SAFETY DATA SHEET

Material Name: Oxygen, Compressed Gas

Section 1 – Product and Company Identification	
Product Identifier:	Oxygen, Compressed Gas
Other means of identification:	Oxygen Gas, O2, GOX (Gaseous Oxygen), Di-atomic oxygen, Medical Oxygen
Product Uses:	Industrial manufacturing including steel making, various combustion processes, oxidation processes, metal cutting, medical, etc.
Supplier Details:	Western Gasco Cylinders Ltd. 2169 Peardonville Road Abbotsford BC V2T 6J7
Emergency Phone Number:	(613)996-6666

Section 2 – Hazards Identification	
Classification per OSHA paragraph (d) of §1910.1200	Compressed gas Oxidizing Gas – Category 1
Signal word Hazard statement(s) Symbol Precautionary statement	Danger Oxidizer, may cause or intensify combustion Gas in pipelines may be under pressure, cylinders may explode if heated Respiratory irritant  Read completely and follow all Safety Data Sheets before use Colorless, odorless gas Keep valves, fittings, piping free from grease and oil, use only with equipment cleaned for oxygen service Keep away from incompatible and combustible materials including clothing Do not allow smoking, open flames or other ignition sources near oxygen source or oxygen enriched atmosphere. Never enter an area where oxygen may have caused an oxygen enriched atmosphere Ensure proper ventilation Use equipment and materials rated for service Protect cylinders from sunlight, store in ventilated area Rapid release of compressed gas may cause frostbite if contacted
Hazards not otherwise classified	None

Toxicity	Refer to Section 11 Non-toxic but prolonged exposure to >75% concentration may cause central nervous system depression, headache, dizziness, drowsiness, slowed reaction time, slurred speech, and unconsciousness.

Section 3 – Compositions / Information of Ingredients	
Chemical Name & Formula	Oxygen, O2
Common Name and Synonyms	Oxygen Gas, O2, GOX (Gaseous oxygen), Di-atomic oxygen, Medical Oxygen
CAS Number	7782-44-7, Oxygen Compressed
Purity	Nominally 100%, typically provided 93% and above, by volume

Section 4 – First Aid Measures	
Inhalation	Immediately remove victim to fresh air if it can be done safely. If not breathing provide artificial respiration or oxygen by trained personnel, get immediate medical attention.
Skin Contact	No adverse effects expected from gas at normal temperature. Very cold gas may cause frostbite.
Eye Contact	No adverse effects normally expected from gas. Avoid high pressure or very cold gas. Remove contact lenses. Flush with water, seek medical attention if irritation persists.
Ingestion	Not an expected route of exposure, refer to inhalation section above.
Most important symptoms, effects, acute and delayed	Prolonged exposure to >75% concentration may cause central nervous system depression, headache, dizziness, drowsiness, slowed reaction time, slurred speech, and unconsciousness.
Immediate medical attention and special treatment needed	If symptoms occur, seek medical advice and attention.

Section 5 – Fire Fighting Measures	
Suitable extinguishing media	Use appropriate extinguishing media for surrounding fire.
Special hazards arising (e.g. nature of any hazardous combustion process)	Oxygen is not flammable, but vigorously supports combustion, materials that are not normally combustible in air can ignite if exposed to ignition source. If product under pressure in closed contained, heat from fire may cause pressure to rise and container to burst. Cool any containers with water if possible.
Special protective equipment and precautions for firefighters	Wear appropriate protective gear and self-contained breathing apparatus. Evacuate personnel from danger area Normal fire protective clothing may burn in oxygen enriched atmosphere. Oxygen gas is slightly denser than air at same temperature which can cause it to concentrate in low areas and lead to oxygen enriched atmosphere.

Section 6 – Accidental Release Measures	
Personal precautions, protective equipment, emergency procedures	First responders should ensure oxygen concentration in area is safe and there are no open flames in area Evacuate personnel to safe area, never enter suspected oxygen enriched area, do not walk or drive through a potentially oxygen enriched area. Clothing exposed to high oxygen concentrations can become saturated and retain oxygen increasing hazard of ignition. Shut off or eliminate any ignition sources. Oxygen gas is slightly denser than air at same temperature which can cause it to concentrate in low areas and lead to an oxygen enriched atmosphere.
Methods and materials for containment and clean up	Isolate any leaking sources if it can be done safely. Ventilate the area if possible.

Section 7 – Handling and Storage	
Precautions for safe handling	Protect system components against physical damage. Use adequate ventilation. Never work on a pressurized system. Use spark proof tools when working around potential enriched oxygen areas. Wear gloves when moving cylinders. Safety glasses always recommended when working with compressed gases. Refer to CGA Safety Bulletin SB-2 for additional recommendations.
Conditions for safe storage, including any incompatibilities	Use storage containers, piping, valves and fittings designed for storage and distribution of gaseous oxygen. Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place (where provided) until cylinder is placed into service and after it is taken out of service. Use designated CGA fittings and other support equipment. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder.

	Do not use non-compatible oils or grease on gas-handling fittings or equipment. Oxygen gas is slightly denser than air at same temperature which can cause it to concentrate in low areas and lead to an oxygen enriched atmosphere.

Section 8 – Exposure Controls / Personal Protection	
Permissible exposure limits	There are no exposure limits for this product. Oxygen levels should be kept above 19.5% and below 23.5% for all personnel.
Appropriate Engineering Controls	Ensure adequate ventilation. Use spark-proof tools and explosion proof equipment in areas where potential high oxygen concentrations may occur. Oxygen monitors and alarms in areas where oxygen enrichment is possible. Pressurized systems to have relief valves properly sized, calibrated and vented. Use compatible materials and oxygen cleaned components
Individual protection measures / personal protective equipment	Ensure adequate ventilation. Use of personnel oxygen monitors. Avoid sources of ignition such as smoking or open flames. Gloves and safety shoes for handling containers/cylinders. Safety glasses / face protection if exposure to discharged gases, eye wash station. Check systems regularly for leaks.

