Oxygen, Compressed

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:	**Oxygen, Compressed**
Synonyms:	**DiOxygen, GOX, Oxygen USP, Aviators Breathing Oxygen**
Common Name:	**Oxygen**
SDS Number:	**1072**
Revision Date:	**5/15/2018**
Version:	**2**
CAS Number:	**7782-44-7**
Chemical Family:	**Oxidizing Gas**
Chemical Formula:	**O2**
Product Use:	**Welding and cutting, Oxidation, Medical Drug use, Laboratory use and analytical instrument support gas** **Only product labeled as USP may be used in Medical applications**
Supplier Details:	**Norco, Inc.** **1125 W. Amity Rd.** **Boise, ID 83705**
Contact:	**Quality Dept.**
Phone:	**208-336-1643**
Fax:	**208-433-6160**
Internet:	**www.Norco-Inc. com**

For Transportation Emergency Contact CHEMTREC: 800-424-9300

2 HAZARDS IDENTIFICATION

Classification of Substance

GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):

Physical, Oxidizing Gases, 1
Physical, Gases Under Pressure, Compressed Gas

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: DANGER

GHS Hazard Pictograms:

GHS Hazard Statements:

H270 - May cause or intensify fire; oxidizer
H280 - Contains gas under pressure; may explode if heated

GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.
P220 - Keep/Store away from clothing/combustible materials.
P244 - Keep valves and fittings free from grease and oil.
P271 - Use and store only outdoors or in a well-ventilated area.
P370+376 - In case of fire: Stop leak if safe to do so.
CGA-PG05 - Use a back flow preventive device in the piping.
CGA-PG20 - Use only equipment of compatible materials of construction.
CGA-PG10 - Use only with equipment rated for cylinder pressure.
CGA-PG22 - Use only with equipment cleaned for oxygen service.
CGA-PG21 - Open valve slowly.
CGA-PG06 - Close valve after each use and when empty.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).

Hazards not Otherwise Classified (HNOC) or not Covered by GHS

Route of Entry:	**Inhalation; Skin; Eyes;**
Target Organs:	**Respiratory system;**
Inhalation:	**Oxygen is not acutely toxic under normal pressure. Prolonged inhalation of high oxygen concentrations (>75%) may affect coordination, attention, and cause tiredness or respiratory irritation. Inhalation for several hours may cause cough, sore throat, chest pain and difficulty breathing.** **Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures (i.e.: divers) may cause cramps, dizziness, difficulty breathing, convulsions, edema, and death.** **Elevated oxygen concentrations in incubators have caused visual impairment and blindness in premature infants. High oxygen concentrations primarily affect eyes which are not fully developed**
Skin Contact:	**Non-irritating. Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.**
Eye Contact:	**Non-irritating. Contact with rapidly expanding gas near the point of release may cause frostbite.**
Ingestion:	**Not anticipated. Product is a gas at normal conditions.**

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients

CAS#	%	Chemical Name
7782-44-7	>99.50%	Oxygen

4 FIRST AID MEASURES

Inhalation:	**Overexposure to oxygen is not anticipated under normal working conditions. High oxygen concentrations in the air may present a fire and explosion hazard. PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES WHEN OXYGEN IS INHALED UNDER PRESSURE (i.e.: as in scuba diving). Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Further treatment should be symptomatic and supportive. Inform the treating physician that the patient could be experiencing hyperoxia.**
Skin Contact:	**Non-irritating. None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.**
Eye Contact:	**Non-irritating. None Required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.**
Ingestion:	**Not a direct hazard.**

5 FIRE FIGHTING MEASURES

Flammability:	**Not Flammable**
Flash Point:	**None**
Flash Point Method:	**Not Applicable**
Burning Rate:	**Not Applicable**
Autoignition Temperature:	**None**
Lower Explosive Limit:	**None**
Upper Explosive Limit:	**None**

Fire and Explosion Hazards:
High oxygen concentrations vigorously accelerate combustion. Will support or initiate combustion/explosion of organic matter and other oxidizable material. Cylinders may rupture violently or vent rapidly from pressure when involved in a fire situation.

Extinguishing Media:
Water spray to keep cylinders cool. Extinguishing agent appropriate for the combustible material.

Fire Fighting Instructions:
If possible, stop the flow of oxygen which is supporting the fire. Firefighters should wear respiratory protection (SCBA) and full

turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6 ACCIDENTAL RELEASE MEASURES

Evacuate all personnel from affected area. A leak near combustible or flammable materials may represent a severe fire or explosion hazard. Eliminate all ignition sources. Ventilate enclosed areas. If it can be done without risk, stop the flow of gas or remove cylinder to outside. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

7 HANDLING AND STORAGE

Handling Precautions:

Dry product is noncorrosive and may be used with all materials of construction. Equipment to contain oxygen must be "Cleaned for Oxygen Service". Check with the supplier to verify oxygen compatibility for the service conditions. Moisture causes metal oxides which are formed with air to be hydrated so that they include volume and loose 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 this type generally contains flammable lubricants.

