

Safety Data Sheet



Section 1: Identification

Product identifier

Product Name • **Pentane (0-0.75%), Carbon Monoxide (0.0005-1.0%), Oxygen (0-23.5%), Carbon Dioxide (0.0005-50%) in Nitrogen [4 Components in Nitrogen]**

Product Code • MSDS No.: 50058

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

Recommended use • Calibration Gas

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

Telephone (Technical) • 713-896-2896

Telephone (Technical) • 800-819-1704

Emergency telephone number

Manufacturer • 800-424-9300 - CHEMTREC

Manufacturer • +1 703-527-3887 - Outside United States

Section 2: Hazard Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Compressed Gas - H280
Reproductive Toxicity 1A - H360

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

Precautionary statements

- Prevention** • Obtain special instructions before use. - P201
Do not handle until all safety precautions have been read and understood. - P202
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

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

Classification of the substance or mixture

WHMIS

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

Label elements

WHMIS



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

Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Nitrogen	CAS:7727-37-9	24.75% TO 99.999%	NDA	OSHA HCS 2012: Press. Gas - Comp.; Simple Asphyxiant	Balance
Oxygen	CAS:7782-44-7	0% TO 23.5%	NDA	OSHA HCS 2012: Ox. Gas 1; Press. Gas. - Comp.	NDA
Carbon dioxide	CAS:124-38-9	0.0005% TO 50%	Inhalation-Rat LC50 • 470000 ppm 30 Minute(s)	OSHA HCS 2012: Press. Gas - Comp.; Simple Asphyxiant	NDA
Carbon monoxide	CAS:630-08-0	0.0005% TO 1%	Inhalation-Rat LC50 • 1807 ppm 4 Hour(s)	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Comp.; Repr. 1A; Acute Tox. 3 (inhl)	NDA

Pentane	CAS:109-66-0	0% TO 0.75%	Inhalation-Rat LC50 • 364 g/m ³ 4 Hour(s) Ingestion/Oral-Rat LD50 • >2000 mg/kg	OSHA HCS 2012: Flam. Liq. 1; Asp. Tox. 1; Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Narc.	NDA
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Section 4: First-Aid Measures

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.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

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.

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: Fire-Fighting Measures

Extinguishing media

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

Unsuitable Extinguishing Media • No data available

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

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

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)

Environmental precautions

- No special environmental precautions necessary.

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.
Isolate area until gas has dispersed.
Ventilate the area.

Section 7 - Handling and Storage

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.

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.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Ontario	Canada Quebec	China	China Highly Toxic Goods
	STELs	Not established	Not established	Not established	1000 mg/m3 STEL (listed under Pentane	Not established

Pentane (109-66-0)					(all isomers))	
	TWAs	600 ppm TWA (listed under Pentane, all isomers)	600 ppm TWA	120 ppm TWAEV; 350 mg/m3 TWAEV	500 mg/m3 TWA (listed under Pentane (all isomers))	Not established
Carbon dioxide (124-38-9)	STELs	30000 ppm STEL	30000 ppm STEL	30000 ppm STEV; 54000 mg/m3 STEV	18000 mg/m3 STEL	Not established
	TWAs	5000 ppm TWA	5000 ppm TWA	5000 ppm TWAEV; 9000 mg/m3 TWAEV	9000 mg/m3 TWA	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	Europe	France	Germany DFG	Germany TRGS	Ireland
Pentane (109-66-0)	TWAs	1000 ppm TWA; 3000 mg/m3 TWA	1000 ppm TWA [VME] (restrictive limit); 3000 mg/m3 TWA [VME] (restrictive limit)	Not established	1000 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 3000 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	1000 ppm TWA; 3000 mg/m3 TWA
	STELs	Not established	Not established	Not established	Not established	750 ppm STEL; 2250 mg/m3 STEL
	Ceilings	Not established	Not established	2000 ppm Peak (listed under Pentane); 6000 mg/m3 Peak (listed under Pentane)	Not established	Not established
	MAKs	Not established	Not established	1000 ppm TWA MAK; 3000 mg/m3 TWA MAK	Not established	Not established
Carbon dioxide (124-38-9)	TWAs	5000 ppm TWA; 9000 mg/m3 TWA	5000 ppm TWA [VME] (indicative limit); 9000 mg/m3 TWA [VME] (indicative limit)	Not established	5000 ppm TWA AGW (exposure factor 2); 9100 mg/m3 TWA AGW (exposure factor 2)	5000 ppm TWA; 9000 mg/m3 TWA
	Ceilings	Not established	Not established	10000 ppm Peak; 18200 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	5000 ppm TWA MAK; 9100 mg/m3 TWA MAK	Not established	Not established

