Safety Data Sheet

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

1.1 Product identifier

Product Name • **Carbon Monoxide (9 - 13%), Hydrogen (3 - 4%), Argon (Balance)**

Product Code • 90106

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

Relevant identified use(s) • Calibration standard

1.3 Details of the supplier of the safety data sheet

Manufacturer • Air Liquide

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

Telephone (Technical) • 713-896-2896

Telephone (Technical) • 800-819-1704

1.4 Emergency telephone number

Manufacturer • 800-424-9300 - CHEMTREC

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

Section 2: Hazards Identification

EU/EEC

According to EU Directive 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Flammable Gases 1 - H220
Compressed Gas - H280
Acute Toxicity Inhalation 4 - H332
Reproductive Toxicity 1A - H360D
Specific Target Organ Toxicity Repeated Exposure 1 - H372

DSD/DPD • Extremely Flammable (F+)
Toxic (T)
Substances Toxic To Reproduction - Category 1
R12, R23, R48/23, R61

2.2 Label Elements

CLP

DANGER

Hazard statements
- H220 - Extremely flammable gas
- H280 - Contains gas under pressure; may explode if heated
- H332 - Harmful if inhaled
- H360D - May damage the unborn child.
- H372 - Causes 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.
- P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
- P260 - Do not breathe gas.
- P264 - Wash thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P271 - Use only outdoors or in a well-ventilated area.
- P281 - Use personal protective equipment as required.

Response
- P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P381 - Eliminate all ignition sources if safe to do so.
- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P314 - Get medical advice/attention if you feel unwell.
- P312 - Call a POISON CENTER or doctor/physician 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
- R12 - Extremely flammable.
- R23 - Toxic by inhalation.
- R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.
- R61 - May cause harm to the unborn child.

Safety phrases
- S9 - Keep container in a well ventilated place
- S16 - Keep away from sources of ignition - No Smoking.
- S37 - Wear suitable gloves.
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

CLP
- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD
- According to European Directive 1999/45/EC this preparation is considered dangerous.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012
- Flammable Gases 1 - H220
  Compressed Gas - H280
  Acute Toxicity Inhalation 4 - H332
  Reproductive Toxicity 1A - H360

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements

- Extremely flammable gas - H220
  Contains gas under pressure; may explode if heated - H280
  Harmful if inhaled - H332
  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
  Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
  Avoid breathing gas. - P261
  Use only outdoors or in a well-ventilated area. - P271
  Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response

- Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
  Eliminate all ignition sources if safe to do so. - P381
  IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
  IF exposed or concerned: Get medical advice/attention. - P308+P313
  Call a POISON CENTER or doctor/physician if you feel unwell. - P312

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
  Flammable Gases - B1
  Very Toxic - D1A
  Other Toxic Effects - D2A

2.2 Label elements

WHMIS

- Compressed Gas - A
  Flammable Gases - B1
  Very Toxic - D1A
  Other Toxic Effects - D2A

2.3 Other hazards

WHMIS

- 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**
Carbon monoxide	**CAS:**630-08-0 **EC Number:**211-128-3	9% TO 13%	Inhalation-Rat LC50 • 1807 ppm 4 Hour(s)	**EU DSD/DPD:** Annex I: F+, R12; Repr. Cat. 1, R61; T, R23-48/23 **EU CLP:** Annex VI: Flam. Gas 1, H220; Press. Gas - Comp., H280; Repr. 1A, H360D; Acute Tox. 3 *, H331; STOT RE 1, H372 **OSHA HCS 2012:** Flam. Gas 1; Press. Gas - Comp.; Repr 1A; Acute Tox. 3 (Inhl)
Hydrogen	**CAS:**1333-74-0 **EC Number:**215-605-7	3% TO 4%	NDA	**EU DSD/DPD:** Annex I: F+; R12 **EU CLP:** Annex VI: Flam. Gas 1, H220; Press. Gas - Comp, H280 **OSHA HCS 2012:** Flam. Gas 1; Press. Gas - Comp.
Argon	**CAS:**7440-37-1 **EC Number:**231-147-0	Balance	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Self Classified: Press. Gas - Comp., H280 **OSHA HCS 2012:** Press. Gas - Comp.; Simple Asphyx.

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

- After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of (to be specified by manufacturer)

Eye

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Get medical attention if symptoms occur. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.

Ingestion

- As this product is a gas, refer to the inhalation section. First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

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

4.4 Other information

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

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media

- SMALL FIRES: Dry chemical or CO2.
  LARGE FIRES: Water spray or fog.

Unsuitable Extinguishing Media

- No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

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

Hazardous Combustion Products

- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Wear positive pressure self-contained breathing apparatus (SCBA).
  DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
  Move containers from fire area if you can do it without risk.
  FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
  FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
  FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
  FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
  FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate

protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

Emergency Procedures

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

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- All equipment used when handling the product must be grounded.
  Stop leak if you can do it without risk.
  If possible, turn leaking containers so that gas escapes rather than liquid.
  Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
  Do not direct water at spill or source of leak.
  Isolate area until gas has dispersed.

6.4 Reference to other sections

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

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

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

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Store locked up.

