 ppm TWA | 50 ppm TWAEV; 176 mg/m3 TWAEV | 100 mg/m3 TWA | 20 ppm TWA; 72 mg/m3 TWA |
| | STELs | Not established | Not established | Not established | 180 mg/m3 STEL | Not established |
| 2-Methylpentane (107-83-5) | STELs | Not established | 1000 ppm TWA (listed under Hexane, isomers, other than n-Hexane) | Not established | Not established | Not established |
| | | | 500 ppm TWA (listed | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | TWAs | Not established | under Hexane, isomers, other than n-Hexane) | Not established | Not established | Not established |
| 3-Methylpentane (96-14-0) | STELs | Not established | 1000 ppm TWA (listed under Hexane, isomers, other than n-Hexane) | Not established | Not established | Not established |
| | TWAs | Not established | 500 ppm TWA (listed under Hexane, isomers, other than n-Hexane) | Not established | Not established | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | France | Germany DFG | Germany TRGS | Ireland | Israel |
|---|---|---|---|---|---|---|
| Pentane (109-66-0) | TWAs | 1000 ppm TWA [VME] (restrictive limit); 3000 mg/m3 TWA [VME] (restrictive limit) | Not established | 1000 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 3000 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2) | 1000 ppm TWA; 3000 mg/m3 TWA | 600 ppm TWA (listed under Pentane, all isomers) |
| | STELs | Not established | Not established | Not established | 750 ppm STEL; 2250 mg/m3 STEL | Not established |
| | Ceilings | Not established | 2000 ppm Peak (listed under Pentane); 6000 mg/m3 Peak (listed under Pentane) | Not established | Not established | Not established |
| | MAKs | Not established | 1000 ppm TWA MAK; 3000 mg/m3 TWA MAK | Not established | Not established | Not established |
| Isopentane (78-78-4) | TWAs | 1000 ppm TWA [VME] (indicative limit); 3000 mg/m3 TWA [VME] (indicative limit) | Not established | 1000 ppm TWA AGW (exposure factor 2); 3000 mg/m3 TWA AGW (exposure factor 2) | 1000 ppm TWA; 3000 mg/m3 TWA | 600 ppm TWA (listed under Pentane, all isomers) |
| | STELs | Not established | Not established | Not established | 750 ppm STEL; 2250 mg/m3 STEL | Not established |
| | Ceilings | Not established | 2000 ppm Peak (listed under Pentane); 6000 mg/m3 Peak (listed under Pentane) | Not established | Not established | Not established |
| | MAKs | Not established | 1000 ppm TWA MAK; 3000 mg/m3 TWA MAK | Not established | Not established | Not established |
| | STELs | Not established | Not established | Not established | Not established | 1000 ppm STEL |

