1. PRODUCT AND COMPANY IDENTIFICATION

Product Name  5-10% CARBON DIOXIDE In NITROGEN
Product Code(s)  084 linde, G-442
UN-Number  UN1956
Recommended Use  Medical.
Trade Name  BLOOD GAS MIXTURES
Supplier Address*  Linde Gas North America LLC - Linde Merchant Production Inc. - Linde LLC
  575 Mountain Ave.
  Murray Hill, NJ 07974
  Phone: 908-464-8100
  www.lindeus.com

  Linde Gas Puerto Rico, Inc.
  Las Palmas Village
  Road No. 869, Street No. 7
  Catano, Puerto Rico 00962
  Phone: 787-641-7445
  www.pr.lindegas.com

  Linde Canada Limited
  5860 Chedworth Way
  Mississauga, Ontario L5R 0A2
  Phone: 905-501-1700
  www.lindecanada.com

  * May include subsidiaries or affiliate companies/divisions.

For additional product information contact your local customer service.

Chemical Emergency Phone Number  Chemtrec: 1-800-424-9300 for US/ 703-527-3887 outside US

2. HAZARDS IDENTIFICATION

WARNING!

Emergency Overview

Simple asphyxiant
Contents under pressure
Keep at temperatures below 52°C / 125°F

Appearance  Colorless  Physical State  Compressed gas.  Odor  Odorless

OSHA Regulatory Status  This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects
Principle Routes of Exposure

Inhalation

Acute Toxicity

Inhalation

Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.

Depending on concentration and duration of exposure to carbon dioxide may cause increased respirations, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure become more apparent when atmospheric oxygen is decreased to 15-17%.

Eyes

Contact with rapidly expanding gas near the point of release may cause frostbite.

Skin

Contact with rapidly expanding gas near the point of release may cause frostbite.

Skin Absorption Hazard

No known hazard by skin absorption.

Ingestion

Not an expected route of exposure.

Chronic Effects

Chronic harmful effects are not known from repeated inhalation of concentrations below PEL/TLV.

Aggravated Medical Conditions

Respiratory disorders.

Environmental Hazard

See Section 12 for additional Ecological Information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Volume %</th>
<th>Chemical Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
<td>0-99</td>
<td>N₂</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>124-38-9</td>
<td>5-10</td>
<td>CO₂</td>
</tr>
</tbody>
</table>

Additional information: Composition listed covers broad ranges rather than exact percentages for specific products.

4. FIRST AID MEASURES

Eye Contact

None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

Skin Contact

None required for gas. For dermal contact or suspected frostbite, remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing.

Inhalation

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF INHALATION OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious inhalation victims should be assisted to an uncontaminated area and inhale fresh air. If breathing is difficult, administer oxygen. Unconscious persons should be moved to an uncontaminated area and, as necessary, given artificial resuscitation and supplemental oxygen. Treatment should be symptomatic and supportive.

Ingestion

None under normal use. Get medical attention if symptoms occur.
5. FIRE-FIGHTING MEASURES

Flammable Properties
Not flammable.

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

Explosion Data

Sensitivity to Mechanical Impact
None

Sensitivity to Static Discharge
None

Specific Hazards Arising from the Chemical
Cylinders may rupture under extreme heat. Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment. Monitor oxygen level.

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

Methods for Containment
Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest Linde location.

Methods for Cleaning Up
Return cylinder to Linde or an authorized distributor.

Other Information
Ventilate the area.

7. HANDLING AND STORAGE

Handling
Use only in ventilated areas. Never attempt to lift a cylinder by its valve protection cap.

Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Use equipment rated for cylinder pressure. Use backflow preventive device in piping. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing leak to occur.