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
					20 mg/m3 Ceiling [MAC] (high altitude	

Carbon monoxide (630-08-0)	Ceilings	Not established	Not established	Not established	area, 2000-3000m); 15 mg/m3 Ceiling [MAC] (high altitude area, >3000m)	Not established
	STELs	Not established	100 ppm STEL	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
Carbon monoxide (630-08-0)	TWAs	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 1); 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 1)	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
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); 25 mg/m3 LLV (regulated 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) | **Simple Asphyxiants:** (Simple Asphyxiant)

France

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

Ireland

•Hydrogen (1333-74-0): **Simple Asphyxiants:** (Asphyxiant) | **Simple Asphyxiants:** (Asphyxiant) | **Substances with Potential Chronic Health Effects:** (Category 1 Reproductive Toxin)

Spain

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

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))

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. Use explosion-proof - electrical, ventilating and/or lighting equipment.

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. Have available emergency self-contained breathing apparatus or full-face airline respirator when using this chemical.

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

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

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

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless compressed gas with no odor.

Color	Colorless	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			
Boiling Point	-185.9 C(-302.62 F) Argon	Melting Point	-189.4 C(-308.92 F) Argon
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Not explosive.
Oxidizing Properties:	Not an oxidizer.		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	1.38 Air=1 Argon
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
Autoignition	Data lacking	Flammability (solid, gas)	Flammable gas.
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Storage in poorly ventilated areas. Storage near a heat source.

10.5 Incompatible materials

- No data available

10.6 Hazardous decomposition products

- None known.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Component Name	CAS	Data
Carbon monoxide (9% TO 13%)	630-08-0	**Acute Toxicity:** ihl-rat LC50:1807 ppm/4H; **Reproductive:** ihl-rat TCLo:150 ppm (0-20D preg)

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity 4 (Inhalation) - ATEmix(inhalation)=13900ppm **OSHA HCS 2012** • Acute Toxicity 4 (Inhalation) - ATEmix(inhalation)=13900ppm

Aspiration Hazard	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Carcinogenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Skin corrosion/Irritation	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Skin sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
STOT-RE	**EU/CLP** • Specific Target Organ Toxicity Repeated Exposure 1 **OSHA HCS 2012** • Classification criteria not met
STOT-SE	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Toxicity for Reproduction	**EU/CLP** • Toxic to Reproduction 1A **OSHA HCS 2012** • Toxic to Reproduction 1A
Respiratory sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met

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)

- Ingestion is not anticipated to be a likely route of exposure to this product. 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 which exists up to 1%, 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

TC = Toxic Concentration

LC = Lethal 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 adverse ecological effects are expected.

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	UN1954	Compressed gas, flammable, n.o.s. (Carbon monoxide, Hydrogen, Argon)	2.1	NDA	NDA
TDG	UN1954	COMPRESSED GAS, FLAMMABLE, N.O.S. (Carbon monoxide, Hydrogen, Argon)	2.1	NDA	Potential Marine Pollutant
IMO/IMDG	UN1954	COMPRESSED GAS, FLAMMABLE, N.O.S. (Carbon monoxide, Hydrogen, Argon)	2.1	NDA	NDA
IATA/ICAO	UN1954	Compressed gas, flammable, n.o.s. (Carbon monoxide, Hydrogen, Argon)	2.1	NDA	NDA

14.6 Special precautions for user

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles

can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

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

- Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications

- Pressure(Sudden Release of), Acute, Chronic, Fire

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Carbon monoxide	630-08-0	Yes	Yes	Yes
Hydrogen	1333-74-0	Yes	Yes	Yes
Argon	7440-37-1	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
Argon	7440-37-1	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Carbon monoxide	630-08-0	Yes
Hydrogen	1333-74-0	Yes
Argon	7440-37-1	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

- Carbon monoxide 630-08-0 A, B1, D1A, D2A
- Hydrogen 1333-74-0 A, B1
- Argon 7440-37-1 A

Canada - WHMIS - Ingredient Disclosure List

- Carbon monoxide 630-08-0 0.1 %
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

Environment

Canada - CEPA - Priority Substances List

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

China - Ozone Depleting Substances - Second Schedule

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

China - Ozone Depleting Substances - Third Schedule

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

China - Dangerous Goods List

- Carbon monoxide 630-08-0 UN1016
- Hydrogen 1333-74-0 UN1049; UN1966
- Argon 7440-37-1 UN1006; UN1951

China - Export Control List - Part I Chemicals

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

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
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 ID Number 1348, 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
- Argon 7440-37-1 Not Listed

Germany - Water Classification (VwVwS) - Annex 3

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

Portugal

Other

Portugal - Prohibited Substances

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

United Kingdom - Substances Contained in Dangerous Substances or Preparations

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

United Kingdom - The Red List - Dangerous Substances in Water

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 Not Listed

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

- Carbon monoxide 630-08-0 Not Listed
- Hydrogen 1333-74-0 Not Listed
- Argon 7440-37-1 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
- Argon 7440-37-1 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
- Argon 7440-37-1 Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date	• 11/July/2013
Preparation Date	• 11/July/2013
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