Carbon monoxide (630-08-0)	TWAs	Not established	50 ppm TWA [VME]; 55 mg/m3 TWA [VME]	Not established	30 ppm 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); 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
	STELs	Not established	Not established	Not established	Not established	100 ppm STEL; 115 mg/m3 STEL
	Ceilings	Not established	Not established	60 ppm Peak; 70 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	30 ppm TWA MAK; 35 mg/m3 TWA MAK	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Israel	Italy	NIOSH	OSHA	OSHA Vacated
Pentane (109-66-0)	TWAs	600 ppm TWA (listed under Pentane, all isomers)	667 ppm TWA; 2000 mg/m3 TWA	120 ppm TWA; 350 mg/m3 TWA	1000 ppm TWA; 2950 mg/m3 TWA	600 ppm TWA; 1800 mg/m3 TWA
	Ceilings	Not established	Not established	610 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established
	STELs	Not established	Not established	Not established	Not established	750 ppm STEL; 2250 mg/m3 STEL
Carbon dioxide (124-38-9)	TWAs	5000 ppm TWA	5000 ppm TWA; 9000 mg/m3 TWA	5000 ppm TWA; 9000 mg/m3 TWA	5000 ppm TWA; 9000 mg/m3 TWA	10000 ppm TWA; 18000 mg/m3 TWA
	STELs	30000 ppm STEL	Not established	30000 ppm STEL; 54000 mg/m3 STEL	Not established	30000 ppm STEL; 54000 mg/m3 STEL
Carbon monoxide (630-08-0)	TWAs	25 ppm TWA	Not established	35 ppm TWA; 40 mg/m3 TWA	50 ppm TWA; 55 mg/m3 TWA	35 ppm TWA; 40 mg/m3 TWA
	Ceilings	Not established	Not established	200 ppm Ceiling; 229 mg/m3 Ceiling	Not established	200 ppm Ceiling; 229 mg/m3 Ceiling

Exposure Limits/Guidelines (Con't.)

	Result	Portugal	Spain	Sweden
Pentane (109-66-0)	TWAs	600 ppm TWA [VLE- MP]	1000 ppm TWA [VLA- ED] (indicative limit value); 3000 mg/m3 TWA [VLA-ED] (indicative limit value)	600 ppm LLV; 1800 mg/m3 LLV
	STELs	Not established	Not established	750 ppm STV; 2000 mg/m3 STV
Carbon dioxide	STELs	30000 ppm STEL [VLE- CD]	Not established	10000 ppm STV; 18000 mg/m3 STV
			5000 ppm TWA [VLA- ED]	

(124-38-9)	TWAs	5000 ppm TWA [VLE-MP]	ED] (indicative limit value); 9150 mg/m3 TWA [VLA-ED] (indicative limit value)	5000 ppm LLV; 9000 mg/m3 LLV
Carbon monoxide (630-08-0)	TWAs	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	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	100 ppm STV; 120 mg/m3 STV

Exposure Control Notations

Portugal

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple Asphyxiant)

France

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

Ireland

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Asphyxiant)
- Carbon monoxide (630-08-0): **Substances with Potential Chronic Health Effects:** (Repr1A)

Spain

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)
- Carbon monoxide (630-08-0): **Reproductive Toxins:** (known reproductive toxins with classification from human data)

Sweden

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

Germany DFG

- Carbon monoxide (630-08-0): **Pregnancy:** (risk to embryo/fetus probable)
- Pentane (109-66-0): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

Exposure Limits Supplemental

Israel

- Carbon monoxide (630-08-0): **Biological Markers of Occupational Exposure:** (3.5 % of hemoglobin Medium: blood Time: end of shift Parameter: Carboxyhemoglobin (background, nonspecific); 20 ppm Medium: end-exhaled air Time: end of shift Parameter: Carbon monoxide (background, nonspecific))

