

Material Safety Data Sheet

Revision 7: 1/18/08
 Material Name: Oxygen, Compressed Gas

ID: 4594908

***** Section 1 - Chemical Product and Company Identification *****

Part Number: R27082, B30229

Product Use: Breathing Apparatus.

Synonyms: Dioxygen; Molecular Oxygen; Oxygen Molecule; Pure Oxygen

Manufacturer Information

Draeger Safety, Inc
 101 Technology Drive
 Pittsburgh, PA 15275-1057

Phone: (412) 787-8383
 Fax: (412) 787-2207
 Emergency # 1-800-424-9300 (CHEMTREC)

General Comments

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

***** Section 2 - Composition / Information on Ingredients *****

CAS #	Component	Percent
7782-44-7	Oxygen	100

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

This material is a controlled product under Canadian WHMIS regulations.

***** Section 3 - Hazards Identification *****

Emergency Overview

CAUTION! CONTENTS UNDER PRESSURE. This product is a clear, colorless, non-flammable gas enclosed under high pressure in a cylinder. High pressure gas may accelerate combustion. High pressure gas released from cylinder may cause damage if released into eyes, skin or any orifice. Container may rupture if exposed to heat or flames.

Potential Health Effects: Eyes

High pressure gas released from cylinder may cause injury if released into eyes. This product may cause irritation to the eyes. Exposure to rapidly expanding gases may cause frostbite to exposed eyes.

Potential Health Effects: Skin

Exposure to rapidly expanding gas may cause frostbite to exposed skin.

Potential Health Effects: Ingestion

No information available for the product.

Potential Health Effects: Inhalation

Short term exposure can lead to irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion and convulsions. Long term exposure can lead to chest pain and lung damage.

HMIS Ratings: Health: 1 Fire: 0 Physical Hazard: 0 Pers. Prot.: safety glasses, gloves

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

***** Section 4 - First Aid Measures *****

First Aid: Eyes

Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of gas remains. Get medical attention immediately.

First Aid: Skin

If frostbite or freezing occurs, immediately flush with plenty of lukewarm water (105-115°F, 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

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First Aid: Ingestion

If ingestion of a large amount does occur, seek medical attention.

First Aid: Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. Give artificial respiration if not breathing. Get immediate medical attention.

* * * Section 5 - Fire Fighting Measures * * *

Flash Point: Not applicable

Upper Flammable Limit (UFL): Not available

Auto Ignition: Not available

Rate of Burning: Not available

General Fire Hazards

Negligible fire hazard. Pressurized Container: May explode when exposed to heat or flame. Stay away from end of tanks. Oxidizing agent, may cause spontaneous ignition of combustible materials.

Hazardous Combustion Products

None identified. Oxygen does not burn but aids combustion.

Extinguishing Media

Carbon dioxide. Dry chemical. Large Fires: Use regular foam or flood with fine water spray. Use methods for the surrounding fire.

Fire Fighting Equipment/Instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Move container from area if it can be done without risk. Cool containers with water spray until fire is out. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Cool containers with water. Apply water from a protected location or from a safe distance.

NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Stop source of leak if possible. Avoid bodily exposure to high pressure air release.

Clean-Up Procedures

Wear safety glasses or face shield to protect eyes. Ventilate the contaminated area.

Evacuation Procedures

Keep unnecessary people away, isolate hazard area and deny entry.

Special Procedures

None identified.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Use proper care when handling and protect cylinders from physical damage. Close cylinder valves when not in use and when empty. Secure cylinders at all times. Do not drag, slide or roll cylinders. Do not deface cylinders or labels. Use regulator piping and equipment adequately designed for pressures encountered. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49 CFR). Handle according to Compressed Gas Association Guidelines.

Storage Procedures

Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from flammable or combustible materials and keep away from heat sources and other ignition sources. Keep away from incompatible substances. Store according to Compressed Gas Association guidelines.

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*** Section 8 - Exposure Controls / Personal Protection ***

A: Component Exposure Limits

ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Engineering Controls

Use local exhaust ventilation.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Approved safety glasses or face shield recommended.

Personal Protective Equipment: Skin

Wear leather or other appropriate work gloves, if necessary for type of operation.

Personal Protective Equipment: Respiratory

Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. For Unknown Concentrations or Immediately Dangerous to Life or Health: Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.

Personal Protective Equipment: General

Wear safety shoes when handling cylinders.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Colorless	Odor:	Odorless
Physical State:	Gas	pH:	Not applicable
Vapor Pressure:	760mmHg@-183°C	Vapor Density:	1.1 (air=1)
Boiling Point:	-297°F (-183°C)	Melting Point:	-360°F (-218°C)
Solubility (H2O):	3.2% @25°C	Specific Gravity:	Not applicable
Freezing Point:	-360°F (-218°C)	Viscosity:	0.02075 cP @25°C
Bulk Density:	1.309 g/L @25°C		

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable under normal conditions.

Chemical Stability: Conditions to Avoid

Avoid flammable and combustible materials. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Incompatibility

Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials.

Hazardous Decomposition

Thermal decomposition products: miscellaneous decomposition products.

Hazardous Polymerization

Will not occur.

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*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

Pure oxygen, especially if not properly humidified, may cause mucous membrane irritation and pulmonary edema after 24 hours. Air normally contains 20-21% oxygen. As exposure to higher concentrations and/or greater than atmospheric pressure continues symptoms of toxicity may develop and increase in severity. Respiratory system effects may include a progressive decrease in vital capacity, tightness in the chest and discomfort, coughing, congestion, tracheobronchitis, pneumonia, edema, atelectasis and increased depth of respiration, rapid panting or asthma-like attacks, apnea in inspiratory position, fibroblastic proliferation, and hyperplasia of alveolar cells. Cardiovascular system effects may include bradycardia, hyperthermia or hypothermia and peripheral vasoconstriction. The nervous system may be affected with mood changes, nausea, dizziness, slowing of mental processes, malaise, hilarity, apprehension, paresthesias including tingling of fingers and toes, fasciculation of the lips and face, muscular twitching, visual and auditory hallucinations, general convulsions and epileptic seizures, loss of consciousness and collapse. At increased atmospheric pressures, vision may be affected. Symptoms may include photophobia, amblyopia, mydriasis, bilateral progressive constriction of visual field, impaired central vision, constriction of retinal vasculature, and possible loss of vision. However, no change in the visual fields or visual acuity was found after breathing pure oxygen for four and one-half hours at normal atmospheric pressures. Animal studies indicate exposure to oxygen under high pressure has caused hemolytic anemia. In pregnant women exposed to 100% oxygen for 20 minutes, the response was a fetal cardiac rate which decreased and became variable.

Due to rapid evaporation, the cryogenic liquid may cause frostbite with redness, tingling, pain and/or numbness. In more severe cases, the skin may become hard and white and develop blisters.

B: Component Analysis - LD50/LC50

No LD50/LC50's are available for this product's components.

Carcinogenicity

A: General Product Information

No information available for the product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Chronic Toxicity

Administration at atmospheric pressures at concentrations of 60% and 80% may be followed by adverse effects, including severe cough, acute chest pain associated with a decrease in vital capacity, intra-alveolar edema and atelectasis. It is possible that prolonged low-level injury may produce severe fibrotic changes in the lungs. However, after a human was exposed to high concentrations of oxygen for 150 days, severe irreversible retinal atrophy occurred.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No data available for this product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

Environmental Fate

No data available for this product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Allow gas to discharge at moderate rate. Remove all flammable materials from vicinity. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

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*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Oxygen, compressed
UN/NA #: UN1072 **Hazard Class:** 2.2
Required Label(s): NON-FLAMMABLE GAS; OXIDIZER
Additional Info.: Exceptions: 49 CFR 173.306
Non-Bulk Packaging: 49 CFR 173.302
Bulk Packaging: 49 CFR 173.314, 315
Quantity Limitations:
-Passenger Aircraft or Railcar: 75 kg
-Cargo Aircraft Only: 150 kg

TDG Information

Shipping Name: Oxygen, compressed
UN/NA #: UN1072 **Hazard Class:** 2.2
Required Label(s): NON-FLAMMABLE GAS; OXIDIZER

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

No information available for the product.

B: Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Oxygen	7782-44-7	No	Yes	No	Yes	Yes	Yes

Canadian WHMIS Information

A: General Product Information

WHMIS Classification: A, C

B: Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

A: General Product Information

No information available for the product.

B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Oxygen	7782-44-7	Yes	DSL	EINECS

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* * * Section 16 - Other Information * * *
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Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. EINECS = European Inventory of Existing Commercial Chemical Substances. EPA = Environmental Protection Agency. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Information System. IARC = International Agency for Research on Cancer. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. NA = Not available or Not Applicable. SARA = Superfund Amendments and Reauthorization Act. TLV = Threshold Limit Value. TSCA = Toxic Substance Control Act.

Contact: Product Manager

Contact Phone: (412) 787-8383

This is the end of MSDS # 4594908