

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

1.1. Product identifier

Product form : Mixture
Product name : 22 Components in Nitrogen
Product code : SG-2023-02533

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

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

Compressed gas H280
Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US) : Warning
Hazard statements (GHS-US) : H280 - Contains gas under pressure; may explode if heated
OSHA-H01 - May displace oxygen and cause rapid suffocation
Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood
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
P403 - Store in a well-ventilated place
P501 - Dispose of contents/container in accordance with local/regional/national/international 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

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

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3.2. Mixture

| Name | Product identifier | % | GHS-US classification |
|------------------|--------------------|-------------------|--|
| Nitrogen | (CAS No) 7727-37-9 | 99.901 - 99.99978 | Compressed gas, H280 |
| Acetylene | (CAS No) 74-86-2 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Compressed gas, H280 |
| 1,3-Butadiene | (CAS No) 106-99-0 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 Muta. 1B, H340 Carc. 1A, H350 |
| 1-Butene | (CAS No) 106-98-9 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| n-Butane | (CAS No) 106-97-8 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| cis-2-Butene | (CAS No) 590-18-1 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| cis-2-Pentene | (CAS No) 627-20-3 | 0.00001 - 0.0045 | Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Asp. Tox. 1, H304 |
| Neopentane | (CAS No) 463-82-1 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 Aquatic Chronic 2, H411 |
| Ethane | (CAS No) 74-84-0 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Compressed gas, H280 |
| Ethylene | (CAS No) 74-85-1 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 STOT SE 3, H336 |
| Isobutane | (CAS No) 75-28-5 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| Isobutylene | (CAS No) 115-11-7 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| 2-Methylbutane | (CAS No) 78-78-4 | 0.00001 - 0.0045 | Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 |
| Isoprene | (CAS No) 78-79-5 | 0.00001 - 0.0045 | Flam. Liq. 1, H224 Muta. 2, H341 Carc. 1B, H350 Aquatic Chronic 2, H411 |
| Methane | (CAS No) 74-82-8 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Compressed gas, H280 |
| Methyl acetylene | (CAS No) 74-99-7 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| 1-Pentene | (CAS No) 109-67-1 | 0.00001 - 0.0045 | Flam. Liq. 1, H224 Asp. Tox. 1, H304 Aquatic Chronic 3, H412 |
| n-Pentane | (CAS No) 109-66-0 | 0.00001 - 0.0045 | Flam. Liq. 2, H225 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 |
| Propadiene 1,2 | (CAS No) 463-49-0 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| Propane | (CAS No) 74-98-6 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| Propylene | (CAS No) 115-07-1 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| trans-2-Butene | (CAS No) 624-64-6 | 0.00001 - 0.0045 | Flam. Gas 1, H220 Liquefied gas, H280 |
| trans-2-Pentene | (CAS No) 646-04-8 | 0.00001 - 0.0045 | Flam. Liq. 1, H224 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Asp. Tox. 1, H304 |

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.

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| | |
|---------------------------------------|--|
| 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. |

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

| | |
|---|--|
| Symptoms/injuries after inhalation | : May displace oxygen and cause rapid suffocation. |
| 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 | : Adverse effects not expected from this product. |

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.

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 | : The product is not flammable. |
| Explosion hazard | : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. |
| 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. |
|------------------|--------------------------------|

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. |

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.

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. |
|-----------------------------------|---|

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| | |
|-------------------------------|---|
| 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. |
| 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. |
| 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. |
| Incompatible products | : None known. |
| Incompatible materials | : None known. |

7.3. Specific end use(s)

See Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| 22 Components in Nitrogen | | |
|---------------------------|-----------------------|------------------------------|
| ACGIH | Not applicable | |
| OSHA | Not applicable | |
| Acetylene (74-86-2) | | |
| 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 | |
| n-Butane (106-97-8) | | |
| ACGIH | ACGIH STEL (ppm) | 1000 ppm |
| OSHA | Not applicable | |
| cis-2-Butene (590-18-1) | | |
| ACGIH | ACGIH TWA (ppm) | 250 ppm |
| OSHA | Not applicable | |
| cis-2-Pentene (627-20-3) | | |
| ACGIH | Not applicable | |
| OSHA | Not applicable | |
| Neopentane (463-82-1) | | |
| ACGIH | ACGIH TWA (ppm) | 600 ppm |
| OSHA | Not applicable | |
| Ethane (74-84-0) | | |
| ACGIH | ACGIH TWA (ppm) | 1000 ppm |
| OSHA | Not applicable | |
| Ethylene (74-85-1) | | |
| ACGIH | ACGIH TWA (ppm) | 200 ppm |
| OSHA | Not applicable | |

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| | | |
|----------------------------|------------------------|------------|
| Isobutane (75-28-5) | | |
| ACGIH | ACGIH STEL (ppm) | 1000 ppm |
| OSHA | Not applicable | |
| Isobutylene (115-11-7) | | |
| ACGIH | ACGIH TWA (ppm) | 250 ppm |
| OSHA | Not applicable | |
| 2-Methylbutane (78-78-4) | | |
| ACGIH | ACGIH TWA (ppm) | 600 ppm |
| OSHA | Not applicable | |
| Isoprene (78-79-5) | | |
| ACGIH | Not applicable | |
| OSHA | Not applicable | |
| Methane (74-82-8) | | |
| ACGIH | ACGIH TWA (ppm) | 1000 ppm |
| OSHA | Not applicable | |
| Methyl acetylene (74-99-7) | | |
| ACGIH | ACGIH TWA (ppm) | 1000 ppm |
| OSHA | OSHA PEL (TWA) (mg/m³) | 1650 mg/m³ |
| OSHA | OSHA PEL (TWA) (ppm) | 1000 ppm |
| 1-Pentene (109-67-1) | | |
| ACGIH | Not applicable | |
| OSHA | Not applicable | |
| n-Pentane (109-66-0) | | |
| ACGIH | ACGIH TWA (ppm) | 600 ppm |
| OSHA | OSHA PEL (TWA) (mg/m³) | 2950 mg/m³ |
| OSHA | OSHA PEL (TWA) (ppm) | 1000 ppm |
| Propadiene 1,2 (463-49-0) | | |
| ACGIH | Not applicable | |
| OSHA | Not applicable | |
| Propane (74-98-6) | | |
| ACGIH | ACGIH TWA (ppm) | 1000 ppm |
| OSHA | OSHA PEL (TWA) (mg/m³) | 1800 mg/m³ |
| OSHA | OSHA PEL (TWA) (ppm) | 1000 ppm |
| Propylene (115-07-1) | | |
| ACGIH | ACGIH TWA (ppm) | 500 ppm |
| OSHA | Not applicable | |
| trans-2-Butene (624-64-6) | | |
| ACGIH | ACGIH TWA (ppm) | 250 ppm |
| OSHA | Not applicable | |
| trans-2-Pentene (646-04-8) | | |
| ACGIH | Not applicable | |
| 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. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities. |
| 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 | : No data available |
| 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 | : Not applicable - not flammable |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Flammability (solid, gas) | : See Section 2.1 and 2.2 |
| Explosion limits | : Not applicable - not flammable |
| Explosive properties | : Not applicable - not flammable. |
| 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

None known.

10.4. Conditions to avoid

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

10.5. Incompatible materials

None known.

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

| | |
|---------------------------------|---|
| Acetylene (74-86-2) | |
| LC50 inhalation rat (ppm) | 820000 ppm/4h |
| 1,3-Butadiene (106-99-0) | |
| LD50 oral rat | 5480 mg/kg |
| LC50 inhalation rat (mg/l) | 285 g/m ³ (Exposure time: 4 h) |
| LC50 inhalation rat (ppm) | 110000 ppm/4h |
| 1-Butene (106-98-9) | |
| LC50 inhalation rat (ppm) | 500000 ppm/4h |
| n-Butane (106-97-8) | |
| LC50 inhalation rat (mg/l) | 658 g/m ³ (Exposure time: 4 h) |
| LC50 inhalation rat (ppm) | 276789.28 ppm/4h |
| cis-2-Butene (590-18-1) | |
| LC50 inhalation rat (ppm) | 150307.38 ppm/4h |
| cis-2-Pentene (627-20-3) | |
| LC50 inhalation rat (ppm) | 250000 ppm/4h |
| Ethane (74-84-0) | |
| 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 |
| Ethylene (74-85-1) | |
| LC50 inhalation rat (ppm) | 820000 ppm/4h |
| ATE US (gases) | 820000.000 ppmV/4h |
| Isobutane (75-28-5) | |
| LC50 inhalation rat (mg/l) | 658 mg/l/4h |
| LC50 inhalation rat (ppm) | 276713.11 ppm/4h |
| Isobutylene (115-11-7) | |
| 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 |
| 2-Methylbutane (78-78-4) | |
| LC50 inhalation rat (ppm) | 94859.36 ppm/4h |

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| | |
|--|--|
| Isoprene (78-79-5) | |
| LD50 dermal rat | > 1 ml/kg |
| LC50 inhalation rat (mg/l) | 180 mg/l/4h |
| LC50 inhalation rat (ppm) | 64597.09 ppm/4h |
| ATE US (gases) | 64597.090 ppmV/4h |
| ATE US (vapors) | 180.000 mg/l/4h |
| ATE US (dust, mist) | 180.000 mg/l/4h |
| Methane (74-82-8) | |
| LC50 inhalation rat (ppm) | 820000 ppm/4h |
| ATE US (gases) | 820000.000 ppmV/4h |
| Methyl acetylene (74-99-7) | |
| LC50 inhalation rat (ppm) | 51429 ppm/4h |
| ATE US (gases) | 51429.000 ppmV/4h |
| 1-Pentene (109-67-1) | |
| LC50 inhalation rat (ppm) | 61002.99 ppm/4h |
| ATE US (gases) | 61002.990 ppmV/4h |
| n-Pentane (109-66-0) | |
| LD50 dermal rabbit | 3000 mg/kg |
| LC50 inhalation rat (mg/l) | 364 g/m ³ (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 |
| Propane (74-98-6) | |
| LC50 inhalation rat (mg/l) | 658 mg/l/4h |
| LC50 inhalation rat (ppm) | 282800 ppm/4h |
| Propylene (115-07-1) | |
| LC50 inhalation rat (mg/l) | 658 mg/l/4h |
| LC50 inhalation rat (ppm) | 49957.23 ppm/4h |
| trans-2-Butene (624-64-6) | |
| LC50 inhalation rat (ppm) | 150307.38 ppm/4h |
| trans-2-Pentene (646-04-8) | |
| LC50 inhalation rat (ppm) | 250000 ppm/4h |
| Nitrogen (7727-37-9) | |
| 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 | : Not classified |
| Carcinogenicity | : Not classified |
| 1,3-Butadiene (106-99-0) | |
| 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 |
| Ethylene (74-85-1) | |
| IARC group | 3 - Not classifiable |
| Isobutylene (115-11-7) | |
| National Toxicology Program (NTP) Status | 1 - Evidence of Carcinogenicity |

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| Isoprene (78-79-5) | |
|--|--|
| IARC group | 2B - Possibly carcinogenic to humans |
| National Toxicology Program (NTP) Status | 1 - Evidence of Carcinogenicity, 3 - Reasonably anticipated to be Human Carcinogen |
| In OSHA Hazard Communication Carcinogen list | Yes |

| Propylene (115-07-1) | |
|----------------------|----------------------|
| IARC group | 3 - Not classifiable |

Reproductive toxicity : Not classified
Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified
Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation.
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 : Adverse effects not expected from this product.

SECTION 12: Ecological information

12.1. Toxicity

| 2-Methylbutane (78-78-4) | |
|--------------------------------|--|
| EC50 Daphnia 1 | 2.3 mg/l (Exposure time: 48 h - Species: Daphnia magna) |
| Isoprene (78-79-5) | |
| LC50 fish 1 | 32.5 - 50.15 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static]) |
| EC50 Daphnia 1 | 140 mg/l (Exposure time: 48 h - Species: Daphnia magna) |
| EC50 other aquatic organisms 1 | > 1000 mg/l (Exposure time: 96 h - Species: Scenedesmus quadricauda) |
| LC50 fish 2 | 58.75 - 95.32 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static]) |
| n-Pentane (109-66-0) | |
| 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

| Acetylene (74-86-2) | |
|-------------------------------|--|
| Persistence and degradability | Will rapidly degrade by indirect photolysis in air. Will not undergo hydrolysis. |
| 1,3-Butadiene (106-99-0) | |
| Persistence and degradability | Not readily biodegradable. |

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| | |
|-----------------------------------|---|
| 1-Butene (106-98-9) | |
| Persistence and degradability | Not readily biodegradable. |
| n-Butane (106-97-8) | |
| Persistence and degradability | No data available. |
| cis-2-Butene (590-18-1) | |
| Persistence and degradability | No data available. |
| Neopentane (463-82-1) | |
| Persistence and degradability | No data available. |
| Ethane (74-84-0) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| Ethylene (74-85-1) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| Isobutane (75-28-5) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| Isobutylene (115-11-7) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| 2-Methylbutane (78-78-4) | |
| Persistence and degradability | No data available. |
| Methane (74-82-8) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. No data available. |
| Methyl acetylene (74-99-7) | |
| Persistence and degradability | No data available. |
| Propadiene 1,2 (463-49-0) | |
| Persistence and degradability | No data available. |
| Propane (74-98-6) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| Propylene (115-07-1) | |
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. |
| trans-2-Butene (624-64-6) | |
| Persistence and degradability | No data available. |
| Nitrogen (7727-37-9) | |
| Persistence and degradability | No ecological damage caused by this product. |

12.3. Bioaccumulative potential

| | |
|---------------------------------|---|
| Acetylene (74-86-2) | |
| Log Pow | 0.37 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| 1,3-Butadiene (106-99-0) | |
| 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. |
| 1-Butene (106-98-9) | |
| Log Pow | 2.4 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| n-Butane (106-97-8) | |
| 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. |
| cis-2-Butene (590-18-1) | |
| Log Pow | 2.33 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |

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| | |
|-----------------------------------|---|
| Neopentane (463-82-1) | |
| Log Pow | 3.11 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Ethane (74-84-0) | |
| Log Pow | 1.81 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Ethylene (74-85-1) | |
| BCF fish 1 | 4 - 4.6 |
| Log Pow | 1.13 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Isobutane (75-28-5) | |
| 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. |
| Isobutylene (115-11-7) | |
| Log Pow | 2.35 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| 2-Methylbutane (78-78-4) | |
| Log Pow | 3.2 - 3.3 |
| Log Kow | Not applicable for gas-mixtures. |
| Bioaccumulative potential | No data available. |
| Isoprene (78-79-5) | |
| BCF fish 1 | (no bioaccumulation expected) |
| Log Pow | 3.2 - 4.5 (at 20 °C) |
| Methane (74-82-8) | |
| 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. |
| Methyl acetylene (74-99-7) | |
| Log Pow | 0.94 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| n-Pentane (109-66-0) | |
| Log Pow | 3.39 |
| Propadiene 1,2 (463-49-0) | |
| Log Pow | 1.45 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Propane (74-98-6) | |
| Log Pow | 2.36 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Propylene (115-07-1) | |
| Log Pow | 1.77 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| trans-2-Butene (624-64-6) | |
| Log Pow | 2.32 |
| Bioaccumulative potential | Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. |
| Nitrogen (7727-37-9) | |
| Log Pow | Not applicable for inorganic gases. |
| Bioaccumulative potential | No ecological damage caused by this product. |

12.4. Mobility in soil

| | |
|----------------------------|---|
| Acetylene (74-86-2) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |

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| | |
|-----------------------------------|---|
| 1,3-Butadiene (106-99-0) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| 1-Butene (106-98-9) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| n-Butane (106-97-8) | |
| Mobility in soil | No data available. |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| cis-2-Butene (590-18-1) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Neopentane (463-82-1) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Ethane (74-84-0) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Ethylene (74-85-1) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Isobutane (75-28-5) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Isobutylene (115-11-7) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| 2-Methylbutane (78-78-4) | |
| Mobility in soil | No data available. |
| Methane (74-82-8) | |
| Mobility in soil | No data available. |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Methyl acetylene (74-99-7) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Propadiene 1,2 (463-49-0) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Propane (74-98-6) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Propylene (115-07-1) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| trans-2-Butene (624-64-6) | |
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |
| Nitrogen (7727-37-9) | |
| 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 disposal recommendations | : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods. |

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SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s.

UN-No.(DOT) : UN1956

Proper Shipping Name (DOT) : Compressed gas, n.o.s.

Hazard labels (DOT) : 2.2 - Non-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;307

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg

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

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Additional information

Other information : No supplementary information available.

ADR

Transport document description : UN 1956, 2.2, (E)

Class (ADR) : 2 - Gases

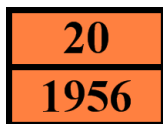
Hazard identification number (Kemler No.) : 20

Classification code (ADR) : 1A

Hazard labels (ADR) : 2.2 - Non-flammable compressed gas



Orange plates :



Tunnel restriction code (ADR) : E

Limited quantities (ADR) : 120ml

Excepted quantities (ADR) : E1

Transport by sea

UN-No. (IMDG) : 1956

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

Class (IMDG) : 2 - Gases

Air transport

UN-No. (IATA) : 1956

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

Class (IATA) : 2

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SECTION 15: Regulatory information

15.1. US Federal regulations

Acetylene (74-86-2)

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

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

cis-2-Butene (590-18-1)

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

Neopentane (463-82-1)

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

Ethane (74-84-0)

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

Ethylene (74-85-1)

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 % |
|---------------------------------------|-------|

Isobutane (75-28-5)

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

Isobutylene (115-11-7)

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

2-Methylbutane (78-78-4)

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

Isoprene (78-79-5)

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 % |
|---------------------------------------|-------|

Methane (74-82-8)

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

Methyl acetylene (74-99-7)

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

1-Pentene (109-67-1)

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

n-Pentane (109-66-0)

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. |
|--------------------------|--|