Use an adjustable strap wrench to remove over-tight or rusted caps. Close valve after each use and when empty. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

Never put cylinders into trunks of cars or unventilated areas of passenger vehicles. Never attempt to refill a compressed gas cylinder without the owner’s written consent. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

For additional recommendations consult Compressed Gas Association's Pamphlets P-1 and Safety Bulletin SB-2.
Storage
Protect from physical damage. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Keep at temperatures below 52°C / 125°F. Full and empty cylinders should be segregated. Use a “first in-first out” inventory system to prevent full cylinders from being stored for excessive periods of time. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA-P1, Safe Handling of Compressed Gases in Containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>STEL = 30000 ppm  TWA: 5000 ppm</td>
<td>TWA: 5000 ppm  TWA: 9000 mg/m³ (vacated) TWA: 10000 ppm  (vacated) TWA: 18000 mg/m³ (vacated) STEL: 30000 ppm  (vacated) STEL: 54000 mg/m³</td>
<td>IDLH: 40000 ppm  TWA: 5000 ppm  TWA: 9000 mg/m³  STEL: 54000 mg/m³</td>
</tr>
</tbody>
</table>

Immediately Dangerous to Life or Health. ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits.

Other Exposure Guidelines
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Engineering Measures
Local exhaust ventilation to prevent accumulation of high concentrations and maintain air-oxygen levels at or above 19.5%.

Ventilation
Use ventilation adequate to keep exposures below recommended exposure limits.

Personal Protective Equipment
Eye/Face Protection
Wear protective eyewear (safety glasses).

Skin and Body Protection
Work gloves and safety shoes are recommended when handling cylinders.

Respiratory Protection
General Use
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Emergency Use
Use positive pressure air line respirator or self-contained breathing apparatus for exposure over exposure limits or emergency use. For exposures above IDLH, an additional escape bottle is required.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.
9. PHYSICAL AND CHEMICAL PROPERTIES

Product Information

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Colorless.</th>
<th>Odor</th>
<th>Odorless.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
<td>Physical State</td>
<td>Compressed gas</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No information available.</td>
<td>Autoignition Temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following information is for the NON-INERT components of this mixture:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Boiling Point</th>
<th>Melting Point</th>
<th>Molecular Weight</th>
<th>Evaporation Rate</th>
<th>Water Solubility</th>
<th>Vapor Pressure</th>
<th>Vapor Density</th>
<th>Gas Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>56 °C</td>
<td>-56 °C</td>
<td>44.00</td>
<td>-</td>
<td>0.145 g/ml @ 25°C</td>
<td>838 psig</td>
<td>1.522</td>
<td>1.839</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>-196 °C</td>
<td>-210 °C</td>
<td>28.01</td>
<td>-</td>
<td>0.023 (vol/vol @ 20°C and 1 atm)</td>
<td>Above critical temperature</td>
<td>0.97</td>
<td>1.165</td>
</tr>
</tbody>
</table>

The following information is for the INERT components that may be part of this mixture:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Boiling Point</th>
<th>Melting Point</th>
<th>Molecular Weight</th>
<th>Evaporation Rate</th>
<th>Water Solubility</th>
<th>Vapor Pressure</th>
<th>Vapor Density</th>
<th>Gas Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>-196 °C</td>
<td>-210 °C</td>
<td>28.01</td>
<td>-</td>
<td>0.023 (vol/vol @ 20°C and 1 atm)</td>
<td>Above critical temperature</td>
<td>0.97</td>
<td>1.165</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability

Stable.

Incompatible Products

Carbon dioxide is incompatible with: Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite. Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may explode.

Conditions to Avoid

Due to the presence of Carbon dioxide, Carbonic acid is formed in the presence of moisture.

Hazardous Decomposition Products

None known.

Hazardous Polymerization

Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information

LD50 Oral: No information available.

LD50 Dermal: No information available.

LC50 Inhalation: No information available.
Inhalation

Acidosis, adrenal cortical exhaustion, and other metabolic stresses have resulted from prolonged continuous exposure to 1-2% carbon dioxide (10,000 ppm-20,000 ppm). The ACGIH TLV of 5,000 ppm is expected to provide a good margin of safety from asphyxiation and undue metabolic stress provided sufficient oxygen levels are maintained in the air. Increased physical activity, duration of exposure, and decreased oxygen content can affect systemic and respiratory effects resulting from exposure to carbon dioxide.

