

Safety Data Sheet



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

1.1 Product identifier

- Product Name** • **Non-Flammable Gas Mixture Containing the Following Components in a Nitrogen Balance Gas: Cyclohexane 10 ppm, Methylcyclohexane 10 pm and Carbon Dioxide 100 ppm**
- Product Code** • 50103

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
- 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 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
- DSD/DPD** • Not classified

2.2 Label Elements

CLP

WARNING



Hazard statements • H280 - Contains gas under pressure; may explode if heated

Precautionary statements

Storage/Disposal ● P403 - Store in a well-ventilated place.

DSD/DPD

Risk phrases ● No label element(s) required

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 not 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
Simple Asphyxiant

2.2 Label elements

OSHA HCS 2012

WARNING



Hazard statements ● Contains gas under pressure; may explode if heated - H280
May displace oxygen and cause rapid suffocation.

Precautionary statements

Storage/Disposal ● Store in a well-ventilated place. - P403

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

2.2 Label elements

WHMIS



● Compressed Gas - A

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).

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 dioxide	CAS:124-38-9 EC Number:204-696-9	100ppm	NDA	EU DSD/DPD: Not Classified EU CLP: Self Classified: Press Gas - Comp., H280 OSHA HCS 2012: Press. Gas - Comp; Simp. Asphyx.
Methylcyclohexane	CAS:108-87-2 EC Number:203-624-3 EU Index:601-018-00-7	10ppm	Ingestion/Oral-Rat LD50 • >3200 mg/kg	EU DSD/DPD: Annex VI, Table 3.2: F R11 Xi R38 N R51-53 Xn R65 R67 EU CLP: Annex VI, Table 3.1: Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Chronic 2, H411 OSHA HCS 2012: Eye Irrit. 2; Acute Tox. 4 (oral); STOT SE 3: Narc.
Cyclohexane	CAS:110-82-7 EC Number:203-806-2 EU Index:601-017-00-1	10ppm	Ingestion/Oral-Rat LD50 • 12705 mg/kg	EU DSD/DPD: Annex VI, Table 3.2: F R11 Xi R38 N R50-53 Xn R65 R67 EU CLP: Annex VI, Table 3.1: Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: Flam. Liq 2; Eye Irrit. 2A; STOT SE 3: Resp Irrit & Narc.; Skin Irrit. 2.; Asp Tox. 1
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 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 • No data available

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

Emergency Procedures • 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. Ventilate the area. Isolate area until gas has dispersed. 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.

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. Do not allow area where cylinders are stored to exceed 52C (125F).

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	Europe
Cyclohexane (110-82-7)	TWAs	100 ppm TWA	100 ppm TWA	300 ppm TWAEV; 1030 mg/m3 TWAEV	250 mg/m3 TWA	200 ppm TWA; 700 mg/m3 TWA
	STELs	Not established	Not established	Not established	375 mg/m3 STEL	Not established
Methylcyclohexane (108-87-2)	TWAs	400 ppm TWA	400 ppm TWA	400 ppm TWAEV; 1610 mg/m3 TWAEV	Not established	Not established
Carbon dioxide (124-38-9)	TWAs	5000 ppm TWA	5000 ppm TWA	5000 ppm TWAEV; 9000 mg/m3 TWAEV	9000 mg/m3 TWA	5000 ppm TWA; 9000 mg/m3 TWA
	STELs	30000 ppm STEL	30000 ppm STEL	30000 ppm STEV; 54000 mg/m3 STEV	18000 mg/m3 STEL	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	France	Germany DFG	Germany TRGS	Ireland	Israel
	STELs	375 ppm STEL [VLCT]; 1300 mg/m3 STEL [VLCT]	Not established	Not established	Not established	Not established

