



1 - 99% ARGON, HELIUM, KRYPTON, NEON, or XENON MIXTURES

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

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|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name | 1 - 99% ARGON, HELIUM, KRYPTON, NEON, or XENON MIXTURES |
| Product Code(s) | G-234, 1539 |
| UN-Number | UN1956 |
| Recommended Use | Laser gas. |
| Supplier Address* | <p>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</p> <p>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</p> <p>Linde Canada Limited 5860 Chedworth Way Mississauga, Ontario L5R 0A2 Phone: 905-501-1700 www.lindecana.com</p> <p>* May include subsidiaries or affiliate companies/divisions.</p> <p>For additional product information contact your local customer service.</p> |
| 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

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|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. |
| 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 | None known. |
| Aggravated Medical Conditions | None known. |
| Environmental Hazard | See Section 12 for additional Ecological Information. |

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Volume % | Chemical Formula |
|---------------|-----------|----------|------------------|
| Krypton | 7439-90-9 | 1-99 | Kr |
| Neon | 7440-01-9 | 1-99 | Ne |
| Argon | 7440-37-1 | 1-99 | Ar |
| Helium | 7440-59-7 | 1-99 | He |
| Xenon | 7440-63-3 | 1-99 | Xe |

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

4. FIRST AID MEASURES

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| Eye Contact | If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention. |
| Skin Contact | 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. |
| Notes to Physician | Treat symptomatically. |

5. FIRE-FIGHTING MEASURES

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|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flammable Properties | Not flammable. |
| Suitable Extinguishing Media | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| <u>Explosion Data</u> | |
| 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

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|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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

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| Handling | <p>Use only in ventilated areas. Never attempt to lift a cylinder by its valve protection cap.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>For additional recommendations consult Compressed Gas Association's Pamphlets P-1 and Safety Bulletin SB-2.</p> |
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| 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. |
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Exposure Guidelines | This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies. |
| Engineering Measures | Local exhaust ventilation to prevent accumulation of high concentrations and maintain air-oxygen levels at or above 19.5%. |
| Ventilation | Ensure adequate ventilation, especially in confined areas. |
| <u>Personal Protective Equipment</u> | |
| 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 | No respiratory equipment is needed if workplace oxygen levels are kept above 19.5%. |
| Emergency Use | Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.5%). |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. |

9. PHYSICAL AND CHEMICAL PROPERTIES

Product Information

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|-----------------------------------|---------------------------|---------------------------------|---------------------------|
| Appearance | Colorless. | Odor | Odorless. |
| Odor Threshold | No information available. | Physical State | Compressed gas |
| Flash Point | Not applicable. | Autoignition Temperature | No information available. |
| Flammability Limits in Air | | | |
| Upper | Not applicable | | |
| Lower | Not applicable | | |

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

| Chemical Name | Boiling Point | Melting Point | Molecular Weight | Evaporation Rate | Water Solubility | Vapor Pressure | Vapor Density (Air=1) | Gas Density Kg/m ³ @20°C |
|---------------|---------------|---------------|------------------|------------------|-----------------------------------|----------------------------|-----------------------|-------------------------------------|
| Argon | -185.9 °C | -189.4 °C | 39.94 | - | 0.056 (vol/vol @ 0°C and 1 atm) | Above critical temperature | 1.38 | 1.65 |
| Helium | -268.94 °C | -272.0 °C | 4.00 | - | 0.0089 (vol/vol @ 20°C and 1 atm) | Above critical temperature | 0.138 | 0.166 |
| Krypton | -153.4 °C | -157 °C | 83.79 | - | 0.0594 (vol/vol @ 20°C and 1 atm) | Above critical temperature | 2.89 | 3.479 |
| Neon | -246.1 °C | -248.6 °C | 20.17 | - | 0.014 (vol/vol @ 0°C and 1 atm) | Above critical temperature | 0.694 | 0.922 |
| Xenon | -108.2 °C | -111 °C | 131.29 | - | 0.108 (vol/vol @ 20°C and 1 atm) | Above critical temperature | 4.55 | 5.472 |

10. STABILITY AND REACTIVITY

| | |
|-----------------------------------------|------------------------------------------|
| Stability | Stable. |
| Incompatible Products | None known. |
| Conditions to Avoid | None known. |
| 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. |
| Repeated Dose Toxicity | No information available. |

| | |
|------------------------------|---------------------------|
| Component Information | No information available. |
|------------------------------|---------------------------|

Chronic Toxicity

Chronic Toxicity None known.

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 None known.

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 |
| Emergency Response Guide Number | 126 |

TDG

| | |
|----------------------|------------------------|
| Proper Shipping Name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| UN-Number | UN1956 |

MEX

| | |
|----------------------|------------------------|
| Proper Shipping Name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| UN-Number | UN1956 |

IATA

| | |
|---------------------------------|---------------------------|
| UN-Number | UN1956 |
| Proper Shipping Name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| ERG Code | 2L |
| Maximum Quantity for Passenger | 75 kg |
| Maximum Quantity for Cargo Only | 150 kg |
| Limited Quantity | No information available. |

IMDG/IMO

| | |
|----------------------|------------------------|
| Proper Shipping Name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| UN-Number | UN1956 |
| EmS No. | F-C, S-V |

ADR

| | |
|----------------------|------------------------|
| Proper Shipping Name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| UN-Number | UN1956 |
| Classification Code | 1A |

15. REGULATORY INFORMATION

International Inventories

| | |
|---------------|----------|
| TSCA | Complies |
| DSL | Complies |
| EINECS/ELINCS | Complies |

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL - 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 | No |
| 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

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------|---------------|------------|--------------|----------|--------------|
| Argon | X | X | X | - | X |
| Helium | X | X | X | - | X |
| Krypton | - | X | - | - | - |
| Neon | X | X | X | - | X |
| Xenon | - | X | - | - | - |

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

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.

| | | | | |
|-------------|-----------------|----------------|-------------------|----------------------------------------------------|
| <u>NFPA</u> | Health Hazard 0 | Flammability 0 | Stability 0 | Physical and Chemical Hazards Simple asphyxiant |
| <u>HMIS</u> | Health Hazard 0 | Flammability 0 | Physical Hazard 3 | Personal Protection - |

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.

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End of Safety Data Sheet