# OXYGEN (19.5-23.5%) in ARGON, HELIUM, or NITROGEN

## Safety Data Sheet

## 1. IDENTIFICATION

Product identifier

| | |
|---|---|
| Product Name | OXYGEN (19.5-23.5%) in ARGON, HELIUM, or NITROGEN |

Other means of identification

| | |
|---|---|
| Safety data sheet number | LIND-M0149 |
| UN / ID no. | UN1956 |
| Trade name | Heliox 20 / 70 |

Recommended use of the chemical and restrictions on use

| | |
|---|---|
| Recommended Use | Industrial and professional use. |
| Uses advised against | Consumer use |

Details of the supplier of the safety data sheet

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.
Road 869, Km 1.8
Barrio Palmas, Catano, PR 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.

Emergency telephone number

| | |
|---|---|
| Company Phone Number | 800-232-4726 (Linde National Operations Center, US)<br>905-501-0802 (Canada) |

CHEMTREC: 1-800-424-9300 (North America) +1-703-527-3887 (International)

## 2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

| | |
|---|---|
| Gases under pressure | Compressed gas |

Label elements

Signal word Warning

Hazard Statements
Contains gas under pressure; may explode if heated

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Use a backflow preventive device in piping
Use only equipment of compatible materials of construction and rated for cylinder pressure
Close valve after each use and when empty

Precautionary Statements - Response

Precautionary Statements - Storage
Protect from sunlight when ambient temperature exceeds 52°C / 125°F

Hazards not otherwise classified (HNOC)
Supports combustion

Other Information
Regarding Oxygen and Helium mixtures: Linde makes no recommendations or suggestions as to the depth of sea water in which these mixtures should be used; it merely warrants that it has used its best efforts to prepare the mixture of oxygen in helium as it is described on the label. DO NOT USE THE PRODUCT IF THE COMPONENT CONCENTRATION DATA ARE NOT CLEARLY LEGIBLE ON THE LABEL.
Do not use as a breathing source unless mixture is specified as a DIVING GAS MIXTURE and can be verified by container labeling as a breathing source.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS No. | Volume % | Chemical Formula |
|---|---|---|---|
| Nitrogen | 7727-37-9 | 0-76.5 | $N_2$ |
| Helium | 7440-59-7 | 0-76.5 | He |
| Argon | 7440-37-1 | 0-76.5 | Ar |

| | | | |
|---|---|---|---|
| Oxygen | 7782-44-7 | 19.5-23.5 | $O_2$ |

Composition covers range of mixtures that fall within the same hazard classifications.

## 4. FIRST AID MEASURES

Description of first aid measures

General advice — Show this safety data sheet to the doctor in attendance.

Inhalation — Move victim to fresh air. Get medical attention immediately if symptoms occur.

Skin contact — None under normal use. Get medical attention if symptoms occur.

Eye contact — None under normal use. Get medical attention if symptoms occur.

Ingestion — Not an expected route of exposure.

Self-protection of the first aider — RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Most important symptoms and effects, both acute and delayed

Symptoms — No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians — Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific extinguishing methods
Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.

Specific hazards arising from the chemical
Non-flammable gas. Supports combustion. Cylinders may rupture under extreme heat.

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, protective equipment and emergency procedures

Personal precautions — Evacuate personnel to safe areas. Contents under pressure.

Environmental precautions

Environmental precautions — No special environmental precautions required.

Methods and material for containment and cleaning up

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. |

## 7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

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. Never attempt to lift a cylinder by its valve protection cap. 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. Use only with adequate ventilation. Use a backflow preventive device in piping. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Ensure the complete gas system has been checked for leaks before use.

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.

Only experienced and properly instructed persons should handle gases under pressure. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA-P1, Safe Handling of Compressed Gases in Containers.

Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| Storage Conditions | 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. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Full and empty cylinders should be segregrated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Stored containers should be periodically checked for general condition and leakage. |
| Incompatible materials | None known. |

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

| | |
|---|---|
| Exposure Guidelines | This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies. |

Appropriate engineering controls

| | |
|---|---|
| Engineering Controls | Systems under pressure should be regularly checked for leakages. |

