1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: OXYGEN, GAS
Product Code(s): G-1, 1024
UN-No: UN1072
Recommended Use: Compressed gas.
Synonyms: LASER Oxygen; Oxygen, Compressed
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

Oxidizer
Contact with combustible material may cause fire
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
Oxygen is not acutely toxic under normal pressure. Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures may cause cramps, dizziness, difficulty breathing, convulsions, edema and death.

Eyes
None known. Contact with rapidly expanding gas near the point of release may cause frostbite.

Skin
None known. Contact with rapidly expanding gas near the point of release may cause frostbite.

Skin Absorption Hazard
No known hazard in contact with skin.

Ingestion
None known.

Chronic Effects
Prolonged inhalation of high oxygen concentrations (>75%) may affect coordination, attention, and cause tiredness of respiratory irritation.

Aggravated Medical Conditions
Chronic obstructive pulmonary disease.

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>Oxygen</td>
<td>7782-44-7</td>
<td>&gt;99</td>
<td>O₂</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

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

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

Inhalation
Move victim to fresh air. Seek immediate medical attention/advice.

Ingestion
None under normal use. Get medical attention if symptoms occur.

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties
Oxidizer. May vigorously accelerate combustion.

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

Explosion Data

Sensitivity to Mechanical Impact
None

Sensitivity to Static Discharge
None
Specific Hazards Arising from the Chemical
May ignite combustibles (wood paper, oil, clothing, etc.). High oxygen concentrations vigorously accelerate combustion. 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. 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.

7. HANDLING AND STORAGE

Handling
Dry product is non-corrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they include volume and lose their protective role (rust formation). Concentrations of SO₂, Cl₂, salt, etc. in the moisture enhances the rusting of metals in air. Carbon steels and low alloy steels are acceptable for use at lower pressures. For high pressure applications stainless steels are acceptable as are copper and its alloys, nickel and its alloys, brass bronze, silicon alloys, Monel®, Inconel®, and beryllium. Lead and silver or lead tin alloys are good gasket materials. Teflon®, Teflon® composites, or Kel-F® are preferred non-metallic gasket materials.

Oxygen should not be used as a substitute for compressed air in pneumatic equipment since they generally contain flammable lubricants. Equipment able to use oxygen must be “cleaned for oxygen service”. Check with the equipment supplier to verify oxygen compatibility for the service conditions.

Stationary customer site vessels should be operated in accordance with the manufacturer’s and Linde’s instruction. Do not attempt to repair, adjust or in any other way modify the operation of these vessels. If there is a malfunction or other type of operations problem with the vessel, contact the closest Linde location immediately for assistance. "NO SMOKING" signs should be posted in storage and use areas. Containers of liquid oxygen should be separated from flammable gas containers by a minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high having a fire resistance rating of 1/2 hour.
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 SB-7, G-4.3, G-4.1, G-4.4, P-2.5, G-4.9, P-14, and 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
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures
Showers. Eyewash stations. Ventilation systems.

Ventilation
Use local exhaust in combination with general ventilation as necessary to keep oxygen concentrations below 23.5%.

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. Gloves must be clean and free from grease or oil.

Respiratory Protection

General Use
No special protective equipment required.

Emergency Use
No special protective equipment required.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-218.8°C / -361.8°F</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Slightly soluble</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Above critical temp.</td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Vol. @ 21.1°C &amp; 1 atm</td>
<td>12.1 ft³/lb</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>-118.57°C / -215.4°F</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Physical State</td>
<td>Compressed gas</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>-182.9°C / -297.3°F</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>32.00</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1.326 kg/m³ (0.083 lb/ft³)</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>Log P -0.65</td>
</tr>
<tr>
<td>Critical Pressure</td>
<td>731.4 psia</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Slightly soluble</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Above critical temp.</td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Vol. @ 21.1°C &amp; 1 atm</td>
<td>12.1 ft³/lb</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>-118.57°C / -215.4°F</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Physical State</td>
<td>Compressed gas</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>-182.9°C / -297.3°F</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>32.00</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1.326 kg/m³ (0.083 lb/ft³)</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>Log P -0.65</td>
</tr>
<tr>
<td>Critical Pressure</td>
<td>731.4 psia</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability                  Stable.
Conditions to Avoid        Keep away from open flames, hot surfaces and sources of ignition.
Hazardous Decomposition Products None known.
Hazardous Polymerization   Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
LD50 Oral:                  No information available.
LD50 Dermal:                No information available.
LC50 Inhalation:           No information available.
Inhalation                  Human volunteers which inhaled 90-95% oxygen through a face mask for 6 hours showed signs of tracheal irritation and fatigue. Other symptoms (which may have been caused by placing a tube into the trachea during the experiment) included: sinusitis, conjunctivitis, fever, and symptoms of acute bronchitis.
Poisoning began in dogs 36 hours after inhalation of pure oxygen at atmospheric pressure. Distress was seen within 48 hours and death within 60 hours.
Eye Contact                The incompletely developed retinal circulation is more susceptible to toxic levels of oxygen. In premature infants, arterial oxygen tension above 150 mm Hg may cause retrolental fibroplasia. Permanent blindness may occur several months later. One case of severe retinal damage in an adult was reported. An individual suffering from myasthenia gravis developed irreversible retinal atrophy after breathing 80% oxygen for 150 days.
Repeated Dose Toxicity      No information available.
Chronic Toxicity

Chronic Toxicity

Prolonged inhalation of high oxygen concentrations (>75%) may affect coordination, attention, and cause tiredness of respiratory irritation.

Carcinogenicity

Contains no ingredient listed as a carcinogen.

Irritation

No information available.

Sensitization

No information available.

Reproductive Toxicity

No information available.

Developmental Toxicity

No information available.

Synergistic Materials

None known.

Target Organ Effects

None known.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Will not bioconcentrate.

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.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name
Oxygen, compressed
Hazard Class
2.2
Subsidiary Class
5.1
UN-No
UN1072
Description
UN1072,Oxygen, compressed,2.2,(5.1)

MEX

OXYGEN, GAS, Material Safety Data Sheet, Revision Date 02-Sep-2010, Page 6 / 9
Proper Shipping Name: Oxygen, compressed
Hazard Class: 2.2
Subsidiary Class: 5.1
UN-No: UN1072
Description: UN1072 Oxygen, compressed, 2.2

IATA
UN-No: UN1072
Proper Shipping Name: Oxygen, compressed
Hazard Class: 2.2
Subsidiary Class: 5.1
ERG Code: 2X
Description: UN1072, Oxygen, compressed, 2.2(5.1)
Maximum Quantity for Passenger: 75 kg
Maximum Quantity for Cargo Only: 150 kg
Limited Quantity: No information available.

IMDG/IMO
Proper Shipping Name: Oxygen, compressed
Hazard Class: 2.2
Subsidiary Class: 5.1
UN-No: UN1072
EmS No.: F-C, S-W
Description: UN1072, Oxygen, compressed, 2.2(5.1)

ADR
Proper Shipping Name: Oxygen, compressed
Hazard Class: 2.2
UN-No: UN1072
Classification Code: 10
Description: UN1072 Oxygen, compressed, 2.2, 5.1

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/NDSSL - 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  Yes  
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>Oxygen</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  
C Oxidizing materials
16. OTHER INFORMATION

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

Issuing Date: 05-Mar-2010

Revision Date: 02-Sep-2010

Revision Number: 1

Revision Note: (M)SDS sections updated. 1.

NFPA
Health Hazard 0
Flammability 0
Stability 0
Physical and Chemical Hazards OX

HMIS
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.

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