Repeated Dose Toxicity

Chronic, harmful effects are not known from repeated inhalation of low (3-5 molar%) concentrations.

Component Information

No information available.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td></td>
<td></td>
<td>470000 ppm (Rat)</td>
</tr>
</tbody>
</table>

Chronic Toxicity

Chronic Toxicity

Chronic harmful effects are not known from repeated inhalation of concentrations below PEL/TLV.

Carcinogenicity

Contains no ingredient listed as a carcinogen.

Irritation

No information available.

Sensitization

No information available.

Reproductive Toxicity

No information available.

Developmental Toxicity

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Synergistic Materials

None known.

Target Organ Effects

Central vascular system (CVS). Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Ozone depletion potential; ODP; (R-11 = 1): Does not contain ozone depleting chemical (40 CFR Part 82).

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Linde for proper disposal.

Contaminated Packaging

Do not re-use empty containers.

14. TRANSPORT INFORMATION

DOT

Proper shipping name
Compressed gas, n.o.s.
Hazard Class
2.2
Subsidiary Class
None
UN-Number
UN1956
Description
UN1956, Compressed gas, n.o.s. (Carbon Dioxide, Nitrogen), 2.2
Emergency Response Guide Number
126

TDG
Proper Shipping Name
Compressed gas, n.o.s.
Hazard Class
2.2
UN-Number
UN1956
Description
UN1956, COMPRESSED GAS, N.O.S., 2.2

MEX
Proper Shipping Name
Compressed gas, n.o.s.
Hazard Class
2.2
UN-Number
UN1956
Description
UN1956 Compressed gas, n.o.s. (Carbon Dioxide, Nitrogen), 2.2

IATA
UN-Number
UN1956
Proper Shipping Name
Compressed gas, n.o.s.
Hazard Class
2.2
ERG Code
2L
Description
UN1956, Compressed gas, n.o.s. (Carbon Dioxide, Nitrogen), 2.2
Maximum Quantity for Passenger
75 kg
Maximum Quantity for Cargo Only
150 kg
Limited Quantity
Forbidden

IMDG/IMO
Proper Shipping Name
Compressed gas, n.o.s.
Hazard Class
2.2
UN-Number
UN1956
EmS No.
F-C, S-V
Description
UN1956, Compressed gas, n.o.s. (Carbon Dioxide, Nitrogen), 2.2

ADR
Proper Shipping Name
Compressed gas, n.o.s.
Hazard Class
2.2
UN-Number
UN1956
Classification Code
1A
Description
UN1956 Compressed gas, n.o.s. (Carbon Dioxide, Nitrogen), 2.2,

15. REGULATORY INFORMATION
International Inventories

TSCA
Complies
DSL
Complies
EINECS/ELINCS
Complies
15. REGULATORY INFORMATION

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard: Yes
Chronic Health Hazard: No
Fire Hazard: No
Sudden Release of Pressure Hazard: Yes
Reactive Hazard: No

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Risk and Process Safety Management Programs
This material, as supplied, does not contain any regulated substances with specified thresholds under 40 CFR Part 68.
This product does not contain any substances regulated as Highly Hazardous Chemicals pursuant to the 29 CFR Part 1910.110.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA/SARA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

International Regulations
Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
A Compressed gases

16. OTHER INFORMATION

Prepared By
Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Issuing Date
10-Feb-2011

Revision Date

Revision Number
0

Revision Note
Initial Release.

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazard</th>
<th>Flammability</th>
<th>Stability</th>
<th>Physical and Chemical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health Hazard</td>
<td></td>
<td></td>
<td>Simple asphyxiant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazard</th>
<th>Flammability</th>
<th>Physical Hazard</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health</td>
<td></td>
<td>Physical Hazard</td>
<td>Personal Protection</td>
</tr>
</tbody>
</table>

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition.

General Disclaimer
For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde LLC, Linde Merchant Production, Inc. or Linde Gas North America LLC (or any of their affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES
Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user’s intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

End of Safety Data Sheet