| | | | | | | |
|---|---|---|---|---|---|---|
| Isobutane (75-28-5) | TWAs | Not established | Not established | 1000 ppm TWA AGW (exposure factor 4); 2400 mg/m3 TWA AGW (exposure factor 4) | Not established | Not established |
| | Ceilings | Not established | 4000 ppm Peak (listed under Butane); 9600 mg/m3 Peak (listed under Butane) | Not established | Not established | Not established |
| | MAKs | Not established | 1000 ppm TWA MAK; 2400 mg/m3 TWA MAK | Not established | Not established | Not established |
| Butane (106-97-8) | TWAs | 800 ppm TWA [VME]; 1900 mg/m3 TWA [VME] | Not established | 1000 ppm TWA AGW (exposure factor 4); 2400 mg/m3 TWA AGW (exposure factor 4) | 1000 ppm TWA | Not established |
| | STELs | Not established | Not established | Not established | Not established | 1000 ppm STEL |
| | Ceilings | Not established | 4000 ppm Peak (listed under Butane); 9600 mg/m3 Peak (listed under Butane) | Not established | Not established | Not established |
| | MAKs | Not established | 1000 ppm TWA MAK; 2400 mg/m3 TWA MAK | Not established | Not established | Not established |
| Ethane (74-84-0) | TWAs | Not established | Not established | Not established | 1000 ppm TWA | 1000 ppm TWA (gas) |
| Propane (74-98-6) | TWAs | Not established | Not established | 1000 ppm TWA AGW (exposure factor 4); 1800 mg/m3 TWA AGW (exposure factor 4) | 1000 ppm TWA | 1000 ppm TWA (gas) |
| | Ceilings | Not established | 4000 ppm Peak; 7200 mg/m3 Peak | Not established | Not established | Not established |
| | MAKs | Not established | 1000 ppm TWA MAK; 1800 mg/m3 TWA MAK | Not established | Not established | Not established |
| Methane (74-82-8) | TWAs | Not established | Not established | Not established | 1000 ppm TWA | 1000 ppm TWA (gas, listed under Aliphatic hydrocarbon gases: Alkane C1-4) |
| Hexane (110-54-3) | TWAs | 20 ppm TWA [VME] (restrictive limit); 72 mg/m3 TWA [VME] (restrictive limit) | Not established | 50 ppm TWA AGW (exposure factor 8); 180 mg/m3 TWA AGW (exposure factor 8) | 20 ppm TWA; 72 mg/m3 TWA | 50 ppm TWA |
| | Ceilings | Not established | 400 ppm Peak; 1440 mg/m3 Peak | Not established | Not established | Not established |
| | MAKs | Not established | 50 ppm TWA MAK; 180 mg/m3 TWA MAK | Not established | Not established | Not established |
| | TWAs | Not established | Not established | 500 ppm TWA AGW (exposure factor 2); 1800 mg/m3 TWA AGW (exposure | Not established | Not established |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | factor 2) | | |
| 2-Methylpentane (107-83-5) | Ceilings | Not established | 1000 ppm Peak (except n-Hexane, listed under Hexane); 3600 mg/m3 Peak (except n-Hexane, listed under Hexane) | Not established | Not established | Not established |
| | MAKs | Not established | 500 ppm TWA MAK; 1800 mg/m3 TWA MAK | Not established | Not established | Not established |
| 3-Methylpentane (96-14-0) | TWAs | Not established | Not established | 500 ppm TWA AGW (exposure factor 2); 1800 mg/m3 TWA AGW (exposure factor 2) | Not established | Not established |
| | Ceilings | Not established | 1000 ppm Peak (except n-Hexane, listed under Hexane); 3600 mg/m3 Peak (except n-Hexane, listed under Hexane) | Not established | Not established | Not established |
| | MAKs | Not established | 500 ppm TWA MAK; 1800 mg/m3 TWA MAK | Not established | Not established | Not established |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Italy | NIOSH | OSHA | OSHA Vacated | Portugal |
|---|---|---|---|---|---|---|
| Pentane (109-66-0) | TWAs | 667 ppm TWA; 2000 mg/m3 TWA | 120 ppm TWA; 350 mg/m3 TWA | 1000 ppm TWA; 2950 mg/m3 TWA | 600 ppm TWA; 1800 mg/m3 TWA | 600 ppm TWA [VLE-MP] |
| | Ceilings | Not established | 610 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min) | Not established | Not established | Not established |
| | STELs | Not established | Not established | Not established | 750 ppm STEL; 2250 mg/m3 STEL | Not established |
| Isopentane (78-78-4) | TWAs | 667 ppm TWA; 2000 mg/m3 TWA | Not established | Not established | Not established | 600 ppm TWA [VLE-MP] (as Pentane, all isomers) |
| Isobutane (75-28-5) | TWAs | Not established | 800 ppm TWA; 1900 mg/m3 TWA | Not established | Not established | Not established |
| Butane (106-97-8) | TWAs | Not established | 800 ppm TWA; 1900 mg/m3 TWA | Not established | 800 ppm TWA; 1900 mg/m3 TWA | Not established |
| Ethane (74-84-0) | TWAs | Not established | Not established | Not established | Not established | 1000 ppm TWA [VLE-MP] |
| Propane (74-98-6) | TWAs | Not established | 1000 ppm TWA; 1800 mg/m3 TWA | 1000 ppm TWA; 1800 mg/m3 TWA | 1000 ppm TWA; 1800 mg/m3 TWA | 1000 ppm TWA [VLE-MP] |
| Methane (74-82-8) | TWAs | Not established | Not established | Not established | Not established | 1000 ppm TWA [VLE-MP] |
| Hexane (110-54-3) | TWAs | 20 ppm TWA; 72 mg/m3 TWA | 50 ppm TWA; 180 mg/m3 TWA | 500 ppm TWA; 1800 mg/m3 TWA | 50 ppm TWA; 180 mg/m3 TWA | 50 ppm TWA [VLE-MP] |

**Exposure Limits/Guidelines (Con't.)**

| | Result | Spain | Sweden |
|---|---|---|---|
| | | 1000 ppm TWA [VLA- | |

| | | | |
|---|---|---|---|
| Pentane (109-66-0) | TWAs | ED] (indicative limit value); 3000 mg/m3 TWA [VLA-ED] (indicative limit value) | 600 ppm LLV; 1800 mg/m3 LLV |
| | STELs | Not established | 750 ppm STV; 2000 mg/m3 STV |
| Isopentane (78-78-4) | TWAs | 1000 ppm TWA [VLA-ED] (indicative limit value); 3000 mg/m3 TWA [VLA-ED] (indicative limit value) | 600 ppm LLV; 1800 mg/m3 LLV |
| | STELs | Not established | 750 ppm STV; 2000 mg/m3 STV |
| Butane (106-97-8) | TWAs | 1000 ppm TWA [VLA-ED] | Not established |
| Ethane (74-84-0) | TWAs | 1000 ppm TWA [VLA-ED] | Not established |
| Propane (74-98-6) | TWAs | 1000 ppm TWA [VLA-ED] | Not established |
| Methane (74-82-8) | TWAs | 1000 ppm TWA [VLA-ED] | Not established |
| Hexane (110-54-3) | TWAs | 20 ppm TWA [VLA-ED] (indicative limit value); 72 mg/m3 TWA [VLA-ED] (indicative limit value) | 25 ppm LLV; 90 mg/m3 LLV |
| | Under Review | 0.2 mg/L Medium: urine Time: end of workweek Parameter: 2,5-Hexanedione (without hydrolysis; means free 2,5-hexanedione, unconjugated. This substance is a metabolite of n-hexane and methyl-n-butyl ketone it means after four or five consecutive days of work with exposure, as soon as possible after the end of the last working day, as biological indicators are eliminated with half-lives greater than five hours; these indicators accumulate in the body during the work week, therefore the sampling time is critical in relation to previous exposures.) | Not established |
| | Biological Limit Values | 0.4 mg/L urine end of workweek 2,5-Hexanedione (without | Not established |

| | | | |
|---|---|---|---|
| | (BLV) | hydrolysis) (1,8) | |
| | STELs | Not established | 50 ppm STV; 180 mg/m3 STV |
| 2-Methylpentane (107-83-5) | STELs | Not established | 300 ppm STV; 1100 mg/m3 STV |
| | TWAs | Not established | 200 ppm LLV; 700 mg/m3 LLV |
| 3-Methylpentane (96-14-0) | STELs | Not established | 300 ppm STV; 1100 mg/m3 STV |
| | TWAs | Not established | 200 ppm LLV; 700 mg/m3 LLV |

### Exposure Control Notations

**Portugal**

- Hexane (110-54-3): **Skin:** (skin - potential for cutaneous exposure)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple Asphyxiant)

**Italy**

- Butane (106-97-8): **Carcinogens:** (Category 1 Carcinogen (containing >= 0.1% Butadiene)) | **Mutagens:** (Category 2 Mutagen (containing >= 0.1% Butadiene))
- Isobutane (75-28-5): **Carcinogens:** (Category 1 Carcinogen (containing >= 0.1% Butadiene)) | **Mutagens:** (Category 2 Mutagen (containing >= 0.1% Butadiene))

**Ireland**

- Ethane (74-84-0): **Simple Asphyxiants:** (Asphyxiant)
- Propane (74-98-6): **Simple Asphyxiants:** (Asphyxiant)
- Methane (74-82-8): **Simple Asphyxiants:** (Asphyxiant)
- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Asphyxiant)

**Spain**

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)

**Germany DFG**

- Hexane (110-54-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- 2-Methylpentane (107-83-5): **Pregnancy:** (classification not yet possible)
- 3-Methylpentane (96-14-0): **Pregnancy:** (classification not yet possible)
- Isopentane (78-78-4): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Pentane (109-66-0): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Butane (106-97-8): **Pregnancy:** (classification not yet possible)
- Isobutane (75-28-5): **Pregnancy:** (classification not yet possible)
- Propane (74-98-6): **Pregnancy:** (classification not yet possible)

## 8.2 Exposure controls

**Engineering Measures/Controls** | Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Consider using explosion-proof - electrical, ventilating and/or lighting equipment if the process area where the compressed gas is to be used is classified as an explosion proof area. Systems under pressure should be regularly checked for leakages. Consider work permit system e.g. for maintenance activities.

