

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Mixture  
 Product name : 19 Components in Nitrogen  
 Product code : SG-2020-02672

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

Use of the substance/mixture : Test gas/Calibration gas.

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

Air Liquide  
 2700 Post Oak Boulevard  
 Houston, TX 77056 - USA  
 T 1-800-819-1704  
[www.us.airliquide.com](http://www.us.airliquide.com)

#### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Flam. Gas 1	H220
Compressed gas	H280
Muta. 1B	H340
Carc. 1A	H350
Repr. 1A	H360
STOT RE 1	H372

Full text of H-phrases: see section 16

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H220 - Extremely flammable gas  
 H280 - Contains gas under pressure; may explode if heated  
 H340 - May cause genetic defects (Inhalation)  
 H350 - May cause cancer  
 H360 - May damage fertility or the unborn child  
 H372 - Causes damage to organs (central nervous system) through prolonged or repeated exposure  
 CGA-HG04 - May form explosive mixtures with air  
 CGA-HG10 - Asphyxiating even with adequate oxygen  
 CGA-HG16 - Extended exposure to gas reduces the ability to smell sulfides.

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood  
 P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking  
 P260 - Do not breathe gas  
 P271 - Use only outdoors or in a well-ventilated area  
 P280 - Wear eye protection, face protection, protective gloves, protective clothing  
 P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing  
 P308+P313 - If exposed or concerned: Get medical advice/attention  
 P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely  
 P381 - Eliminate all ignition sources if safe to do so  
 P403 - Store in a well-ventilated place  
 P405 - Store locked up  
 P501 - Dispose of contents/container in accordance with local/regional/national/international

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regulations  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)  
CGA-PG05 - Use a back flow preventive device in the piping  
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-PG21 - Open valve slowly  
CGA-PG29 - Do not depend on odor to detect presence of gas

### 2.3. Other hazards

Other hazards not contributing to the classification : This product contains a chemical asphyxiant.

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

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Name	Product identifier	%	GHS-US classification
Nitrogen	(CAS No) 7727-37-9	68.9	Compressed gas, H280
Propylene	(CAS No) 115-07-1	6	Flam. Gas 1, H220 Liquefied gas, H280
Hydrogen	(CAS No) 1333-74-0	3.5	Flam. Gas 1, H220 Compressed gas, H280
Isobutane	(CAS No) 75-28-5	3	Flam. Gas 1, H220 Liquefied gas, H280
Methane	(CAS No) 74-82-8	3	Flam. Gas 1, H220 Compressed gas, H280
butene, mixed-1-and-2-isomers	(CAS No) 107-01-7	2	Flam. Gas 1, H220 Liquefied gas, H280
Ethylene	(CAS No) 74-85-1	2	Flam. Gas 1, H220 Liquefied gas, H280 STOT SE 3, H336
2-Methylbutane	(CAS No) 78-78-4	2	Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Isobutylene	(CAS No) 115-11-7	1.5	Flam. Gas 1, H220 Liquefied gas, H280
Propane	(CAS No) 74-98-6	1.5	Flam. Gas 1, H220 Liquefied gas, H280
1-Butene	(CAS No) 106-98-9	1	Flam. Gas 1, H220 Liquefied gas, H280
n-Butane	(CAS No) 106-97-8	1	Flam. Gas 1, H220 Liquefied gas, H280
Carbon dioxide	(CAS No) 124-38-9	1	Liquefied gas, H280
Carbon monoxide	(CAS No) 630-08-0	1	Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360 STOT RE 1, H372
Ethane	(CAS No) 74-84-0	1	Flam. Gas 1, H220 Liquefied gas, H280
Hydrogen sulfide	(CAS No) 7783-06-4	0.5	Flam. Gas 1, H220 Liquefied gas, H280 Acute Tox. 2 (Inhalation:gas), H330 STOT SE 3, H335 Aquatic Acute 1, H400
n-Pentane	(CAS No) 109-66-0	0.5	Flam. Liq. 2, H225 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
1,3-Butadiene	(CAS No) 106-99-0	0.2	Flam. Gas 1, H220 Liquefied gas, H280 Muta. 1B, H340 Carc. 1A, H350
n-Hexane	(CAS No) 110-54-3	0.2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
1-Pentene	(CAS No) 109-67-1	0.2	Flam. Liq. 1, H224 Asp. Tox. 1, H304 Aquatic Chronic 3, H412

Full text of H-phrases: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact	: Adverse effects not expected from this product.
First-aid measures after eye contact	: Adverse effects not expected from this product.
First-aid measures after ingestion	: Ingestion is not considered a potential route of exposure.