Cyclohexane (110-82-7)	TWAs	200 ppm TWA [VME] (restrictive limit); 700 mg/m3 TWA [VME] (restrictive limit)	Not established	200 ppm TWA AGW (exposure factor 4); 700 mg/m3 TWA AGW (exposure factor 4)	200 ppm TWA; 700 mg/m3 TWA	100 ppm TWA
	Ceilings	Not established	800 ppm Peak; 2800 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	200 ppm TWA MAK; 700 mg/m3 TWA MAK	Not established	Not established	Not established
Methylcyclohexane (108-87-2)	TWAs	400 ppm TWA [VME]; 1600 mg/m3 TWA [VME]	Not established	200 ppm TWA AGW (exposure factor 2); 810 mg/m3 TWA AGW (exposure factor 2)	400 ppm TWA; 1600 mg/m3 TWA	400 ppm TWA
	Ceilings	Not established	400 ppm Peak; 1620 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	200 ppm TWA MAK; 810 mg/m3 TWA MAK	Not established	Not established	Not established
Carbon dioxide (124-38-9)	TWAs	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	5000 ppm TWA
	STELs	Not established	Not established	Not established	Not established	30000 ppm STEL
	Ceilings	Not established	10000 ppm Peak; 18200 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	5000 ppm TWA MAK; 9100 mg/m3 TWA MAK	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Italy	NIOSH	OSHA	OSHA Vacated	Portugal
Cyclohexane (110-82-7)	TWAs	100 ppm TWA; 350 mg/m3 TWA	300 ppm TWA; 1050 mg/m3 TWA	300 ppm TWA; 1050 mg/m3 TWA	300 ppm TWA; 1050 mg/m3 TWA	100 ppm TWA [VLE-MP]
Methylcyclohexane (108-87-2)	TWAs	Not established	400 ppm TWA; 1600 mg/m3 TWA	500 ppm TWA; 2000 mg/m3 TWA	400 ppm TWA; 1600 mg/m3 TWA	400 ppm TWA [VLE-MP]
Carbon dioxide (124-38-9)	STELs	Not established	30000 ppm STEL; 54000 mg/m3 STEL	Not established	30000 ppm STEL; 54000 mg/m3 STEL	30000 ppm STEL [VLE-CD]
	TWAs	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	5000 ppm TWA [VLE-MP]

Exposure Limits/Guidelines (Con't.)

	Result	Spain	Sweden
Cyclohexane (110-82-7)	TWAs	200 ppm TWA [VLA-ED] (indicative limit value; manufacturing, commercialization, and use restrictions under REACH); 700 mg/m3 TWA [VLA-ED] (indicative limit value; manufacturing, commercialization, and	300 ppm LLV; 1000 mg/m3 LLV

		use restrictions under REACH)	
	STELs	Not established	370 ppm STV; 1300 mg/m3 STV
Methylcyclohexane (108-87-2)	TWAs	400 ppm TWA [VLA-ED]; 1630 mg/m3 TWA [VLA-ED]	Not established
Carbon dioxide (124-38-9)	TWAs	5000 ppm TWA [VLA-ED] (indicative limit value); 9150 mg/m3 TWA [VLA-ED] (indicative limit value)	5000 ppm LLV; 9000 mg/m3 LLV
	STELs	Not established	10000 ppm STV; 18000 mg/m3 STV

Exposure Control Notations

Portugal

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

Ireland

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

Spain

•Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)

Germany DFG

•Cyclohexane (110-82-7): **Pregnancy:** (classification not yet possible)

•Methylcyclohexane (108-87-2): **Pregnancy:** (classification not yet possible)

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

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

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

STEV = Short Term Exposure Value

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

TWAEV = Time-Weighted Average Exposure Value

NIOSH = National Institute of Occupational Safety and Health

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

OSHA = Occupational Safety and Health Administration

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with a faint gasoline-like odor.
Color	Colorless	Odor	Mild gasoline-like odor.
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	Not relevant
Specific Gravity/Relative Density	0.906 Water=1 (Nitrogen)	Density	0.072 lb(s)/ft ³ (Nitrogen)
Water Solubility	Data lacking	Viscosity	Data lacking
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking
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	Data lacking
Flammability (solid, gas)	Nonflammable 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

- Excess heat.

10.5 Incompatible materials

- Titanium will burn in Nitrogen (the main component of this gas mixture). Lithium reacts slowly with Nitrogen at ambient temperatures. The other components have incompatibilities, but are in such trace percentages that those incompatibilities are not expected to cause significant reactivity hazards in this gas mixture.

10.6 Hazardous decomposition products

- The components of this product do not decompose, per se, but may react with other compounds in the heat of a fire.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Cyclohexane (10ppm)	110-82-7	Acute Toxicity: Ingestion/Oral-Rat LD50 • 12705 mg/kg; Irritation: Skin-Rabbit • 1548 mg 2 Day(s)-Intermittent
Methylcyclohexane (10ppm)	108-87-2	Acute Toxicity: Ingestion/Oral-Rat LD50 • >3200 mg/kg; Inhalation-Rabbit LC50 • 15227 ppm 1 Hour(s); <i>Behavioral:General anesthetic; Behavioral:Convulsions or effect on seizure threshold;</i> <i>Gastrointestinal:Changes in structure or function of salivary glands;</i> Irritation: Eye-Rabbit • 100 µL 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 µL 24 Hour(s) • Mild irritation; Multi-dose Toxicity: Inhalation-Rat TCLo • 11 g/m ³ 6 Hour(s) 5 Day(s)-Intermittent; <i>Behavioral:General anesthetic</i>
Carbon dioxide (100ppm)	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; Reproductive Effects:Specific Developmental Abnormalities:Cardiovascular (circulatory) system; Reproductive Effects:Specific Developmental Abnormalities:Respiratory system</i>

GHS Properties	Classification
Acute toxicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
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 • Data lacking OSHA HCS 2012 • Data lacking
STOT-SE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Respiratory sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Serious eye damage/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking

Potential Health Effects

Inhalation

Acute (Immediate)

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased

levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

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.

Chronic (Delayed)

- No data available

Key to abbreviations

LC = Lethal Concentration

LD = Lethal Dose

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 gases, n.o.s. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, Carbon Dioxide)	2.2	NDA	Potential Marine Pollutant
IMO/IMDG	UN1956	COMPRESSED GASES, N.O.S. (Nitrogen, Carbon Dioxide)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gases, n.o.s. (Nitrogen, Carbon Dioxide)	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 MARPOL 73/78 and the IBC Code

- Data lacking.

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

State Right To Know				
Component	CAS	MA	NJ	PA
Carbon dioxide	124-38-9	Yes	Yes	Yes
Cyclohexane	110-82-7	Yes	Yes	Yes
Methylcyclohexane	108-87-2	Yes	Yes	Yes
Nitrogen	7727-37-9	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
Cyclohexane	110-82-7	Yes	No	Yes	Yes	No
Methylcyclohexane	108-87-2	Yes	No	Yes	Yes	No
Nitrogen	7727-37-9	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
Carbon dioxide	124-38-9	Yes
Cyclohexane	110-82-7	Yes
Methylcyclohexane	108-87-2	Yes
Nitrogen	7727-37-9	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Methylcyclohexane	108-87-2	B2 A; Uncontrolled product according to WHMIS classification criteria (solid)
• Carbon dioxide	124-38-9	
• Cyclohexane	110-82-7	B2, D2B
• Nitrogen	7727-37-9	A

Canada - WHMIS - Ingredient Disclosure List

• Methylcyclohexane	108-87-2	1 %
• Carbon dioxide	124-38-9	1 %
• Cyclohexane	110-82-7	1 %
• Nitrogen	7727-37-9	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

China - Dangerous Goods List

• Methylcyclohexane	108-87-2	
• Carbon dioxide	124-38-9	(including solid or refrigerated liquid)
• Cyclohexane	110-82-7	

• Nitrogen	7727-37-9	(compressed or refrigerated liquid)
China - Export Control List - Part I Chemicals		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Europe

Other		
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification		
• Methylcyclohexane	108-87-2	F; R11 Xi; R38 N; R51-53 Xn; R65 R67
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	F; R11 Xi; R38 N; R50-53 Xn; R65 R67
• Nitrogen	7727-37-9	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling		
• Methylcyclohexane	108-87-2	F Xn N R:11-38-51/53-65-67 S:(2)-9-16-33-61-62
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-25-33-60-61-62
• Nitrogen	7727-37-9	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases		
• Methylcyclohexane	108-87-2	S:(2)-9-16-33-61-62
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	S:(2)-9-16-25-33-60-61-62
• Nitrogen	7727-37-9	Not Listed

Germany

Environment		
Germany - TA Luft - Types and Classes		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
Germany - Water Classification (VwVwS) - Annex 1		

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	ID Number 256, not considered hazardous to water
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	ID Number 1351, not considered hazardous to water

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	ID Number 63, hazard class 2 - hazard to waters
• Nitrogen	7727-37-9	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Methylcyclohexane	108-87-2	ID Number 2548, hazard class 2 - hazard to waters
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

United Kingdom

Environment

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

• Methylcyclohexane	108-87-2	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
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Other

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

• Methylcyclohexane	108-87-2	Not Listed
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• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

United States

Labor

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

Environment

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	1000 lb final RQ; 454 kg final RQ
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed

• Nitrogen	7727-37-9	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	1.0 % de minimis concentration
• Nitrogen	7727-37-9	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics		
• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	waste number U056 (Ignitable waste)
• Nitrogen	7727-37-9	Not Listed

United States - California

Environment

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

United States - Pennsylvania

Labor

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

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

• Methylcyclohexane	108-87-2	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Cyclohexane	110-82-7	Not Listed
• Nitrogen	7727-37-9	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H225 - Highly flammable liquid and vapour
- H304 - May be fatal if swallowed and enters airways
- H315 - Causes skin irritation
- H336 - May cause drowsiness or dizziness
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects
- H411 - Toxic to aquatic life with long lasting effects
- R11 - Highly flammable.
- R38 - Irritating to skin.
- R50 - Very toxic to aquatic organisms.
- R51 - Toxic to aquatic organisms.
- R53 - May cause long-term adverse effects in the aquatic environment.
- R65 - Harmful: may cause lung damage if swallowed.
- R67 - Vapours may cause drowsiness and dizziness.

Last Revision Date

- 05/September/2014

Preparation Date

- 05/September/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