Individual protection measures, such as personal protective equipment

| | |
|---|---|
| Eye / face protection | Wear safety glasses with side shields (or goggles). |
| Skin and body protection | Work gloves and safety shoes are recommended when handling cylinders. |
| Respiratory protection | No special protective equipment required. |
| General Hygiene Considerations | Handle in accordance with good industrial hygiene and safety practice. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | Compressed gas |
| Appearance | Colorless. |
| Odor | Odorless. |
| Odor threshold | No information available |
| pH | No data available |
| Melting point | No data available |
| Evaporation rate | Not applicable |
| Lower flammability limit: | Not applicable |
| Upper flammability limit: | Not applicable |
| Flash point | Not applicable |
| Autoignition temperature | No data available |
| Decomposition temperature | No data available |
| Partition coefficient | No data available |
| Kinematic viscosity | Not applicable |

| Chemical Name | Molecular weight | Boiling point | Vapor Pressure | Vapor density (air =1) | Gas Density kg / $m^3$@20°C | Critical Temperature |
|---|---|---|---|---|---|---|
| Nitrogen | 28.01 | -196 °C | Above critical temperature | 0.97 | 1.153 | -146.9 °C |
| Helium | 4.00 | -268.9 °C | Above critical temperature | 0.138 | 0.165 | -267.9 °C |
| Argon | 39.95 | -185.9 °C | Above critical temperature | 1.38 | 1.65 | -122.3 °C |
| Oxygen | 31.99 | -182.9 °C | Above critical temperature | 1.11 | 1.331 | -118.6 °C |

## 10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions

Chemical stability
Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
None under recommended storage and handling conditions (see Section 7).

Incompatible materials
None known.

Hazardous Decomposition Products
None known.

## 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

| | |
|---|---|
| Inhalation | No data available. |
| Skin contact | No data available. |
| Eye contact | No data available. |
| Ingestion | Not an expected route of exposure. |

Information on toxicological effects

| | |
|---|---|
| Symptoms | No information available. |

Delayed and immediate effects as well as chronic effects from short and long-term exposure

| | |
|---|---|
| Irritation | Not classified. |
| Sensitization | Not classified. |
| Germ cell mutagenicity | Not classified. |
| Carcinogenicity | This product does not contain any carcinogens or potential carcinogens listed by OSHA, IARC or NTP. |
| Reproductive toxicity | Not classified. |
| STOT - single exposure | Not classified. |
| STOT - repeated exposure | Not classified. |
| Chronic toxicity | None known. |
| Aspiration hazard | Not applicable. |

Numerical measures of toxicity

| Product Information | |
|---|---|
| Oral LD50 | No information available |
| Dermal LD50 | No information available |
| Inhalation LC50 | No information available |

## 12. ECOLOGICAL INFORMATION

Ecotoxicity
No known acute aquatic toxicity.

Persistence and degradability
Not applicable.

Bioaccumulation
No information available.

## 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

| | |
|---|---|
| Disposal of wastes | 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. |

## 14. TRANSPORT INFORMATION

Note: The technical names of components listed as part of shipping description will depend on specific mixture composition and / or balance gas.

DOT

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| Description | UN1956, Compressed gas, n.o.s.(Oxygen, XXXXX), 2.2 |
| Emergency Response Guide Number | 126 |

TDG

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| Description | UN1956, Compressed gas, n.o.s.(Oxygen, XXXXX), 2.2 |

MEX

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| Description | UN1956, Compressed gas, n.o.s.(Oxygen, XXXXX), 2.2 |

IATA

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| ERG Code | 2L |
| Description | UN1956, Compressed gas, n.o.s.(Oxygen, XXXXX), 2.2 |

IMDG

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| EmS-No. | F-C, S-V |
| Special Provisions | 274 |
| Description | UN1956, Compressed gas, n.o.s. (Oxygen, XXXXX), 2.2 |

ADR

| | |
|---|---|
| UN / ID no. | UN1956 |
| Proper shipping name | Compressed gas, n.o.s. |
| Hazard Class | 2.2 |
| Classification code | 1A |
| Tunnel restriction code | (E) |
| Special Provisions | 274, 655 |
| Description | UN1956, Compressed gas, n.o.s.(Oxygen, XXXXX), 2.2, (E) |

## 15. REGULATORY INFORMATION

International Inventories

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

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 Chemical Substances / European List of Notified Chemical Substances

US 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 |

CERCLA

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.

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.

CWA (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.

## US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|---|---|---|---|
| Argon<br>7440-37-1 | X | X | X |
| Helium<br>7440-59-7 | X | X | X |
| Nitrogen<br>7727-37-9 | X | X | X |
| Oxygen<br>7782-44-7 | X | X | X |

## 16. OTHER INFORMATION

NFPA Health hazards 0 Flammability 0 Instability 0 Physical and Chemical Properties -

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.

| | |
|---|---|
| Issue Date | 14-May-2015 |
| Revision Date | 15-May-2015 |
| Revision Note | Initial Release |

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