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

Symptoms/injuries after inhalation	: Asphyxiating even with adequate oxygen.
Symptoms/injuries after skin contact	: Adverse effects not expected from this product.
Symptoms/injuries after eye contact	: Adverse effects not expected from this product.
Symptoms/injuries after ingestion	: Ingestion is not considered a potential route of exposure.
Symptoms/injuries upon intravenous administration	: Not known.
Chronic symptoms	: May cause cancer. May cause genetic defects. May damage fertility. May damage the unborn child. Causes damage to organs (Central nervous system.) through prolonged or repeated exposure.

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

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen. Obtain medical attention if breathing difficulty persists.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: Do not use water jet to extinguish.

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

Fire hazard	: This product is flammable.
Explosion hazard	: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. May form flammable/explosive vapor-air mixture.
Reactivity	: None known.

### 5.3. Advice for firefighters

Firefighting instructions	: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.
Protection during firefighting	: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

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

General measures	: Ensure adequate ventilation.
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#### 6.1.1. For non-emergency personnel

Protective equipment	: Wear protective equipment consistent with the site emergency plan.
Emergency procedures	: Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

#### 6.1.2. For emergency responders

Protective equipment	: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.
Emergency procedures	: Evacuate and limit access. Ventilate area. Remove ignition sources. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering atmospheres of unknown contaminant concentration until proven to be safe.

### 6.2. Environmental precautions

Try to stop release if safe to do so.

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

For containment	: Try to stop release if safe to do so.
Methods for cleaning up	: Dispose of this material and its container in accordance with local regulations.

### 6.4. Reference to other sections

See also Sections 8 and 13.

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Handle empty containers with care because residual vapors are flammable. In use, may form flammable vapor-air mixture.
- Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Use only non-sparking tools.
- Hygiene measures : Do not eat, drink or smoke when using this product.

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

- Technical measures : Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed.
- Storage conditions : Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area. Store locked up.
- Incompatible products : None known.
- Incompatible materials : Oxidizing materials. Air.

#### 7.3. Specific end use(s)

See Section 1.2.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

19 Components in Nitrogen		
ACGIH	Not applicable	
OSHA	Not applicable	
1,3-Butadiene (106-99-0)		
ACGIH	ACGIH TWA (ppm)	2 ppm
OSHA	OSHA PEL (TWA) (ppm)	1 ppm
OSHA	OSHA PEL (STEL) (ppm)	5 ppm (see 29 CFR 1910.1051)
1-Butene (106-98-9)		
ACGIH	ACGIH TWA (ppm)	250 ppm
OSHA	Not applicable	
butene, mixed-1-and-2-isomers (107-01-7)		
ACGIH	Not applicable	
OSHA	Not applicable	
n-Butane (106-97-8)		
ACGIH	ACGIH STEL (ppm)	1000 ppm
OSHA	Not applicable	
Carbon dioxide (124-38-9)		
ACGIH	ACGIH TWA (ppm)	5000 ppm
ACGIH	ACGIH STEL (ppm)	30000 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	9000 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	5000 ppm
Carbon monoxide (630-08-0)		
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	55 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	50 ppm
Ethane (74-84-0)		
ACGIH	ACGIH TWA (ppm)	1000 ppm

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<b>Ethane (74-84-0)</b>		
OSHA	Not applicable	

  

<b>Ethylene (74-85-1)</b>		
ACGIH	ACGIH TWA (ppm)	200 ppm
OSHA	Not applicable	

  

