Safety Data Sheet 50009 MSA

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

1.1 Product identifier

Product Name **Non-Flammable Gas Mixture Containing One or More of the Following Components in a Ntrogen Balance Gas: Oxygen, 0 23.5%; Methane, 0-2.5%; Hydrogen, 0-2.0%; Carbon Monoxide, 0.00001-1.0%**

MSA P/N

459944, 461768, 461769, 473180, 477888, 478191, 710565, 710566, 710882, 806255, 806734, 809241, 809242, 809243, 813718, 814350, 814491, 814497, 814978, 10010162, 10027938, 10028020, 10028048, 10028050, 10028052, 10028054, 10028056, 10040791, 10048789, 10048981, 10049056, 10125948, 10125948, 10150609, 10150618

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

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

1.3 Details of the supplier of the safety data sheet

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

U.S. Supplier
Mine Safety Appliances Company
Cranberry Township Pennsylvania
U.S.A. 16066
1-800-MSA-2222
www.msanet.com/prism

Telephone (Technical) 713-896-2896
800-819-1704

1.4 Emergency telephone number

Manufacturer 800-424-9300 - CHEMTREC

+1 703-527-3887 - Outside United States

Section 2: Hazards Identification

EU/EEC

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

2.1 Classification of the substance or mixture

CLP
- Compressed Gas - H280
  Reproductive Toxicity 1A - H360D
  Specific Target Organ Toxicity Repeated Exposure 2 - H373

DSD/DPD
- Harmful (Xn)
  Substances Toxic To Reproduction - Category 1
  R20, R48/20, R61

2.2 Label Elements

CLP **DANGER**

Hazard statements . H280 - Contains gas under pressure; may explode if heated
H360D - May damage the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention . P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe gas.
P281 - Use personal protective equipment as required.

Response . P308+P313 - IF exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.

Storage/Disposal . P403 - Store in a well-ventilated place.
P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases . R20 - Harmful by inhalation.
R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R61 - May cause harm to the unborn child.

Safety phrases . S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

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

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

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 . Compressed Gas - H280
Reproductive Toxicity 1A - H360
Simple Asphyxiant

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements . Contains gas under pressure; may explode if heated - H280
May damage fertility or the unborn child. - H360
May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention . Obtain special instructions before use. - P201
Do not handle until all safety precautions have been read and understood. - P202
Do not breathe gas. - P260
Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response . IF exposed or concerned: Get medical advice/attention. - P308+P313

Storage/Disposal . Store in a well-ventilated place. - P403
Store locked up. - P405
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012

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

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

. Compressed Gas - A
Very Toxic - D1A
Other Toxic Effects - D2A

2.2 Label elements

WHMIS

. Compressed Gas - A
Very Toxic - D1A
Other Toxic Effects - D2A

2.3 Other hazards

WHMIS

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

2.4 Other information

NFPA

Section 3 - Composition/Information on Ingredients

3.1 Substances

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

3.2 Mixtures

Composition				
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**
Oxygen	**CAS:**7782-44-7 **EINECS:**231-956-9	0% TO 23.5%	NDA	**EU DSD/DPD:** Annex VI, Table 3.2 - O; R8 **EU CLP:** Annex VI, Table 3.1 - Ox. Gas 1, H270; Press. Gas - Comp., H280 **OSHA HCS 2012:** Ox. Gas 1; Press Gas. - Comp.
Methane	**CAS:**74-82-8 **EINECS:**200-812-7	0% TO 2.5%	NDA	**EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12 **EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas - Comp., H280 **OSHA HCS 2012:** Flam. Gas 1; Press. Gas - Comp; Simp. Asphyx
Hydrogen	**CAS:**1333-74-0 **EINECS:**215-605-7	0% TO 2%	NDA	**EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12 **EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas - Comp., H280 **OSHA HCS 2012:** Flam. Gas 1, Press. Gas - Comp.
Carbon monoxide	**CAS:**630-08-0 **EINECS:**211-128-3	0.00001% TO 1%	Inhalation-Rat LC50 • 1807 ppm 4 Hour(s)	**EU DSD/DPD:** Annex VI, Table 3.2 - F+; R12 T; R23-48/23 Repr.Cat.1; R61 **EU CLP:** Annex VI, Table 3.1 - Flam. Gas 1, H220; Press. Gas - Comp., H280; Repr. 1A, H360D; Acute Tox. 3 *, H331; STOT RE 1, H372 **OSHA HCS 2012:** Repr 1A; Acute Tox 3 (inhl); Flam. Gas 1; Press Gas
Nitrogen	**CAS:**7727-37-9 **EINECS:**231-783-9	Balance	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Self Classified - Press. Gas - Comp, H280 **OSHA HCS 2012:** Press. Gas - Comp.; Simp. Asphyx.