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

Eye/Face	respirator if exposure limits are exceeded or symptoms are experienced.
Skin/Body	- Wear safety glasses. - 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

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

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas mixture which is odorless or has a sharp odor, depending on the amount of Carbon Dioxide in this mixture.
Color	Colorless	Odor	Odorless or a sharp odor, depending on the amount of Carbon Dioxide in this mixture.
Odor Threshold	Not relevant		
General Properties			
Boiling Point	-195.8 C(-320.44 F) Nitrogen	Melting Point	210 C(410 F) Nitrogen
Decomposition Temperature	Data lacking	pH	Not relevant
Specific Gravity/Relative Density	0.906 Water=1 @ 21.1 C(69.98 F) Nitrogen	Density	0.072 lb(s)/ft ³ @ 0 C(32 F) Nitrogen
Water Solubility	0.023 @ 0 C(32 F) (vol/vol) Nitrogen	Viscosity	Not relevant
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not flammable.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- Excess heat.

Incompatible materials

- No data available

Hazardous decomposition products

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

Section 11 - Toxicological Information

Information on toxicological effects

Components		
Oxygen (0% TO 23.5%)	7782-44-7	Reproductive: Inhalation-Rat TCLo • 10 pph 9 Hour(s)(22D preg); <i>Reproductive Effects:Specific Developmental Abnormalities:Respiratory system</i> ; <i>Reproductive Effects:Effects on Newborn:Physical</i>
Carbon dioxide (0.0005% TO 50%)	124-38-9	Acute Toxicity: Inhalation-Rat LC50 • 470000 ppm 30 Minute(s); Reproductive: Inhalation-Rat TCLo • 6 pph 24 Hour(s)(10D preg); <i>Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system</i> ; <i>Reproductive Effects:Specific Developmental Abnormalities:Cardiovascular (circulatory) system</i> ; <i>Reproductive Effects:Specific Developmental Abnormalities:Respiratory system</i>
Carbon monoxide (0.0005% TO 1%)	630-08-0	Acute Toxicity: Inhalation-Rat LC50 • 1807 ppm 4 Hour(s); Reproductive: Inhalation-Rat TCLo • 150 ppm (0-20D preg); <i>Reproductive Effects:Maternal Effects:Other effects</i> ; <i>Reproductive Effects:Effects on Newborn:Biochemical and metabolic</i> ; <i>Reproductive Effects:Effects on Newborn:Physical</i>
Pentane (0% TO 0.75%)	109-66-0	Acute Toxicity: Ingestion/Oral-Rat LD50 • >2000 mg/kg; Inhalation-Rat LC50 • 364 g/m ³ 4 Hour(s)

GHS Properties	Classification
Acute toxicity	OSHA HCS 2012 • Classification criteria not met
Aspiration Hazard	OSHA HCS 2012 • Classification criteria not met
Carcinogenicity	OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	OSHA HCS 2012 • Classification criteria not met
Skin sensitization	OSHA HCS 2012 • Classification criteria not met
STOT-RE	OSHA HCS 2012 • Classification criteria not met
STOT-SE	OSHA HCS 2012 • Classification criteria not met
Toxicity for Reproduction	OSHA HCS 2012 • Toxic to Reproduction 1A
Respiratory sensitization	OSHA HCS 2012 • Classification criteria not met
Serious eye damage/Irritation	OSHA HCS 2012 • Classification criteria not met

Potential Health Effects

Inhalation

Acute (Immediate)	Inhalation of carbon dioxide can increase respiration and heart rate.
Chronic (Delayed)	No data available
Skin	
Acute (Immediate)	Under normal conditions of use, no health effects are expected.
Chronic (Delayed)	Under normal conditions of use, no health effects are expected.
Eye	
Acute (Immediate)	Under normal conditions of use, no health effects are expected.
Chronic (Delayed)	Under normal conditions of use, no health effects are expected.
Ingestion	
Acute (Immediate)	Ingestion is not anticipated to be a likely route of exposure to this product.
Chronic (Delayed)	Ingestion is not anticipated to be a likely route of exposure to this product.
Carcinogenic Effects	The components of this material are not found on the following lists: FEDERAL OSHA Z LIST, NTP and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.
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.