<b>n-Hexane (110-54-3)</b>		
ACGIH	ACGIH TWA (ppm)	50 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1800 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

  

<b>Hydrogen (1333-74-0)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	

  

<b>Hydrogen sulfide (7783-06-4)</b>		
ACGIH	ACGIH TWA (ppm)	1 ppm
ACGIH	ACGIH STEL (ppm)	5 ppm
OSHA	OSHA PEL (Ceiling) (ppm)	20 ppm

  

<b>Isobutane (75-28-5)</b>		
ACGIH	ACGIH STEL (ppm)	1000 ppm
OSHA	Not applicable	

  

<b>Isobutylene (115-11-7)</b>		
ACGIH	ACGIH TWA (ppm)	250 ppm
OSHA	Not applicable	

  

<b>2-Methylbutane (78-78-4)</b>		
ACGIH	ACGIH TWA (ppm)	600 ppm
OSHA	Not applicable	

  

<b>Methane (74-82-8)</b>		
ACGIH	ACGIH TWA (ppm)	1000 ppm
OSHA	Not applicable	

  

<b>1-Pentene (109-67-1)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	

  

<b>n-Pentane (109-66-0)</b>		
ACGIH	ACGIH TWA (ppm)	600 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	2950 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	1000 ppm

  

<b>Propane (74-98-6)</b>		
ACGIH	ACGIH TWA (ppm)	1000 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1800 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	1000 ppm

  

<b>Propylene (115-07-1)</b>		
ACGIH	ACGIH TWA (ppm)	500 ppm
OSHA	Not applicable	

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Nitrogen (7727-37-9)	
ACGIH	Not applicable
OSHA	Not applicable

### 8.2. Exposure controls

Appropriate engineering controls	: Ensure exposure is below occupational exposure limits. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Consider work permit system e.g. for maintenance activities. Alarm detectors should be used when toxic gases may be released.
Hand protection	: Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand Protection.
Eye protection	: Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection.
Skin and body protection	: Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.
Respiratory protection	: None necessary during normal and routine operations. See Sections 5 & 6.
Thermal hazard protection	: None necessary during normal and routine operations.
Environmental exposure controls	: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.
Other information	: Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Clear, colorless gas.
Color	: Colorless
Odor	: sulfide-like Rotten eggs.
Odor threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: See Section 2.1 and 2.2
Explosion limits	: No data available
Explosive properties	: Without adequate ventilation formation of explosive mixtures may be possible.
Oxidizing properties	: None.
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Molecular mass	: Not applicable for gas-mixtures.
Relative gas density	: Similar to air
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

None known.

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### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Can form explosive mixture with air.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Oxidizing materials. Air.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

<b>1,3-Butadiene (106-99-0)</b>	
LD50 oral rat	5480 mg/kg
LC50 inhalation rat (mg/l)	285 g/m <sup>3</sup> (Exposure time: 4 h)
LC50 inhalation rat (ppm)	110000 ppm/4h
<b>1-Butene (106-98-9)</b>	
LC50 inhalation rat (ppm)	500000 ppm/4h
<b>butene, mixed-1-and-2-isomers (107-01-7)</b>	
LC50 inhalation rat (ppm)	150307.38 ppm/4h
ATE US (gases)	150307.380 ppmV/4h
<b>n-Butane (106-97-8)</b>	
LC50 inhalation rat (mg/l)	658 g/m <sup>3</sup> (Exposure time: 4 h)
LC50 inhalation rat (ppm)	276789.28 ppm/4h
<b>Carbon dioxide (124-38-9)</b>	
LC50 inhalation rat (ppm)	820000 ppm/4h
<b>Carbon monoxide (630-08-0)</b>	
LC50 inhalation rat (ppm)	1880 ppm/4h
ATE US (gases)	1880.000 ppmV/4h
<b>Ethane (74-84-0)</b>	
LC50 inhalation rat (mg/l)	658 mg/l/4h
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h
ATE US (vapors)	658.000 mg/l/4h
ATE US (dust, mist)	658.000 mg/l/4h
<b>Ethylene (74-85-1)</b>	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h
<b>n-Hexane (110-54-3)</b>	
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat (ppm)	48000 ppm/4h
ATE US (dermal)	3000.000 mg/kg body weight
ATE US (gases)	48000.000 ppmV/4h
<b>Hydrogen (1333-74-0)</b>	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h
<b>Hydrogen sulfide (7783-06-4)</b>	
LC50 inhalation rat (mg/l)	0.99 mg/l (Exposure time: 1 h)