**Personal Protective Equipment**

**Respiratory** | In case of insufficient ventilation, wear suitable respiratory equipment.

**Eye/Face** | Wear safety glasses.

**Skin/Body** | Wear leather gloves when handling cylinders.

**Environmental Exposure Controls** | Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
LLV = Limit Level Value is the exposure limit for 8-hour work day
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
TWAEV = Time-Weighted Average Exposure Value

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Material Description** | | | |
| Physical Form | Gas | Appearance/Description | Colorless gas with gasoline like odor. |
| Color | Colorless | Odor | Gasoline like. |
| Odor Threshold | 119 to 1147 ppm (Pentane) | | |
| **General Properties** | | | |
| Boiling Point | -195.8 C(-320.44 F) (Nitrogen) | Melting Point | -210 C(-346 F) (Nitrogen) |
| Decomposition Temperature | Data lacking | pH | Data lacking |
| Specific Gravity/Relative Density | 0.906 Water=1 (Nitrogen) | Water Solubility | Data lacking |
| Viscosity | Data lacking | Explosive Properties | Data lacking |
| Oxidizing Properties: | Data lacking | | |
| **Volatility** | | | |
| Vapor Pressure | Data lacking | Vapor Density | Data lacking |
| Evaporation Rate | Data lacking | | |
| **Flammability** | | | |
| Flash Point | Data lacking | UEL | Data lacking |
| LEL | Data lacking | Autoignition | Data lacking |
| Flammability (solid, gas) | Flammable Gas. | | |
| **Environmental** | | | |
| Octanol/Water Partition coefficient | Data lacking | | |

### 9.2 Other Information

No additional physical and chemical parameters noted.

## Section 10: Stability and Reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Stable under normal temperatures and pressures.

### 10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4 Conditions to avoid

Excess heat, sparks, open flame.

## 10.5 Incompatible materials

- Nitrogen reacts with Li, Nd, and Ti at high temperatures.

## 10.6 Hazardous decomposition products

- No data available.

# Section 11 - Toxicological Information

## 11.1 Information on toxicological effects

| Components | | |
|---|---|---|
| Hexane (300ppm) | 110-54-3 | **Acute Toxicity:** Ingestion/Oral-Rat LD50 • 25 g/kg; Inhalation-Rat LC50 • 48000 ppm 4 Hour(s);<br>**Irritation:** Eye-Rabbit • 10 mg • Mild irritation;<br>**Reproductive:** Inhalation-Rat TCLo • 5000 ppm (6-19D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system**; *Reproductive Effects:Specific Developmental Abnormalities*:**Urogenital system** |
| 2-Methylpentane (300ppm) | 107-83-5 | **Multi-dose Toxicity:** Ingestion/Oral-Rat TDLo • 10 g/kg 4 Week(s)-Intermittent; *Kidney, Ureter, and Bladder*:**Changes in tubules (including acute renal failure, acute tubular necrosis)**; *Related to Chronic Data*:**Death in the Other Multiple Dose data type field** |
| Isopentane (0.25%) | 78-78-4 | **Acute Toxicity:** Inhalation-Rat LC50 • 280000 mg/m³ 4 Hour(s) |
| Pentane (0.25%) | 109-66-0 | **Acute Toxicity:** Ingestion/Oral-Rat LD50 • >2000 mg/kg; Inhalation-Rat LC50 • 364 g/m³ 4 Hour(s) |
| Butane (1%) | 106-97-8 | **Acute Toxicity:** Inhalation-Rat LC50 • 658 g/m³ 4 Hour(s) |
| Isobutane (1%) | 75-28-5 | **Acute Toxicity:** Inhalation-Rat LC50 • 658000 mg/m³ 4 Hour(s) |

| GHS Properties | Classification |
|---|---|
| **Acute toxicity** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Aspiration Hazard** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Carcinogenicity** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Germ Cell Mutagenicity** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Skin corrosion/Irritation** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Skin sensitization** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **STOT-RE** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **STOT-SE** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Toxicity for Reproduction** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |

| | |
|---|---|
| **Respiratory sensitization** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |
| **Serious eye damage/Irritation** | **EU/CLP** • Classification criteria not met<br>**OSHA HCS 2012** • Classification criteria not met |

