

1. Chemical Product and Company Identification

Product Name : Oxygen (compressed oxygen gas)
Supplier : Leland Limited, Inc.
2614 South Clinton Ave.
South Plainfield, NJ 07080
1-908-668-1008 (9-5 EST)
Emergency Calls : 1-800-424-9300 (Domestic)
(CHEMTREC) 1-703-527-3887 (International)

2. Hazards Identification

EMERGENCY OVERVIEW
CAUTION! High-pressure gas, oxidizing gas.
Vigorously accelerates combustion.
Self-contained breathing apparatus may be required by rescue workers.
This is a colorless, odorless, and tasteless gas under ambient conditions.

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

Effects of a Single (acute) Overexposure : **Inhalation** - Breathing 80% or more Oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain, and breathing difficulty. Breathing Oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure Oxygen under pressure may cause lung damage and also Central Nervous System (CNS) effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness, and convulsions. Breathing Oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.
Skin Contact - No harm expected.
Swallowing - This product is a gas at normal temperature and pressure.
Eye Contact - No harm expected.

Effects of Repeated (chronic) Overexposure : No harm expected

Other Effects of Overexposure : The welding process may generate hazardous fumes and gases.

Medical Conditions Aggravated by Overexposure : At atmospheric concentration and pressure, Oxygen poses no toxicity hazards. At high concentrations, newborn premature infants may suffer delayed retinal damage (retrolental fibroplasias) that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% Oxygen for extended periods (24 to 48 hours) or at pressures exceeding atmospheric pressure, particularly in individuals whose retinal circulation has been previously compressed. All individuals exposed for long periods to Oxygen at high pressure and all who exhibit overt Oxygen toxicity should have ophthalmologic examinations.

Carcinogenicity : Oxygen is not listed by NTP, OSHA, or IARC.

3. Composition, Information on Ingredients

Single or Mixed	:	Single
Chemical Name	:	Oxygen
Content (vol%)	:	99.0 or more
Chemical Formula	:	O ₂
CAS Number	:	7782-44-7

4. First Aid Measures

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Inhalation	:	Immediately remove to fresh air. If not breathing, give artificial respiration. Keep victim warm and at rest. Call a physician. Advise the physician that the victim has been exposed to a high concentration of Oxygen.
Skin Contact	:	Oxygen is harmless at atmospheric pressure. Flush with water.
Frostbite	:	Try to warm up the frozen tissues and seek medical attention.
Eye Contact	:	Oxygen is harmless at atmospheric pressure. Direct spray may cause irritation. In case of irritation, check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
Swallowing	:	Not applicable
Protective Measures before starting First Aid	:	Ensure that the work area is well ventilated before starting first aid.
Notes to Physician	:	Supportive treatment should include immediate sedation, anticonvulsive therapy if needed, and rest.

5. Fire Fighting Measures

Flammable Properties	:	Oxidizing agent vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.
Extinguishing Media	:	Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water is the preferred extinguishing method for clothing fires.
Special Fire Fighting Procedures	:	WARNING! High-pressure, oxidizing gas. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156.
Specific Physical and Chemical Hazards	:	Heat of fire can build pressure in cylinder and cause it to rupture. Oxygen cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of cylinder should be subjected to a temperature higher than 125 ° F (52 ° C). Smoking, flames, and electric sparks in the presence of enriched Oxygen atmospheres are potential explosion hazards. <i>Recommended storage temperature: 0 ° C to +40 ° C.</i>

Hazardous Combustion products : Not applicable.

6. Accidental Release Measures

Steps to be taken if Material is Released or Spilled : **WARNING! High-pressure, oxidizing gas.**
Evacuate all personnel from danger area. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

Human consideration : Exposure to oxygen gas may cause work clothes to catch fire.

Environmental Affects : Oxygen gas will not adversely affect the environment.

Waste Disposal Method : Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local disposal authority for assistance.

7. Handling and Storage

Handling : Technical measures

Oxidation
Use pressure regulators, hoses, pressure gauges, etc., designed for oxygen. Do not use oxygen lines for other gases. Use pressure gauges having a label indicating non-oil.
Keep Oxygen gas equipment and accessories (storage tanks, containers, pipes, valves, gauges, etc.) clean and free of oils, fats, organic substances, dust, dirt, rust, burrs, etc.. Completely remove before starting operation.
If fats or oils get on hands or gloves, do not touch oxygen areas of equipment. Check hands, gloves, and clothing for fats and oils. Fats or oils catching fire in the presence of Oxygen gas will cause explosive burning. Do not use flammable gaskets for Oxygen gas supply.

Handling of Oxygen gas cylinders
Handle Oxygen gas cylinders carefully.
Before using Oxygen gas, confirm the name of the gas by checking the mark or the other items on the cylinder. Return gas cylinders containing gas other than Oxygen to the supplier.
Feed gas via a pressure regulator, not directly.
Use only specialized pressure regulators for Oxygen.
Before connecting a pressure regulator, check the thread type.
Before using a gas cylinder, check the pressure regulator, hoses, pipes, joints, etc., for leakage.
Do not refill cylinders.
Do not modify or erase marks or other items on cylinders. Do not peel off labels on cylinders.
Do not use gas cylinders in electric circuits.