Storage Requirements:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 degrees F (52 degrees C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. 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. Post "NO SMOKING OR OPEN FLAMES" sign in the storage or use area.

For additional recommendations consult Compressed Gas Association Pamphlet P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use general ventilation and/or local exhaust as necessary to keep oxygen concentrations below 23.5%.

Personal Protective Equipment:

HMIS PP, B | Safety Glasses, Gloves
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Personal protective equipment

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested:Butoject (KCL 897 / Aldrich Z677647, Size M)

Splash protection: Material: Chloroprene Minimum layer thickness: 0.6 mm Break through time: 30 min Material tested:Camapren (KCL 722 / Aldrich Z677493, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our

customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection: Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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OSHA PEL: Not Available
ACGIH PEL: Not Available
LC_{50} : Not Available
RTECS#: RO206000
IDLH: Not Available

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	**Colorless Gas**		
Physical State:	**Gas**	**Odor:**	**Odorless**
Odor Threshold:	**Not Applicable**	**Molecular Formula:**	**32**
Particle Size:	**Not Applicable**	**Solubility:**	**Slightly Soluble**
Specific Gravity or Density:	**Vapor density at STP (Air = 1); 1.11 (Gas)**	**Softening Point:**	**Not Applicable**
Viscosity:	**Not Applicable**	**Percent Volatile:**	**100%**
Saturated Vapor Concentration:	**100%**	**Freezing or Melting Point:**	**-219°C (-362°F)**
Boiling Point:	**-183°C (-297°F)**	**Autoignition Temperature:**	**Not Applicable**
Flammability:	**Not Flammable**		
Vapor Pressure:	**Not Applicable**		
Potentia Hydrogenii:	**Not Applicable**		

10 STABILITY AND REACTIVITY

Chemical Stability:	**Stable**
Conditions to Avoldentification:	**Avoid heat, sparks, flames, and other ignition sources.**
Materials to Avoldentification:	**All flammable, inorganic, and combustible materials. Avoid heat, starks, flames, and other ignitions sources. Oils and grease.**
Hazardous Decomposition:	**None**
Hazardous Polymerization:	**Will not occur.**

11 TOXICOLOGICAL INFORMATION

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Information on toxicological effects

Acute toxicity:
Oral LD50 no data available
Inhalation LC50

Dermal LD50
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Nausea, Dizziness, Unconsciousness, May be harmful.

Synergistic effects: no data available

Additional Information:

RTECS: RS2060000

12 ECOLOGICAL INFORMATION

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Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

13 DISPOSAL CONSIDERATIONS

Do not attempt to dispose of residual waste or unused quantities in returnable containers. Return in shipping container, properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Norco for proper disposal.

14 TRANSPORT INFORMATION

UN1072, Oxygen, compressed, 2.2,(5.1)
UNProper Shipping Name US:
UN1072, Oxygen, Compressed, 2.2, (5.1)

Proper Shipping Name Canada:
UN1072, Oxygen, Compressed, 2.2, (5.1)

15 REGULATORY INFORMATION

Component (CAS#) [%] - CODES

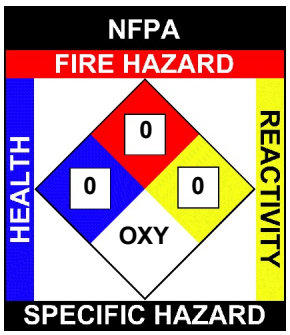
Oxygen (7782-44-7) [>99.50%] MASS, PA, TSCA

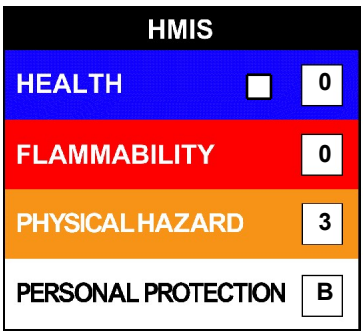
Regulatory CODE Descriptions

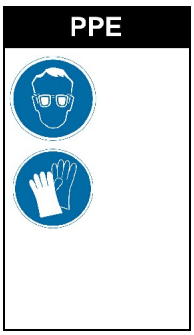
MASS = MA Massachusetts Hazardous Substances List
PA = PA Right-To-Know List of Hazardous Substances
TSCA = Toxic Substances Control Act

16 OTHER INFORMATION

NFPA: **Health = 0, Fire = 0, Reactivity = 0, Specific Hazard = OXY**
HMIS III: **Health = 0, Fire = 0, Physical Hazard = 3**
HMIS PPE: **B - Safety Glasses, Gloves**







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