Section 9 – Physical and Chemical Properties			
Property	**Value**	**Property**	**Value**
Appearance	Colorless	Upper/Lower Explosive Limit	NA

Odor	Odorless	Vapor Pressure	NA
Odor Threshold	NA	Vapor Density	0.0828 lb/ft3 @ 70°F 1.33 kg/m3 @ 21.1°C
Molecular Weight	32.0 g/mol	Specific Volume	12.08 ft3/lb @ 70°F 0.754 m3/kg @ 21.1 °C
pH	NA	Relative Density to Air	1.1
Melting / Freezing Point	-362°F / -219°C	Solubility	Slight in water
Boiling Point	-297°F / -183°C	Partition Coefficient: noctanol / water	NA
Flash Point	NA	Auto Ignition Temperature	NA
Evaporation Rate	NA	Decomposition Temperature	NA
Flammability	Non-flammable	Viscosity (dynamic)	0.0204 centipoise @70°F

Section 10 – Stability and Reactivity	
Reactivity	Not reactive under normal conditions
Chemical Stability	Stable at normal temperatures and pressures
Possibility of Hazardous Reactions	Oxygen enriched atmospheres strongly enhance combustion
Conditions to Avoid	Exposure to incompatible and combustible materials Open flames or other sources of ignition and high temperatures. High concentrations causing oxygen enriched atmosphere leading to enhanced combustion reactions (see sections 4, 6, 7 & 8)
Incompatible Materials	Oils and greases, combustible, flammable and reducing materials
Hazardous Decomposition Products	None

Section 11 Toxicology Information	
Information on likely routes of exposure	Inhalation – exposure to prolonged concentrations >75% may cause adverse breathing symptoms; at 100%, may cause respiratory and central nervous system damage Ingestion – not an expected route Skin – no affects expected normally, cold gas may cause frostbite Eye – no effects expected normally, cold gas may cause frostbite
Symptoms related to physical, chemical, toxicological characteristics	Inhalation – adverse symptoms include chest pain, difficulty breathing, nasal irritation, nausea, irregular heartbeat, dizziness, respiratory and central nervous system damage Skin – cold gas may cause frostbite Eye – cold gas may cause frostbite
Delayed, Immediate, chronic effects from short and long term exposure	The symptoms listed above are result of prolonged exposure as indicated Frostbite from immediate exposure to very cold gas

Numerical measures of toxicity	LD50 – not available LC50 – not available
Carcinogen Listing	Not carcinogenic
Section 12 – Ecological Information	
Ecotoxicity	None
Persistence and degradability	Not applicable. Normal air is approximately 21% oxygen by volume.
Bio-accumulative potential	No information available
Mobility in Soil	No information available
Other Adverse effects	No known other effects

Section 13 – Disposal Considerations	
Waste residues and disposal guidelines	Product will normally dissipate in air, however oxygen gas is slightly denser than air at same temperature which can cause it to concentrate in low areas and lead to an oxygen enriched atmosphere. Dispose of any contents or containers in accordance with applicable regulations. Cylinders should be returned in original shipping container/method with any valves closed and protective plugs or caps securely in place. Refer to CGA Pamphlet 63, Disposal of Gases for more information.

Section 14 – Transport Information	
US DOT UN ID Number	UN1072
UN Proper Shipping Name	Oxygen, compressed
DOT Transportation Hazard Class	DOT Class 2.2 (Non-Flammable compressed gas) Emergency Response Guide No. 122  
Packing Group	Not Applicable
Environmental Hazards	None
Transport Bulk Codes	Refer to DOT 49 CFR 172, 173 & 175 for additional information
Special Precautions	Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Isolate area to avoid personnel exposure or any other vehicles from entering the area. High pressure gas cylinders should have outlet valves closed, with plugs/valve caps secured in place. Load space must be separated from driver compartment. Cylinders should be firmly secured from moving or falling during transport.

Section 15 - Regulatory Information

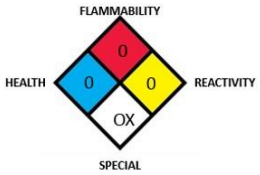
US Federal TSCA (Toxic Substance Control Act) – listed or exempted
US EPA SARA Title III Section 311/312 hazard Category: Sudden release of pressure hazard; Fire Hazard US States Right-To-Know Lists: Massachusetts, New Jersey, Pennsylvania

Section 16 – Other Information

US Nation Fire Protection Agency (NFPA) hazard ratings:

(Scale of 0 to 4, with 0 = lowest increasing to 4 = highest hazard, refer to NFPA for details related to the relative rating for each category)

Health: 0 Fire: 0
Reactivity: 0
Special: OX (Oxidizer)



US Hazardous Material Information System (HMIS) ratings:

(Scale: 0 = minimal, 1 = slight, 2= moderate, 3 = serious, 4 = severe)

USE OF THIS INFORMATION:

Western Gasco Cylinders Inc. offers this information to promote the safe use of this product through awareness of hazards and safety information. Those who use or transport or sell this product to others should: 1) Disseminate this information internally to all workplace areas, employees, agents and contractors likely to encounter this product

2) Provide supplemental hazards awareness, safety information, operation and maintenance procedures to the workplace areas and employees, agents and contractors likely to encounter this product

3) Furnish this information to all their customers who purchase this product

4) Ask each purchaser or user of the product to notify its employees and customers of the product hazards and safety information.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

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