### Potential Health Effects

#### Inhalation

**Acute (Immediate)** | This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

**Chronic (Delayed)** | No data available

#### Skin

**Acute (Immediate)** | Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)** | No data available

#### Eye

**Acute (Immediate)** | Under normal conditions of use, no health effects are expected.

**Chronic (Delayed)** | No data available

#### Ingestion

**Acute (Immediate)** | Ingestion is not anticipated to be a likely route of exposure to this product.

**Chronic (Delayed)** | No data available

**Carcinogenic Effects** | The components of this material are not found on the following lists: FEDERAL OSHA Z LIST, NTP and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

## Section 12 - Ecological Information

### 12.1 Toxicity

| Material data lacking.

### 12.2 Persistence and degradability

| Material data lacking.

### 12.3 Bioaccumulative potential

| Material data lacking.

### 12.4 Mobility in Soil

| Material data lacking.

### 12.5 Results of PBT and vPvB assessment

| No PBT and vPvB assessment has been conducted.

### 12.6 Other adverse effects

| No studies have been found.

## Section 13 - Disposal Considerations

## 13.1 Waste treatment methods

**Product waste** | Contact supplier if guidance is required. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Ensure that the emission levels from local regulations or operating permits are not exceeded.

**Packaging waste** | Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

# Section 14 - Transport Information

| | 14.1 UN number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards |
|---|---|---|---|---|---|
| **DOT** | UN1954 | Compressed gas, flammable, n.o.s. (Nitrogen, Methane, Propane, Ethane) | 2.1 | NDA | NDA |
| **TDG** | UN1954 | COMPRESSED GAS, FLAMMABLE, N.O.S (Nitrogen, Methane, Propane, Ethane). | 2.1 | NDA | Potential Marine Pollutant |
| **IMO/IMDG** | UN1954 | COMPRESSED GAS, FLAMMABLE, n.o.s. (Nitrogen, Methane, Propane, Ethane) | 2.1 | NDA | NDA |
| **IATA/ICAO** | UN1954 | Compressed gas, flammable, n.o.s. (Nitrogen, Methane, Propane, Ethane) | 2.1 | NDA | NDA |

**14.6 Special precautions for user** | Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** | Not relevant.

# Section 15 - Regulatory Information

## 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**SARA Hazard Classifications** | Acute, Fire, Pressure(Sudden Release of)

| State Right To Know | | | | |
|---|---|---|---|---|
| **Component** | **CAS** | **MA** | **NJ** | **PA** |
| Isopentane | 78-78-4 | Yes | Yes | Yes |
| 2-Methylpentane | 107-83-5 | Yes | Yes | Yes |
| 3-Methylpentane | 96-14-0 | Yes | No | Yes |
| Butane | 106-97-8 | Yes | Yes | Yes |
| Ethane | 74-84-0 | Yes | Yes | Yes |
| Hexane | 110-54-3 | Yes | Yes | Yes |
| Isobutane | 75-28-5 | Yes | Yes | Yes |
| Methane | 74-82-8 | Yes | Yes | Yes |

| | | | | |
|---|---|---|---|---|
| Nitrogen | 7727-37-9 | Yes | Yes | Yes |
| Pentane | 109-66-0 | Yes | Yes | Yes |
| Propane | 74-98-6 | Yes | Yes | Yes |