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<b>Hydrogen sulfide (7783-06-4)</b>	
LC50 inhalation rat (ppm)	356 ppm/4h
ATE US (gases)	356.000 ppmV/4h
ATE US (vapors)	0.990 mg/l/4h
ATE US (dust, mist)	0.990 mg/l/4h

<b>Isobutane (75-28-5)</b>	
LC50 inhalation rat (mg/l)	658 mg/l/4h
LC50 inhalation rat (ppm)	276713.11 ppm/4h

<b>Isobutylene (115-11-7)</b>	
LC50 inhalation rat (mg/l)	620 mg/l/4h
LC50 inhalation rat (ppm)	239620.46 ppm/4h
ATE US (gases)	239620.460 ppmV/4h
ATE US (vapors)	620.000 mg/l/4h
ATE US (dust, mist)	620.000 mg/l/4h

<b>2-Methylbutane (78-78-4)</b>	
LC50 inhalation rat (ppm)	94859.36 ppm/4h

<b>Methane (74-82-8)</b>	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h

<b>1-Pentene (109-67-1)</b>	
LC50 inhalation rat (ppm)	61002.99 ppm/4h
ATE US (gases)	61002.990 ppmV/4h

<b>n-Pentane (109-66-0)</b>	
LD50 dermal rabbit	3000 mg/kg
LC50 inhalation rat (mg/l)	364 g/m <sup>3</sup> (Exposure time: 4 h)
LC50 inhalation rat (ppm)	123317.17 ppm/4h
ATE US (dermal)	3000.000 mg/kg body weight
ATE US (gases)	123317.170 ppmV/4h
ATE US (vapors)	364.000 mg/l/4h
ATE US (dust, mist)	364.000 mg/l/4h

<b>Propane (74-98-6)</b>	
LC50 inhalation rat (mg/l)	658 mg/l/4h
LC50 inhalation rat (ppm)	282800 ppm/4h

<b>Propylene (115-07-1)</b>	
LC50 inhalation rat (mg/l)	658 mg/l/4h
LC50 inhalation rat (ppm)	49957.23 ppm/4h

<b>Nitrogen (7727-37-9)</b>	
LC50 inhalation rat (ppm)	820000 ppm/4h

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: May cause genetic defects (Inhalation).
Carcinogenicity	: May cause cancer.

<b>1,3-Butadiene (106-99-0)</b>	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity, 2 - Known Human Carcinogens
In OSHA Hazard Communication Carcinogen list	Yes
In OSHA Specifically Regulated Carcinogen list	Yes

<b>Ethylene (74-85-1)</b>	
IARC group	3 - Not classifiable

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<b>Isobutylene (115-11-7)</b>	
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity

<b>Propylene (115-07-1)</b>	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Causes damage to organs (central nervous system) through prolonged or repeated exposure.

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Asphyxiating even with adequate oxygen.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : May cause cancer. May cause genetic defects. May damage fertility. May damage the unborn child. Causes damage to organs (Central nervous system.) through prolonged or repeated exposure.

## SECTION 12: Ecological information

### 12.1. Toxicity

<b>n-Hexane (110-54-3)</b>	
LC50 fish 1	2.1 - 2.98 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

<b>Hydrogen sulfide (7783-06-4)</b>	
LC50 fish 1	0.0448 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	0.022 mg/l (Exposure time: 96 h - Species: Gammarus pseudolimnaeus)
LC50 fish 2	0.016 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

<b>2-Methylbutane (78-78-4)</b>	
EC50 Daphnia 1	2.3 mg/l (Exposure time: 48 h - Species: Daphnia magna)

<b>n-Pentane (109-66-0)</b>	
LC50 fish 1	9.87 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	9.74 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	11.59 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

### 12.2. Persistence and degradability

<b>1,3-Butadiene (106-99-0)</b>	
Persistence and degradability	Not readily biodegradable.