Do not use burners or the like to directly heat the cylinder.

Avoid compressed Oxygen gas discharge.

Do not use gas cylinders for other purposes.

Other

Do not use Oxygen gas in place of compressed air.

Large numbers of Oxygen gas cylinders in enclosed areas may cause high oxygen concentrations. Use only in open or well ventilated areas.

Safe Handling

Oxygen gas oxidizes more easily than ambient air. Keep Oxygen gas away from contact with alkaline metals, benzoic flavoring (powder), carbon dioxide, textiles, hydrogen plus catalysts, acetone, acetylene, alcohol, oil film, etc.

An organic or flammable substance comes in contact with Oxygen gas may cause explosions.

Porous organic substances such as cloth or wood retain oxygen for long periods and will burn vigorously. Keep such substances away from fire.

Many substances non-flammable or fire-resistant in ambient air easily catch fire in Oxygen gas.

Together with water, Oxygen promotes metal corrosion.

Storage

: Storage Conditions

Keep Oxygen away from fire and spark sources.

Keep Oxygen gas cylinders away from flammable substances.

Do not store cylinders near electric lines or grounding.

Store cylinders in a dry and well ventilated area.

Keep cylinders away from corrosive fluid.

Keep cylinders away from direct sunlight at an ambient temperature of 0 to 40 ° C (32 to 104 ° F).

Do not expose cylinders to rough handling or falling.

8. Exposure Controls and Personal Protection

Engineering Controls

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal Protection

Eyes

: To protect eyes, wear goggles/safety glasses.

Respiratory Protection

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134.

Hands

: When handling Oxygen gas cylinders, wear leather gloves.

Skin and Body

: Not needed.

Other

: Protective equipment for cylinder handling, select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

9. Physical and Chemical Properties

Physical state : Gas at normal temperature and pressure
 Color : Colorless
 Odor : Odorless
 Explosiveness : Not applicable
 Molecular Weight : 32.0 g/mole
 Specific Gravity : 1.11 (Air=1, 0 ° C, 0.1013MPa (1 atm))
 Boiling/condensation point : -183.0 ° C (-297.4 ° F)
 Melting/freezing point : -218.8 ° C (-361.8 ° F)
 Gas Density : 1.429 g/L (@ 0 ° C, 0.1013MPa (1 atm))
 Solubility in Water : 0.0489 O₂/H₂O @0 ° C (32 ° F)

10. Stability and Reactivity

Stability and Reactivity : This product is stable.
 Hazardous Decomposition Products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
 Hazardous Polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.
 Conditions to Avoid : None currently known.

11. Toxicological Information

Acute toxicity : No known toxicological effects from this product.
 Inhalation : Inhalation:
 High oxygen density in ambient air affects health as follows.

Oxygen density (vol%)	Effect
18 - 25	Safe range
36	Inhaling this oxygen density for too long may cause symptoms of oxygen gas poisoning.
46	Inhaling this oxygen density even for a short time may cause symptoms of oxygen gas poisoning such as epileptic convulsions, lip twitching, dizziness, aversion, labored breathing, muscle cramps, mental derangement, auditory hallucinations, deterioration of visual acuity, and sharp pains in the extremities.

Local Physical Effects on Skin, Eyes, etc. : None
 Sensitization : None
 Chronic or Long-term Toxicity : None

12. Ecological Information

- Ecotoxicity : No known effects.
- Other adverse effects : The atmosphere contains approximately 21% Oxygen. No adverse ecological effects expected. Oxygen does not contain any Class 1 or Class 2 ozone-depleting chemicals.

13. Disposal Considerations

- Discharge of Oxygen Gas : To release Oxygen gas, select a well-ventilated safe place and check that no fire sources or flammable substances are present.
- Disposal of Cylinders : If gas remains in cylinders, release gas with proper equipment and dispose of cylinders as incombustible waste.
For empty cylinders, check for a puncture hole and dispose of as incombustible waste.
Do not dispose of cylinders without first checking that all gas has been released.

14. Transport Information

- DOT / IMO Shipping Name : Oxygen, compressed
- Identification Number : UN 1072
- Shipping Label(s) : Nonflammable gas, Oxidizer
- Hazard Class : 2.2
- Placard (When required) : Nonflammable gas, Oxidizer
- Special Shipping Information : See CFR 49, 172.101, 173.306 for exceptions of labeling.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

- U.S. Federal Regulations : EPA (Environmental Protection Agency)
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): None

SARA: Superfund Amendment and Reauthorization Act:

Sections 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of extremely hazardous substances (40 CFR Part 355):

Threshold Planning Quantity (TPQ): None

Extremely Hazardous Substances (40 CFR 355): None

Sections 311/312: Require submission of Material Safety Data Sheet (MSDSs) and chemical inventory reporting with identification of EPA hazard categories. The hazard categories for this products are as follows:

