

# Material Safety Data Sheet

## Oxygen

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### SECTION 01

## Chemical Product and Company Identification

<b>Product Name</b>	:	Oxygen
<b>Supplier</b>	:	EsPRI Gas 500 Northridge Road Suite 200 Atlanta, GA 30350
<b>Product Use</b>	:	Synthetic/Analytical chemistry.
<b>Synonym</b>	:	Molecular oxygen; Oxygen molecule; Pure oxygen; O <sub>2</sub> ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
<b>MSDS #</b>	:	001043
<b>Date of Prep/ Revision</b>	:	9/24/2013
<b>In Case of Emergency</b>	:	1-800-720-1563

### SECTION 02

## Hazards Identification

<b>Physical State</b>	:	Gas [Compressed gas]
<b>Emergency Overview</b>	:	DANGER! GAS: OXIDIZER CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. CONTENTS UNDER PRESSURE. Do not puncture or incinerate container. May cause severe frostbite. LIQUID: OXIDIZER CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.

## SECTION 02

## Hazards Identification (Cont.)

**Emergency Overview** : Extremely cold liquid and gas under pressure.  
May cause severe frostbite.  
Do not puncture or incinerate container.  
Store in tightly-closed container.  
Avoid contact with combustible materials.  
Contact with rapidly expanding gases or liquids can cause frostbite.

**Routes of Entry** : Inhalation

Potential Acute Health Effects

**Eyes** : May cause eye irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

**Skin** : May cause skin irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

**Inhalation** : Respiratory system irritation after overexposure to high oxygen concentrations.

**Ingestion** : Ingestion is not a normal route of exposure for gases. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

**Medical Conditions Aggravated by Overexposure** : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological information (Section 11)

## SECTION 03

## Composition, Information on Ingredients

**Name** : Oxygen

**CAS Number** : 7782-44-7

**% Volume** : 100

**Exposure Limits** : N/A

**SECTION 04**

## 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.

- Eye Contact** : 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.
- Skin Contact** : None expected
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : As this product is a gas, refer to the inhalation section.

**SECTION 05**

## Fire-Fighting Measures

- Flammability of the Product** : Non-Flammable
- Products of combustion** : No specific data
- Fire hazards in the presence of various substances** : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk. Contains gas under pressure. Contact with combustible material may cause fire. This material increases the risk of fire and may aid combustion. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

**SECTION 05**

## Fire-Fighting Measures (Cont.)

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**SECTION 06**

## Accidental Release Measures

**Personal Precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Eliminate all ignition sources if safe to do so. Do not touch or walk through spilled material. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed

**Environmental Precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Methods for Cleaning Up** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

**SECTION 07**

## Handling and Storage

**Handling** : High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Store in tightly-closed container. Avoid contact with combustible materials. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

**SECTION 07**

## Handling and Storage (Cont.)

**Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

**SECTION 08**

## Exposure Controls / 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** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. When working with cryogenic liquids, wear a full face shield.

**Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory** : 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. The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Insulated gloves suitable for low temperatures

## SECTION 08

## Exposure Controls / Personal Protection (Cont.)

<b>Personal Protection in case of a Large Spill</b>	:	Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).
<b>Product Name</b>	:	Oxygen

Consult local authorities for acceptable exposure limits.

## SECTION 09

## Physical and Chemical Properties

<b>Molecular Weight</b>	:	32 g/mole
<b>Molecular Formula</b>	:	O <sub>2</sub>
<b>Boiling/Condensation Point</b>	:	-183°C (-297.4°F)
<b>Melting/Freezing Point</b>	:	-218.4°C (-361.1°F)
<b>Critical Temperature</b>	:	-118.15°C (-180.7°F)
<b>Vapor Density</b>	:	1.1 (Air = 1)
<b>Specific Volume (ft<sup>3</sup> /lb)</b>	:	12.0482
<b>Gas Density (lb/ft<sup>3</sup>)</b>	:	0.083

## SECTION 10

## Stability and Reactivity

<b>Stability and Reactivity</b>	:	The product is stable.
<b>Incompatibility with Various Substances</b>	:	Extremely reactive or incompatible with the following materials: oxidizing materials, reducing materials and combustible materials.

## SECTION 10

## Stability and Reactivity (Cont.)

- 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.

## SECTION 11

## Toxicological Information

Toxicity Data

- Other Toxic Effects on Humans** : No specific information is available in our database regarding the other toxic effects of this material to humans

Specific Effects

- Carcinogenic Effects** : No known significant effects or critical hazards.
- Mutagenic Effects** : No known significant effects or critical hazards.
- Reproduction Toxicity** : No known significant effects or critical hazards.