<b>1-Butene (106-98-9)</b>	
Persistence and degradability	Not readily biodegradable.

<b>n-Butane (106-97-8)</b>	
Persistence and degradability	No data available.

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<b>Carbon dioxide (124-38-9)</b>	
Persistence and degradability	No ecological damage caused by this product.
<b>Carbon monoxide (630-08-0)</b>	
Persistence and degradability	Will not undergo hydrolysis. Not readily biodegradable. Not applicable for inorganic gases.
<b>Ethane (74-84-0)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>Ethylene (74-85-1)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>Hydrogen (1333-74-0)</b>	
Persistence and degradability	No ecological damage caused by this product.
<b>Hydrogen sulfide (7783-06-4)</b>	
Persistence and degradability	Not applicable for inorganic gases.
<b>Isobutane (75-28-5)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>Isobutylene (115-11-7)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>2-Methylbutane (78-78-4)</b>	
Persistence and degradability	No data available.
<b>Methane (74-82-8)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist. No data available.
<b>Propane (74-98-6)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>Propylene (115-07-1)</b>	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
<b>Nitrogen (7727-37-9)</b>	
Persistence and degradability	No ecological damage caused by this product.

### 12.3. Bioaccumulative potential

<b>1,3-Butadiene (106-99-0)</b>	
BCF fish 1	13 - 19.1
Log Pow	1.99
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>1-Butene (106-98-9)</b>	
Log Pow	2.4
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>n-Butane (106-97-8)</b>	
Log Pow	2.89
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Carbon dioxide (124-38-9)</b>	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83
Bioaccumulative potential	No ecological damage caused by this product.
<b>Carbon monoxide (630-08-0)</b>	
Log Pow	1.78
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Ethane (74-84-0)</b>	
Log Pow	1.81
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Ethylene (74-85-1)</b>	
BCF fish 1	4 - 4.6

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<b>Ethylene (74-85-1)</b>	
Log Pow	1.13
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Hydrogen (1333-74-0)</b>	
BCF fish 1	(no bioaccumulation expected)
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.
<b>Hydrogen sulfide (7783-06-4)</b>	
BCF fish 1	(no bioaccumulation expected)
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No data available.
<b>Isobutane (75-28-5)</b>	
BCF fish 1	1.57 - 1.97
Log Pow	2.76
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Isobutylene (115-11-7)</b>	
Log Pow	2.35
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>2-Methylbutane (78-78-4)</b>	
Log Pow	3.2 - 3.3
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	No data available.
<b>Methane (74-82-8)</b>	
Log Pow	Not applicable for gas mixtures
Log Kow	Not applicable for gas mixtures
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>n-Pentane (109-66-0)</b>	
Log Pow	3.39
<b>Propane (74-98-6)</b>	
Log Pow	2.36
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Propylene (115-07-1)</b>	
Log Pow	1.77
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
<b>Nitrogen (7727-37-9)</b>	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.

### 12.4. Mobility in soil

<b>1,3-Butadiene (106-99-0)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>1-Butene (106-98-9)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>n-Butane (106-97-8)</b>	
Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Carbon dioxide (124-38-9)</b>	
Ecology - soil	No ecological damage caused by this product.
<b>Carbon monoxide (630-08-0)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Ethane (74-84-0)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

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<b>Ethylene (74-85-1)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Hydrogen (1333-74-0)</b>	
Ecology - soil	No ecological damage caused by this product.
<b>Hydrogen sulfide (7783-06-4)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Isobutane (75-28-5)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Isobutylene (115-11-7)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>2-Methylbutane (78-78-4)</b>	
Mobility in soil	No data available.
<b>Methane (74-82-8)</b>	
Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Propane (74-98-6)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Propylene (115-07-1)</b>	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
<b>Nitrogen (7727-37-9)</b>	
Ecology - soil	No ecological damage caused by this product.