| Inventory | | | | | | |
|---|---|---|---|---|---|---|
| **Component** | **CAS** | **Canada DSL** | **Canada NDSL** | **China** | **EU EINECS** | **EU ELNICS** |
| Isopentane | 78-78-4 | Yes | No | Yes | Yes | No |
| 2-Methylpentane | 107-83-5 | Yes | No | Yes | Yes | No |
| 3-Methylpentane | 96-14-0 | Yes | No | Yes | Yes | No |
| Butane | 106-97-8 | Yes | No | Yes | Yes | No |
| Ethane | 74-84-0 | Yes | No | Yes | Yes | No |
| Hexane | 110-54-3 | Yes | No | Yes | Yes | No |
| Isobutane | 75-28-5 | Yes | No | Yes | Yes | No |
| Methane | 74-82-8 | Yes | No | Yes | Yes | No |
| Nitrogen | 7727-37-9 | Yes | No | Yes | Yes | No |
| Pentane | 109-66-0 | Yes | No | Yes | Yes | No |
| Propane | 74-98-6 | Yes | No | Yes | Yes | No |

| Inventory (Con't.) | | |
|---|---|---|
| **Component** | **CAS** | **TSCA** |
| Isopentane | 78-78-4 | Yes |
| 2-Methylpentane | 107-83-5 | Yes |
| 3-Methylpentane | 96-14-0 | Yes |
| Butane | 106-97-8 | Yes |
| Ethane | 74-84-0 | Yes |
| Hexane | 110-54-3 | Yes |
| Isobutane | 75-28-5 | Yes |
| Methane | 74-82-8 | Yes |
| Nitrogen | 7727-37-9 | Yes |
| Pentane | 109-66-0 | Yes |
| Propane | 74-98-6 | Yes |

## Canada

### Labor

**Canada - WHMIS - Classifications of Substances**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | B2 |
| • Ethane | 74-84-0 | A, B1 |
| • Isopentane | 78-78-4 | B2 |
| • Isobutane | 75-28-5 | A, B1 (listed under Methyl-2 propane) |
| • Propane | 74-98-6 | A, B1 |
| • Butane | 106-97-8 | A, B1 |
| • Hexane | 110-54-3 | B2, D2A, D2B |
| • 2-Methylpentane | 107-83-5 | B2 |
| • Nitrogen | 7727-37-9 | A |
| • 3-Methylpentane | 96-14-0 | B2 |
| • Methane | 74-82-8 | A, B1 |

**Canada - WHMIS - Ingredient Disclosure List**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | 1 % |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | 1 % |
| • Hexane | 110-54-3 | 1 % |
| • 2-Methylpentane | 107-83-5 | 1 % |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

### Environment

**Canada - CEPA - Priority Substances List**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## China

### Environment

**China - Ozone Depleting Substances - First Schedule**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**China - Ozone Depleting Substances - Second Schedule**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |

| | | |
|---|---|---|
| • Methane | 74-82-8 | Not Listed |

**China - Ozone Depleting Substances - Third Schedule**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## Other

**China - Annex I & II - Controlled Chemicals Lists**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**China - Dangerous Goods List**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | (including refrigerated liquid) |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | |
| • Propane | 74-98-6 | |
| • Butane | 106-97-8 | |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | (compressed or refrigerated liquid) |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | (compressed or refrigerated liquid) |

**China - Export Control List - Part I Chemicals**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |

| | | |
|---|---|---|
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## Europe

### Other

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | F+; R12 N; R51-53 Xn; R65 R66 R67 |
| • Ethane | 74-84-0 | F+; R12 |
| • Isopentane | 78-78-4 | F+; R12 N; R51-53 Xn; R65 R66 R67 |
| • Isobutane | 75-28-5 | F+; R12 |
| • Propane | 74-98-6 | F+; R12 |
| • Butane | 106-97-8 | F+; R12 |
| • Hexane | 110-54-3 | F; R11 Xi; R38 N; R51-53 Repr.Cat.3; R62 Xn; R65-48/20 R67 |
| • 2-Methylpentane | 107-83-5 | F; R11 Xi; R38 N; R51-53 Xn; R65 R67 |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | F; R11 Xi; R38 N; R51-53 Xn; R65 R67 |
| • Methane | 74-82-8 | F+; R12 |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | 5%<=C: Xn; R:48/20 |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | F+ Xn N R:12-51/53-65-66-67 S:(2)-9-16-29-33-61-62 |
| • Ethane | 74-84-0 | F+ R:12 S:(2)-9-16-33 |
| • Isopentane | 78-78-4 | F+ Xn N R:12-51/53-65-66-67 S:(2)-9-16-29-33-61-62 |
| • Isobutane | 75-28-5 | F+ R:12 S:(2)-9-16 |
| • Propane | 74-98-6 | F+ R:12 S:(2)-9-16 |
| • Butane | 106-97-8 | F+ R:12 S:(2)-9-16 |
| • Hexane | 110-54-3 | F Xn N R:11-38-48/20-62-65-67-51/53 S:(2)-9-16-29-33-36/37-61-62 |
| • 2-Methylpentane | 107-83-5 | F Xn N R:11-38-65-67-51/53 S:(2)-9-16-29-33-61-62 |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | F Xn N R:11-38-65-67-51/53 S:(2)-9-16-29-33-61-62 |
| • Methane | 74-82-8 | F+ R:12 S:(2)-9-16-33 |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | C |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | C |
| • Isobutane | 75-28-5 | C |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | C |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | C |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | C |
| • Methane | 74-82-8 | Not Listed |

**EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | S:(2)-9-16-29-33-61-62 |
| • Ethane | 74-84-0 | S:(2)-9-16-33 |
| • Isopentane | 78-78-4 | S:(2)-9-16-29-33-61-62 |
| • Isobutane | 75-28-5 | S:(2)-9-16 |
| • Propane | 74-98-6 | S:(2)-9-16 |
| • Butane | 106-97-8 | S:(2)-9-16 |
| • Hexane | 110-54-3 | S:(2)-9-16-29-33-36/37-61-62 |
| • 2-Methylpentane | 107-83-5 | S:(2)-9-16-29-33-61-62 |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | S:(2)-9-16-29-33-61-62 |
| • Methane | 74-82-8 | S:(2)-9-16-33 |

## Germany

### Environment

**Germany - TA Luft - Types and Classes**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**Germany - Water Classification (VwVwS) - Annex 1**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | ID Number 91, not considered hazardous to water |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | ID Number 562, not considered hazardous to water (ratio 1,3-butadiene <0.1%) |
| • Propane | 74-98-6 | ID Number 560, not considered hazardous to water |
| • Butane | 106-97-8 | ID Number 561, not considered hazardous to water (1,3- |

| | | |
|---|---|---|
| | | Butadiene <0.1%) |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | ID Number 1351, not considered hazardous to water |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | ID Number 1343, not considered hazardous to water |

**Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | ID Number 452, hazard class 2 - hazard to waters |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | ID Number 648, hazard class 2 - hazard to waters |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | ID Number 124, hazard class 2 - hazard to waters |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**Germany - Water Classification (VwVwS) - Annex 3**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## Other

**Germany - Specifically Regulated Chemicals in TRGS**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## Portugal

### Other

**Portugal - Prohibited Substances**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## United Kingdom

### Environment

**United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | 10000 kg |

### Other

**United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**United Kingdom - List of Dangerous Substances in Water**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |

| | | |
|---|---|---|
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## United States

### Labor

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - OSHA - Specifically Regulated Chemicals**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

### Environment

**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |

| | | |
|---|---|---|
| • Hexane | 110-54-3 | 5000 lb final RQ; 2270 kg final RQ |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |

| | | |
|---|---|---|
| • Hexane | 110-54-3 | 1.0 % de minimis concentration |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## United States - California

### Environment

**U.S. - California - Proposition 65 - Carcinogens List**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - California - Proposition 65 - Developmental Toxicity**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |

| | | |
|---|---|---|
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## United States - Pennsylvania

### Labor

**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |

| | | |
|---|---|---|
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

**U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances**

| | | |
|---|---|---|
| • Pentane | 109-66-0 | Not Listed |
| • Ethane | 74-84-0 | Not Listed |
| • Isopentane | 78-78-4 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propane | 74-98-6 | Not Listed |
| • Butane | 106-97-8 | Not Listed |
| • Hexane | 110-54-3 | Not Listed |
| • 2-Methylpentane | 107-83-5 | Not Listed |
| • Nitrogen | 7727-37-9 | Not Listed |
| • 3-Methylpentane | 96-14-0 | Not Listed |
| • Methane | 74-82-8 | Not Listed |

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out.

## Section 16 - Other Information

**Last Revision Date** | 23/December/2014

**Preparation Date** | 23/December/2014

**Disclaimer/Statement of Liability** | To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

**Key to abbreviations**

NDA = No Data Available