Material Safety Data Sheet

Oxygen (Gas/Liquid)

AIR LIQUIDE™

Section 1. Chemical product and company identification

Commercial name(s). : **Oxygen/*ALIGAL*™ 3**
Material uses : Various./Special atmospheres for food.
Supplier/Manufacturer : Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700, Montreal, QC H3B 5E6
In case of emergency : (514) 878-1667

Section 2. Hazards identification

Physical state : Gas or liquefied gas.
Emergency overview : WARNING!

OXIDIZER.
CONTENTS UNDER PRESSURE.
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

Keep away from heat (<52°C/125°F). Use only with adequate ventilation. Extremely hazardous gas/liquid under pressure. Keep cylinder valve, closed when the product is not used. Gas may accumulate in confined areas.

Routes of entry : Inhalation. Dermal contact. Eye contact.
Potential acute health effects
Inhalation : Inhlation of this product may cause hyperoxia.
Skin : Dermal contact with a rapidly evaporating liquid could result in freezing of the tissues or frostbite.
Eyes : Liquid or rapidly evolving gas can cause burns similar to frostbite.
Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. Ingestion of liquid can cause burns similar to frostbite.
Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.
Medical conditions aggravated by over-exposure : Repeated or prolonged exposure is not known to aggravate any medical condition.

See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

	CAS number	mole %
Canada		
Oxygen	7782-44-7	> 99.5

This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.
See Chapters 8, 11, 14 and 15 for details.

Section 4. First aid measures

Prompt medical attention is mandatory in all cases of overexposure to this gas. Rescue personnel should wear a self-contained breathing apparatus and be awared of the extremely high risk of fire, caused by overoxygenated atmospheres.

Inhalation : In case of inhalation, conscious persons should be assisted to an uncontaminated area and inhale fresh air. The person should be kept warmed and calm. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area. Further treatment should be symptomatic and supportive.

Skin contact : Remove contaminated clothing and rinse affected skin with lukewarm water. Do not rinse with hot water. Provide medical prompt attention, frozen tissue is painless and appear waxy, with a possible yellow color. Frozen tissue will become swollen, painful and prone to infection when thawed.

Eye contact : Individual in contact with a gas should not wear contact lenses. Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.

Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation.

Notes to physician : The medical doctor must be warned that the person may suffer from hyperoxia.

Section 5. Fire fighting measures

Flammability of the product : Non-flammable.

This gas vigorously accelerate combustion. Avoid all contact with combustible materials. Some non-flamamble materials in air will burn under an overoxygenated atmosphere.

Explosion hazards in the presence of various substances : Container explosion may occur under fire conditions or when heated.

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

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

Section 6. Accidental release measures

Personal precautions : EVACUATE ALL PERSONNEL FROM AFFECTED AREA.
Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on cylinder or cylinder' valve, contact the closest Air Liquide Canada location.

Section 7. Handling and storage

Handling : Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

Storage : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must 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 being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no source of ignition in the storage or use area.

Section 8. Exposure controls, personal protection

Engineering controls : Use only in well-ventilated areas.

Personal protection

Respiratory : 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.

Hands : Wear suitable gloves for the application.

Eyes : Safety glasses with side shields.

Skin/Body : Metal cap, safety shoes are recommended when handling cylinders.

Some applications of this product may require additionnal or other specific protective clothings. Please consult your supervisor.

Personal protection in case of a major leak : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Metal cap, safety boots. Wear MSHA/NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

Exposure limits : None assigned. Inhlation of this product may cause hyperoxia.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state : Gas or liquefied gas.

Color : Colorless.

Odor : Odorless.

Molecular weight : 32 g/mole

Molecular formula : O_2

Boiling/condensation point : -183.11°C (-297.6°F)

Melting/freezing point : -218.55°C (-361.4°F)

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with organic materials.

Hazardous polymerization : Will not occur.

Section 11. Toxicological information

Acute Effects

Inhalation : Inhlation of this product may cause hyperoxia.

Skin : Dermal contact with a rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Eyes : Liquid or rapidly evolving gas can cause burns similar to frostbite.

Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. Ingestion of liquid can cause burns similar to frostbite.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

Section 12. Ecological information

Products of degradation : This gas is released as is in the atmosphere.

Section 13. Disposal considerations

Disposal : Do not attempt to dispose of the container or of its content. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Air Liquide Canada for proper disposal. For emergency disposal, contact the closest Air Liquide Canada location.

Section 14. Transport information

Classification

TDG/ IMDG/ IATA :	UN number	Proper shipping name	Class	Packing group
	GAS: UN1072 LIQUID: UN1073	OXYGEN, COMPRESSED OXYGEN, REFRIGERATED LIQUID (cryogenic liquid)	2.2, (5.1) 2.2, (5.1)	-

NAERG : 122

Label

UN/Other regulations

Additional information

Cylinders should be transported in a secure position, in a well ventilated vehicule. The transportation of compressed gas cylinders in automobiles or in closed-body vehicules can present serious safety hazards and should be discouraged.

TDG

Special provisions
42

IATA

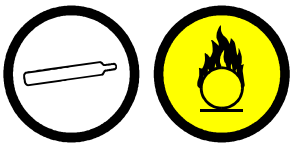
Quantity limitation - Passenger aircraft
75 kg

Quantity limitation - Cargo aircraft
150 kg

Section 15. Regulatory information

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class C: Oxidizing material.



CEPA DSL: Oxygen

Section 16. Other information

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

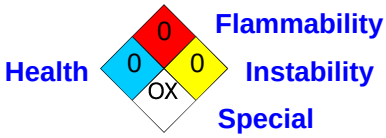
Gas.

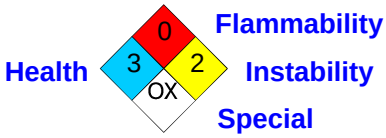
Health	0
Fire hazard	0
Reactivity	0
Personal protection	C

Liquid.

Health	3
Fire hazard	0
Reactivity	2
Personal protection	X

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





References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2002. CGA C-7 Guide to the Preparation of Precautionary Labels and Marking of Compressed Gas Containers. CGA P-20 Standard for Classification of Toxic Gas Mixtures. CGA P-23 Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components.

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