Propadiene 1,2 (463-49-0)

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

Propane (74-98-6)

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

Propylene (115-07-1)

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 % |
|---------------------------------------|-------|

trans-2-Butene (624-64-6)

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

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Nitrogen (7727-37-9)

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

15.2. International regulations

CANADA

Acetylene (74-86-2)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|---|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas Class F - Dangerously Reactive Material |
|----------------------|---|

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

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 |
|----------------------|---|

1-Butene (106-98-9)

Listed on the Canadian DSL (Domestic Substances List)

n-Butane (106-97-8)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|--|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas |
|----------------------|--|

cis-2-Butene (590-18-1)

Listed on the Canadian DSL (Domestic Substances List)

Neopentane (463-82-1)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|--|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas |
|----------------------|--|

Ethane (74-84-0)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|--|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas |
|----------------------|--|

Ethylene (74-85-1)

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 |
|----------------------|---|

Isobutane (75-28-5)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|--|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas |
|----------------------|--|

Isobutylene (115-11-7)

Listed on the Canadian DSL (Domestic Substances List)

2-Methylbutane (78-78-4)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|---------------------------------------|
| WHMIS Classification | Class B Division 2 - Flammable Liquid |
|----------------------|---------------------------------------|

Isoprene (78-79-5)

Listed on the Canadian DSL (Domestic Substances List)

Methane (74-82-8)

Listed on the Canadian DSL (Domestic Substances List)

| | |
|----------------------|--|
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas |
|----------------------|--|

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Methyl acetylene (74-99-7)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class A - Compressed Gas
Class B Division 1 - Flammable Gas

1-Pentene (109-67-1)

Listed on the Canadian DSL (Domestic Substances List)

n-Pentane (109-66-0)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class B Division 2 - Flammable Liquid

Propadiene 1,2 (463-49-0)

Listed on the Canadian DSL (Domestic Substances List)

Propane (74-98-6)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class A - Compressed Gas
Class B Division 1 - Flammable Gas

Propylene (115-07-1)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class A - Compressed Gas
Class B Division 1 - Flammable Gas

trans-2-Butene (624-64-6)

Listed on the Canadian DSL (Domestic Substances List)

Nitrogen (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class A - Compressed Gas

EU-Regulations

Acetylene (74-86-2)

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

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

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

1-Butene (106-98-9)

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

n-Butane (106-97-8)

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

cis-2-Butene (590-18-1)

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

Neopentane (463-82-1)

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

Ethane (74-84-0)

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

Ethylene (74-85-1)

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

Isobutane (75-28-5)

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

Isobutylene (115-11-7)

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

2-Methylbutane (78-78-4)

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

Isoprene (78-79-5)

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

Methane (74-82-8)

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

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Methyl acetylene (74-99-7)

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

1-Pentene (109-67-1)

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

n-Pentane (109-66-0)

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

Propadiene 1,2 (463-49-0)

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

Propane (74-98-6)

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

Propylene (115-07-1)

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

trans-2-Butene (624-64-6)

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

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

Acetylene (74-86-2)

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)

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)

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cis-2-Butene (590-18-1)

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)

Neopentane (463-82-1)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

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)

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)

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)

Isoprene (78-79-5)

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 Japanese ISHL (Industrial Safety and Health Law)
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)

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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)

Methyl acetylene (74-99-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
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)

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)

Propadiene 1,2 (463-49-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
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)

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)

trans-2-Butene (624-64-6)

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)

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)

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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 |

Isoprene (78-79-5)

| | | | | |
|---|---|---|---|----------------------------------|
| 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 | No | No | No | |

Acetylene (74-86-2)

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

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

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

cis-2-Butene (590-18-1)

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

Neopentane (463-82-1)

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

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

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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

Isoprene (78-79-5)

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

Methyl acetylene (74-99-7)

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

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

Propadiene 1,2 (463-49-0)

U.S. - New Jersey - Right to Know Hazardous Substance 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

trans-2-Butene (624-64-6)

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

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

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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.

Full text of H-phrases:

| | |
|-------------------|--|
| 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 |
| Carc. 1B | Carcinogenicity Category 1B |
| Compressed gas | Gases under pressure Compressed gas |
| Eye Irrit. 2A | Serious eye damage/eye irritation Category 2A |
| 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 |
| Muta. 2 | Germ cell mutagenicity Category 2 |
| Skin Irrit. 2 | Skin corrosion/irritation 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 |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |
| H336 | May cause drowsiness or dizziness |
| H340 | May cause genetic defects (Inhalation) |
| H341 | Suspected of causing genetic defects |
| H350 | May cause cancer |
| 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.