Key to abbreviations

LC = Lethal Concentration

TC = Toxic Concentration

TD = Toxic Dose

Section 12 - Ecological Information

Toxicity

- Material data lacking.

Persistence and degradability

- Material data lacking.

Bioaccumulative potential

- Material data lacking.

Mobility in Soil

- Material data lacking.

Results of PBT and vPvB assessment

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

Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

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

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN1956	Compressed gas, n.o.s. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gas, n.o.s. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA

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.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications

- Pressure(Sudden Release of), Acute

State Right To Know				
Component	CAS	MA	NJ	PA
Carbon dioxide	124-38-9	Yes	Yes	Yes
Carbon monoxide	630-08-0	Yes	Yes	Yes
Nitrogen	7727-37-9	Yes	Yes	Yes
Oxygen	7782-44-7	Yes	Yes	Yes
Pentane	109-66-0	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Carbon dioxide	124-38-9	Yes	No	Yes	Yes	No
Carbon monoxide	630-08-0	Yes	No	Yes	Yes	No
Nitrogen	7727-37-9	Yes	No	Yes	Yes	No
Oxygen	7782-44-7	Yes	No	Yes	Yes	No
Pentane	109-66-0	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
Carbon dioxide	124-38-9	Yes
Carbon monoxide	630-08-0	Yes

Nitrogen	7727-37-9	Yes
Oxygen	7782-44-7	Yes
Pentane	109-66-0	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Carbon monoxide	630-08-0	A, B1, D1A, D2A
• Pentane	109-66-0	B2
• Oxygen	7782-44-7	A, C
• Carbon dioxide	124-38-9	A; Uncontrolled product according to WHMIS classification criteria (solid)
• Nitrogen	7727-37-9	A

Canada - WHMIS - Ingredient Disclosure List

• Carbon monoxide	630-08-0	0.1 %
• Pentane	109-66-0	1 %
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	1 %
• Nitrogen	7727-37-9	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Dangerous Goods List

• Carbon monoxide	630-08-0	
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	(compressed or refrigerated liquid)
• Carbon dioxide	124-38-9	(including solid or refrigerated liquid)
• Nitrogen	7727-37-9	(compressed or refrigerated liquid)

China - Export Control List - Part I Chemicals

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	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
• Pentane	109-66-0	F+; R12 N; R51-53 Xn; R65 R66 R67
• Oxygen	7782-44-7	O; R8
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	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
• Pentane	109-66-0	F+ Xn N R:12-51/53-65-66-67 S:(2)-9-16-29-33-61-62
• Oxygen	7782-44-7	O R:8 S:(2)-17
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	E
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• Pentane	109-66-0	C
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases		
• Carbon monoxide	630-08-0	S:53-45
• Pentane	109-66-0	S:(2)-9-16-29-33-61-62
• Oxygen	7782-44-7	S:(2)-17
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	ID Number 743, not considered hazardous to water
• Carbon dioxide	124-38-9	ID Number 256, not considered hazardous to water
• Nitrogen	7727-37-9	ID Number 1351, 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
• Pentane	109-66-0	ID Number 452, hazard class 2 - hazard to waters
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed

- Nitrogen

7727-37-9

Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

United Kingdom

Environment

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

• Carbon monoxide	630-08-0	100000 kg
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	10000000 kg (qualifying renewable fuel sources are reportable when the total amount of CO2 released is above 10 million kg); 10000000 kg
• Nitrogen	7727-37-9	Not Listed

Other

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

United States

Labor

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed

• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

United States - California

Environment

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	developmental toxicity, initial date 7/1/89
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

United States - Pennsylvania

Labor

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

• Carbon monoxide	630-08-0	
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Carbon monoxide	630-08-0	Not Listed
• Pentane	109-66-0	Not Listed
• Oxygen	7782-44-7	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Nitrogen	7727-37-9	Not Listed

Section 16 - Other Information**Last Revision Date**

- 16/October/2014

Preparation Date

- 16/October/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