### 12.5. Other adverse effects

Effect on ozone layer	: No known effects from this product.
Effect on the global warming	: Contains greenhouse gas(es) not covered by 842/2006/EC.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods	: Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into areas where there is a risk of forming an explosive mixture with air.
Waste disposal recommendations	: Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at <a href="http://www.cganet.com">www.cganet.com</a> for more guidance on suitable disposal methods.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT

Transport document description	: UN1954 Compressed gas, flammable, n.o.s. (Hydrogen, Propylene)
UN-No.(DOT)	: UN1954
Proper Shipping Name (DOT)	: Compressed gas, flammable, n.o.s.
Hazard labels (DOT)	: 2.1 - Flammable gas



DOT Packaging Non Bulk (49 CFR 173.xxx)	: 302;305
DOT Packaging Bulk (49 CFR 173.xxx)	: 314;315
DOT Symbols	: G - Identifies PSN requiring a technical name
DOT Packaging Exceptions (49 CFR 173.xxx)	: 306

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DOT Quantity Limitations Passenger aircraft/rail : Forbidden  
(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 150 kg  
CFR 175.75)

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

### Additional information

Other information : No supplementary information available.

### ADR

Transport document description : UN 1954 COMPRESSED GAS, FLAMMABLE, N.O.S., 2.1, (B/D)

Class (ADR) : 2 - Gases

Hazard identification number (Kemler No.) : 23

Classification code (ADR) : 1F

Hazard labels (ADR) : 2.1 - Flammable gases



Orange plates :



Tunnel restriction code (ADR) : B/D

Limited quantities (ADR) : 0

Excepted quantities (ADR) : E0

### Transport by sea

UN-No. (IMDG) : 1954

Proper Shipping Name (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S.

Class (IMDG) : 2 - Gases

### Air transport

UN-No. (IATA) : 1954

Proper Shipping Name (IATA) : COMPRESSED GAS, FLAMMABLE, N.O.S.

Class (IATA) : 2

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### 1,3-Butadiene (106-99-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

SARA Section 313 - Emission Reporting : 0.1 %

#### 1-Butene (106-98-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### n-Butane (106-97-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Carbon dioxide (124-38-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Carbon monoxide (630-08-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

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<b>Ethane (74-84-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Ethylene (74-85-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
<b>n-Hexane (110-54-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
<b>Hydrogen (1333-74-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Hydrogen sulfide (7783-06-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Subject to reporting requirements of United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	500
SARA Section 313 - Emission Reporting	1.0 %
<b>Isobutane (75-28-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Isobutylene (115-11-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>2-Methylbutane (78-78-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Methane (74-82-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>1-Pentene (109-67-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>n-Pentane (109-66-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
<b>Propane (74-98-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Propylene (115-07-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
<b>Nitrogen (7727-37-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

### 15.2. International regulations

#### CANADA

<b>1,3-Butadiene (106-99-0)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class F - Dangerously Reactive Material
<b>1-Butene (106-98-9)</b>	
Listed on the Canadian DSL (Domestic Substances List)	

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<b>n-Butane (106-97-8)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Carbon dioxide (124-38-9)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas
<b>Carbon monoxide (630-08-0)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
<b>Ethane (74-84-0)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Ethylene (74-85-1)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>n-Hexane (110-54-3)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Hydrogen (1333-74-0)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Hydrogen sulfide (7783-06-4)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Isobutane (75-28-5)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Isobutylene (115-11-7)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
<b>2-Methylbutane (78-78-4)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 2 - Flammable Liquid
<b>Methane (74-82-8)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>1-Pentene (109-67-1)</b>	
Listed on the Canadian DSL (Domestic Substances List)	

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<b>n-Pentane (109-66-0)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 2 - Flammable Liquid
<b>Propane (74-98-6)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Propylene (115-07-1)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Nitrogen (7727-37-9)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas

### EU-Regulations

<b>1,3-Butadiene (106-99-0)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>1-Butene (106-98-9)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>n-Butane (106-97-8)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Carbon dioxide (124-38-9)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Carbon monoxide (630-08-0)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Ethane (74-84-0)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Ethylene (74-85-1)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>n-Hexane (110-54-3)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Hydrogen (1333-74-0)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Hydrogen sulfide (7783-06-4)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Isobutane (75-28-5)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Isobutylene (115-11-7)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>2-Methylbutane (78-78-4)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Methane (74-82-8)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>1-Pentene (109-67-1)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>n-Pentane (109-66-0)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Propane (74-98-6)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
<b>Propylene (115-07-1)</b>	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	

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### Nitrogen (7727-37-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

No additional information available

### National regulations

#### 1,3-Butadiene (106-99-0)

Listed on IARC (International Agency for Research on Cancer)  
Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Japanese Pollutant Release and Transfer Register Law (PRTR Law)  
Listed as carcinogen on NTP (National Toxicology Program)  
Listed on the Canadian IDL (Ingredient Disclosure List)

#### 1-Butene (106-98-9)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### n-Butane (106-97-8)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the Canadian IDL (Ingredient Disclosure List)

#### Carbon dioxide (124-38-9)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the Canadian IDL (Ingredient Disclosure List)

#### Carbon monoxide (630-08-0)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the Canadian IDL (Ingredient Disclosure List)

#### Ethane (74-84-0)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

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### Ethylene (74-85-1)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### n-Hexane (110-54-3)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Japanese Pollutant Release and Transfer Register Law (PRTR Law)  
Listed on the Canadian IDL (Ingredient Disclosure List)

### Hydrogen (1333-74-0)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### Hydrogen sulfide (7783-06-4)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the Canadian IDL (Ingredient Disclosure List)

### Isobutane (75-28-5)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### Isobutylene (115-11-7)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### 2-Methylbutane (78-78-4)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### Methane (74-82-8)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

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### 1-Pentene (109-67-1)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### n-Pentane (109-66-0)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
 Listed on the Canadian IDL (Ingredient Disclosure List)

### Propane (74-98-6)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### Propylene (115-07-1)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### Nitrogen (7727-37-9)

Listed on the AICS (Australian Inventory of Chemical Substances)  
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
 Listed on the Korean ECL (Existing Chemicals List)  
 Listed on NZIoC (New Zealand Inventory of Chemicals)  
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

## 15.3. US State regulations

### 1,3-Butadiene (106-99-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
Yes	Yes	Yes	No	0.4 µg/day

### Carbon monoxide (630-08-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	Yes	No	No	

### 1,3-Butadiene (106-99-0)

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
 U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances  
 U.S. - Pennsylvania - RTK (Right to Know) List

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### 1-Butene (106-98-9)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### n-Butane (106-97-8)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Carbon dioxide (124-38-9)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Carbon monoxide (630-08-0)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Ethane (74-84-0)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Ethylene (74-85-1)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List

### n-Hexane (110-54-3)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Hydrogen (1333-74-0)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Hydrogen sulfide (7783-06-4)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Isobutane (75-28-5)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Isobutylene (115-11-7)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### 2-Methylbutane (78-78-4)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Methane (74-82-8)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

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### 1-Pentene (109-67-1)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### n-Pentane (109-66-0)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Propane (74-98-6)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Propylene (115-07-1)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Nitrogen (7727-37-9)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

## SECTION 16: Other information

- Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.
- Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

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Full text of H-phrases:

Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1A	Carcinogenicity Category 1A
Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
Flam. Liq. 1	Flammable liquids Category 1
Flam. Liq. 2	Flammable liquids Category 2
Liquefied gas	Gases under pressure Liquefied gas
Muta. 1B	Germ cell mutagenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
Repr. 2	Reproductive toxicity Category 2
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H220	Extremely flammable gas
H224	Extremely flammable liquid and vapor
H225	Highly flammable liquid and vapor
H280	Contains gas under pressure; may explode if heated
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H330	Fatal if inhaled
H331	Toxic if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H340	May cause genetic defects (Inhalation)
H350	May cause cancer
H360	May damage fertility or the unborn child
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

SDS US (GHS HazCom 2012)

*This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation'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 product 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.*