## SECTION 12

## Ecological Information

- Aquatic Ecotoxicity** : Not Available
- Environmental Fate** : Not Available
- Environmental Hazards** : This product shows a low bioaccumulation potential.
- Toxicity to the Environment** : Not Available




**SECTION 13**

## Disposal Considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

**SECTION 14**

## Transport Information

Regulatory Info	UN #	Proper Shipping Name	Class	Packing Group	Label	Additional Info
<b>DOT Classification</b>	UN1072	OXYGEN, COMPRESSED	2.2	N/A (gas)	 	Limited QTY: Yes
	UN1073	Oxygen, refrigerated liquid				Packaging Instruction Passenger Aircraft QTY Limitation: 75kg  Cargo Aircraft QTY Limitation: 150kg  Special Provisions: A52
<b>TDG Classification</b>	UN1072	OXYGEN, COMPRESSED	2.2	N/A (gas)	 	Explosive Limit and Limited QTY Index: 0.125
	UN1073	Oxygen, refrigerated liquid				ERAP Index: 3000  Passenger Carrying Ship Index: 50  Passenger Carrying Road or Rail Index: 75  Special Provisions: 42
<b>Mexico Classification</b>	UN1072	OXYGEN, COMPRESSED	2.2	N/A (gas)	 	-
	UN1073	Oxygen, refrigerated liquid				

“REFER TO CFR 49 (OR AUTHORITY HAVING JURISDICTION) TO DETERMINE THE INFORMATION REQUIRED FOR SHIPMENT OF THE PRODUCT.”



## SECTION 15

## Regulatory Information

United States

- U.S. Federal Regulations** :
- TSCA 8(a) CDR Exempt/Partial exemption:** This material is listed or exempted.
  - United States inventory (TSCA 8b):** This material is listed or exempted.
  - State regulations SARA 302/304:** No products were found.
  - SARA 311/312 Hazards identification:** Fire hazard, Sudden release of pressure
- State Regulations** :
- Connecticut Carcinogen Reporting:** This material is not listed.
  - Connecticut Hazardous Material Survey:** This material is not listed.
  - Florida substances:** This material is not listed.
  - Illinois Chemical Safety Act:** This material is not listed.
  - Illinois Toxic Substances Disclosure to Employee Act:** This material is not listed.
  - Louisiana Reporting:** This material is not listed.
  - Louisiana Spill:** This material is not listed.
  - Massachusetts Spill:** This material is not listed.
  - Massachusetts Substances:** This material is not listed.
  - Michigan Critical Material:** This material is not listed.
  - Minnesota Hazardous Substances:** This material is not listed.
  - New Jersey Hazardous Substances:** This material is not listed.
  - New Jersey Spill:** This material is not listed.
  - New Jersey Toxic Catastrophe Prevention Act:** This material is not listed.
  - New York Acutely Hazardous Substances:** This material is not listed.
  - New York Toxic Chemical Release Reporting:** This material is not listed.
  - Pennsylvania RTK Hazardous Substances:** This material is not listed.
  - Rhode Island Hazardous Substances:** This material is not listed.

Canada

- WHMIS (Canada)** :
- Class A: Compressed gas.
  - Class C: Oxidizing material.
  - CEPA Toxic substances:** This material is not listed.
  - Canadian ARET:** This material is not listed.
  - Canadian NPRI:** This material is not listed.
  - Alberta Designated Substances:** This material is not listed.
  - Ontario Designated Substances:** This material is not listed.
  - Quebec Designated Substances:**

**SECTION 16**

# Other Information

United States

**Label Requirements** : GAS: OXIDIZER.  
 CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
 CONTENTS UNDER PRESSURE.  
 Do not puncture or incinerate container.  
 May cause severe frostbite.  
 LIQUID: OXIDIZER.  
 CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
 Extremely cold liquid and gas under pressure.  
 May cause severe frostbite.

Canada

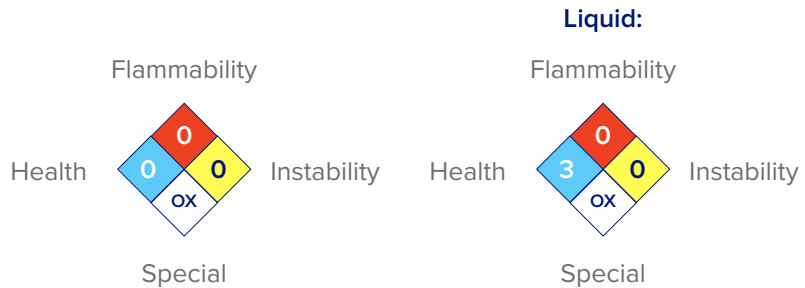
**Label Requirements** : Class A: Compressed gas.  
 Class C: Oxidizing material.

**Hazardous Material Information System (U.S.A.)**

Health	0
Flammability	0
Physical Hazards	0

**Liquid:**

Health	3
Fire Hazard	0
Reactivity	0
Personal Protection	

**National Fire Protection Association (U.S.A.)**


## Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.