See Section 11 for Toxicological Information. See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

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

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

Eye
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If irritation develops and persists, get medical attention.

Ingestion
- Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. A potential health hazard associated with this gas is anoxia.

4.4 Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self -Contained Breathing

Apparatus must be worn. Victim(s) who experience any adverse effect after over - exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media
- None known.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
  Ruptured cylinders may rocket.

Hazardous Combustion Products
- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Wear positive pressure self-contained breathing apparatus (SCBA).
  Move containers from fire area if you can do it without risk.
  FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
  FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
  FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
  FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
  FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

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

Emergency Procedures
- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Stop leak if you can do it without risk.
  Do not direct water at spill or source of leak.
  Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
  If possible, turn leaking containers so that gas escapes rather than liquid.
  Isolate area until gas has dispersed.
  Ventilate the area.

6.4 Reference to other sections

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

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked -over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked -over.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**China**	**China Highly Toxic Goods**
Methane (74-82-8)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	1000 ppm TWA	Not established	Not established	Not established
Carbon monoxide (630-08-0)	Ceilings	Not established	Not established	Not established	20 mg/m3 Ceiling [MAC] (high altitude area, 2000-3000m); 15 mg/m3 Ceiling [MAC] (high altitude area, >3000m)	Not established
	STELs	Not established	Not established	200 ppm STEV; 230 mg/m3 STEV	30 mg/m3 STEL (not in high altitude area)	30 mg/m3 STEL (not in high altitude area)
	TWAs	25 ppm TWA	25 ppm TWA	35 ppm TWAEV; 40 mg/m3 TWAEV	20 mg/m3 TWA (not in high altitude area)	20 mg/m3 TWA (not in high altitude area)

Exposure Limits/Guidelines (Con't.)						
	Result	**France**	**Germany DFG**	**Germany TRGS**	**Ireland**	**Israel**
Methane (74-82-8)	TWAs	Not established	Not established	Not established	1000 ppm TWA	1000 ppm TWA (gas, listed under Aliphatic hydrocarbon gases: Alkane C1-4)
				30 ppm TWA AGW (The risk of damage to the embryo or fetus cannot be excluded even when AGW and BGW		

Carbon monoxide (630-08-0)	TWAs	50 ppm TWA [VME]; 55 mg/m3 TWA [VME]	Not established	values are observed, exposure factor 2); 35 mg/m3 TWA AGW (The risk of damage to the embryo or fetus cannot be excluded even when AGW and BGW values are observed, exposure factor 2)	20 ppm TWA; 23 mg/m3 TWA	25 ppm TWA
	STELs	Not established	Not established	Not established	100 ppm STEL; 115 mg/m3 STEL	Not established
	Ceilings	Not established	60 ppm Peak; 70 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	30 ppm TWA MAK; 35 mg/m3 TWA MAK	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	NIOSH	OSHA	Portugal	Spain	Sweden
Methane (74-82-8)	TWAs	Not established	Not established	1000 ppm TWA [VLE-MP]	1000 ppm TWA [VLA-ED]	Not established
Carbon monoxide (630-08-0)	TWAs	35 ppm TWA; 40 mg/m3 TWA	50 ppm TWA; 55 mg/m3 TWA	25 ppm TWA [VLE-MP]	25 ppm TWA [VLA-ED]; 29 mg/m3 TWA [VLA-ED]	20 ppm LLV (regulated under exhaust fumes, listed under Exhaust fumes); 25 mg/m3 LLV (regulated under exhaust fumes, listed under Exhaust fumes); 35 ppm LLV; 40 mg/m3 LLV
	Biological Limit Values (BLV)	Not established	Not established	Not established	3.5 % of Carboxyhemoglobin in total hemoglobin blood end of shift Carboxyhemoglobin (2,F,I); 20 ppm alveolar air end of shift CO end-cut of exhaled air (2,F,I)	Not established
	STELs	Not established	Not established	Not established	Not established	100 ppm STV; 120 mg/m3 STV
	Ceilings	200 ppm Ceiling; 229 mg/m3 Ceiling	Not established	Not established	Not established	Not established

Exposure Control Notations

Portugal

•Hydrogen (1333-74-0): **Simple Asphyxiants:** (Simple Asphyxiant) I **Simple Asphyxiants:** (Simple Asphyxiant)

France

•Carbon monoxide (630-08-0): **Reproductive Toxins:** (Reproductive Toxin category 1)

Ireland

•Hydrogen (1333-74-0): **Simple Asphyxiants:** (Asphyxiant) I **Simple Asphyxiants:** (Asphyxiant) I **Simple Asphyxiants:** (Asphyxiant) I **Substances with Potential Chronic Health Effects:** (Repr1A)

Spain

•Carbon monoxide (630-08-0): **Reproductive Toxins:** (known reproductive toxins with classification from human data) I **Simple Asphyxiants:** (simple asphyxiant) I **Simple Asphyxiants:** (simple asphyxiant)

Sweden

•Carbon monoxide (630-08-0): **Reproductive Toxins:** (Causes reproductive disturbances)

Germany DFG

•Carbon monoxide (630-08-0): **Pregnancy:** (risk to embryo/fetus probable)

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear leather gloves when handling cylinders.

Environmental Exposure Controls

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

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

LLV = Limit Level Value is the exposure limit for 8-hour work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

STEV = Short Term Exposure Value

TWAEV = Time-Weighted Average Exposure Value

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with no odor.
Color	Colorless	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			
Boiling Point	-195.8 C(-320.44 F) (Nitrogen)	Melting Point	-210 C(-346 F) (Nitrogen)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	0.906 Water=1 (Nitrogen)	Density	0.072 lb(s)/ft3 @ 0 C(32 F)
Water Solubility	Data lacking	Viscosity	Data lacking
Explosive Properties	Not explosive.	Oxidizing Properties:	Not an oxidizer.
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Not flammable.		

Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Excess heat.

10.5 Incompatible materials

- Hydrogen is incompatible with strong oxidizers (i.e. chlorine, bromine, pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride). Nitrogen reacts with Li, Nd, and Ti at high temperatures.

10.6 Hazardous decomposition products

- None

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Component Name	CAS	Data
Carbon monoxide (0.00001% TO 1%)	630-08-0	**Acute Toxicity:** ihl-rat LC50:1807 ppm/4H; **Reproductive:** ihl-rat TCLo:150 ppm (0-20D preg)
Oxygen (0% TO 23.5%)	7782-44-7	**Reproductive:** ihl-rat TCLo:10 pph/9H (22D preg)

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Dermal - Data lacking; Acute Toxicity - Inhalation - Data lacking; Acute Toxicity - Oral - Data lacking **OSHA HCS 2012** • Acute Toxicity - Dermal - Data lacking; Acute Toxicity - Inhalation - Data lacking; Acute Toxicity - Oral - Data lacking
Aspiration Hazard	**EU/CLP** • Not relevant **OSHA HCS 2012** • Not relevant
Carcinogenicity	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Germ Cell Mutagenicity	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Skin corrosion/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Skin sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking

STOT-RE	**EU/CLP** • Specific Target Organ Toxicity Repeated Exposure 2 **OSHA HCS 2012** • Data lacking
STOT-SE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Toxicity for Reproduction	**EU/CLP** • Toxic to Reproduction 1A **OSHA HCS 2012** • Toxic to Reproduction 1A
Respiratory sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Serious eye damage/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking

Route(s) of entry/exposure
- Inhalation, Skin, Eye

Potential Health Effects

Inhalation

Acute (Immediate)
- Inhalation over-exposures to atmospheres containing more than the Threshold Limit Value of Carbon Monoxide (25 ppm), another component of this gas mixture, can result in serious health consequences. Carbon Monoxide is classified as a chemical asphyxiant, producing a toxic action by combining with the hemoglobin of the blood and replacing the available oxygen. Through this replacement, the body is deprived of the required oxygen, and asphyxiation occurs. Since the affinity of Carbon Monoxide for hemoglobin is about 200-300 times that of oxygen, only a small amount of Carbon Monoxide will cause a toxic reaction to occur. Carbon Monoxide exposures in excess of 50 ppm will produce symptoms of poisoning if breathed for a sufficiently long time. If this gas mixture is released in a small, poorly ventilated area (i.e. an enclosed or confined space), symptoms which may develop include the following: bright red lips and fingernails, headache progessing to heart palpitations, staggering, confusion, nausea, dizziness and unconsciousness with higher concentration exposures. For exposures greater than 2500 ppm there is potential for collapse and death before warning symptoms are experienced.

Chronic (Delayed)
- No data available

Skin

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

Chronic (Delayed)
- No data available

Eye

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

Chronic (Delayed)
- No data available

Ingestion

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

Chronic (Delayed)
- No data available

Reproductive Effects
- The Carbon Monoxide component of this gas mixture can cause teratogenic effects in humans. Severe exposure to Carbon Monoxide during pregnancy has caused adverse effects and the death of the fetus. In general, maternal symptoms are an indicator of the potential risk to the fetus since Carbon Monoxide is toxic to the mother before it is toxic to the fetus.

11.2 Other information

- The transport of oxygen in blood ensured by haemoglobin will be slowed down because carboxyhaemoglobin instead of oxyhaemoglobin will be formed in lungs. The affinity of heamoglobin for carbon monoxide is 200 to 300 higher then for oxygen. All related health hazards wil be caused by slow respiration of cells which will damage the central nervous system, collapse the cardiovascular system, cause kidney insufficiency, coma, etc.

Key to abbreviations

LC = Lethal Concentration
TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1956	Compressed gas, n.o.s (Oxygen, Nitrogen)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Oxygen, Nitrogen)	2.2	NDA	Potential Marine Pollutant
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S. (Oxygen, Nitrogen)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gas, n.o.s. (Oxygen, Nitrogen)	2.2	NDA	NDA

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

14.7 Transport in bulk according to Annex II of
- Not relevant.

MARPOL 73/78 and the IBC Code

Section 15 - Regulatory Information

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

SARA Hazard Classifications . Acute, Pressure(Sudden Release of)

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Carbon monoxide	630-08-0	Yes	Yes	Yes
Hydrogen	1333-74-0	Yes	Yes	Yes
Methane	74-82-8	Yes	Yes	Yes
Nitrogen	7727-37-9	Yes	Yes	Yes
Oxygen	7782-44-7	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Carbon monoxide	630-08-0	Yes	No	Yes	Yes	No
Hydrogen	1333-74-0	Yes	No	Yes	Yes	No
Methane	74-82-8	Yes	No	Yes	Yes	No
Nitrogen	7727-37-9	Yes	No	Yes	Yes	No
Oxygen	7782-44-7	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Carbon monoxide	630-08-0	Yes
Hydrogen	1333-74-0	Yes
Methane	74-82-8	Yes
Nitrogen	7727-37-9	Yes
Oxygen	7782-44-7	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Carbon monoxide	630-08-0	A, B1, D1A, D2A
• Hydrogen	1333-74-0	A, B1
• Oxygen	7782-44-7	A, C
• Nitrogen	7727-37-9	A
• Methane	74-82-8	A, B1

Canada - WHMIS - Ingredient Disclosure List

• Carbon monoxide	630-08-0	0.1 %
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Environment

Canada - 2004 NPRI (National Pollutant Release Inventory)

• Carbon monoxide	630-08-0	Part 4 Substance
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Canada - 2005 NPRI (National Pollutant Release Inventory)

• Carbon monoxide	630-08-0	Part 4 Substance
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Canada - CEPA - Greenhouse Gases Subject to Mandatory Reporting

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	21 GWP

Canada - CEPA - Priority Substances List

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Canada - DWQ (Drinking Water Quality) - IMACs

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Other

Canada - Accelerated Reduction/Elimination of Toxics (ARET)

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Canada New Brunswick

Environment

Canada - New Brunswick - Ozone Depleting Substances - Schedule A

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Canada - New Brunswick - Ozone Depleting Substances - Schedule B

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

China - Dangerous Goods List

• Carbon monoxide	630-08-0	
• Hydrogen	1333-74-0	(compressed or refrigerated liquid)
• Oxygen	7782-44-7	(compressed or refrigerated liquid)
• Nitrogen	7727-37-9	(compressed or refrigerated liquid)
• Methane	74-82-8	(compressed or refrigerated liquid)

China - Export Control List - Part I Chemicals

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

• Methane	74-82-8	Not Listed

Europe

Other

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

• Carbon monoxide	630-08-0	F+; R12 T; R23-48/23 Repr.Cat.1; R61
• Hydrogen	1333-74-0	F+; R12
• Oxygen	7782-44-7	O; R8
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	F+; R12

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	F+ T R:61-12-23-48/23 S:53-45
• Hydrogen	1333-74-0	F+ R:12 S:(2)-9-16-33
• Oxygen	7782-44-7	O R:8 S:(2)-17
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	F+ R:12 S:(2)-9-16-33

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

• Carbon monoxide	630-08-0	E
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	S:53-45
• Hydrogen	1333-74-0	S:(2)-9-16-33
• Oxygen	7782-44-7	S:(2)-17
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	S:(2)-9-16-33

Germany

Environment

Germany - TA Luft - Types and Classes

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	ID Number 741, not considered hazardous to water

• Oxygen	7782-44-7	ID Number 743, not considered hazardous to water
• Nitrogen	7727-37-9	ID Number 1351, not considered hazardous to water
• Methane	74-82-8	ID Number 1343, not considered hazardous to water

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

• Carbon monoxide	630-08-0	ID Number 257, hazard class 1 - low hazard to waters
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

United Kingdom

Environment

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

• Carbon monoxide	630-08-0	100000 kg
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	10000 kg

United Kingdom - Substances Contained in Dangerous Substances or Preparations

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed

• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Other

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

United States

Labor

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

Environment

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed

• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

United States - California

Environment

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	developmental toxicity, initial date 7/1/89
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

United States - Pennsylvania

Labor

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

• Carbon monoxide	630-08-0	
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Hydrogen	1333-74-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

- WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H220 - Extremely flammable gas
  H270 - May cause or intensify fire; oxidizer
  H331 - Toxic if inhaled
  H372 - Causes damage to organs through prolonged or repeated exposure.

R8 - Contact with combustible material may cause fire.
R12 - Extremely flammable.
R23 - Toxic by inhalation.
R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Last Revision Date
- 23/October/2015

Preparation Date
- 10/January/2014

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

Key to abbreviations

NDA = No Data Available