

SECTION 1: Identification

1.1. Product identifier

Product name : Oxygen (compressed)
 CAS No : 7782-44-7
 Formula : O₂
 Synonyms : Oxygen

1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Test/Calibration gas; Special atmospheres for food; Laser applications; Welding

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

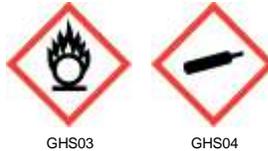
Classification (GHS-CA)

Oxidizing Gases, Category 1 : H270
 Gases under pressure: compressed gas : H280
 Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms (GHS-CA) :



Signal word (GHS-CA) : Danger
 Hazard statements (GHS-CA) : H270 - May cause or intensify fire; oxidizer
 H280 - Contains gas under pressure; may explode if heated
 Precautionary statements (GHS-CA) : P202 - Do not handle until all safety precautions have been read and understood
 P220 - Keep away from clothing and other combustible materials
 P244 - Keep valves and fittings free from oil and grease
 P271 - Use only outdoors or in a well-ventilated area
 P370+P376 - In case of fire: Stop leak if safe to do so
 P403 - Store in a well-ventilated place
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations
 CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C/125 °F
 CGA-PG05 - Use a back flow preventive device in the piping
 CGA-PG06 - Close valve after each use and when empty
 CGA-PG10 - Use only with equipment rated for cylinder pressure
 CGA-PG14 - Approach suspected leak area with caution
 CGA-PG20 - Use only with equipment of compatible materials of construction and rated for cylinder pressure
 CGA-PG21 - Open valve slowly
 CGA-PG22 - Use only with equipment cleaned for oxygen service

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification (GHS-CA)
Oxygen (compressed) (Main constituent)	(CAS No) 7782-44-7	100	Ox. Gas 1, H270 Compressed gas, H280

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable



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SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Adverse effects not expected from this product.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : Adverse effects not expected from this product.
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects after inhalation : Adverse effects not expected from this product.
Symptoms/effects after skin contact : Adverse effects not expected from this product.
Symptoms/effects after eye contact : Adverse effects not expected from this product.
Symptoms/effects after ingestion : Ingestion is not considered a potential route of exposure.
Symptoms/effects upon intravenous administration: Not known.
Chronic symptoms : Adverse effects not expected from this product.

4.3. Immediate medical attention and special treatment, if necessary

- Other medical advice or treatment : If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Unsuitable extinguishing media

- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.3. Specific hazards arising from the hazardous product

- Fire hazard : The product is not flammable.
Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

5.4. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Exposure to fire may cause containers to rupture/explode.
Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Ensure adequate ventilation.
Personal Precautions, Protective Equipment and Emergency Procedures : EVACUATE ALL PERSONNEL FROM AFFECTED AREA. Use appropriate protective equipment. If leak is on user's equipment, be certain to purge piping before attempting repairs. If leak is on a container or container valve contact the closest Gasal location.

6.2. Methods and materials for containment and cleaning up

- For containment : Try to stop release if without risk.
Methods for cleaning up : Dispose of contents/container in accordance with local/regional/national/international regulations.

6.3. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection"

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.
Hygiene measures : Do not eat, drink or smoke when using this product.
Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Comply with applicable regulations.
Storage conditions : Do not expose to temperatures exceeding 52 °C/ 125 °F. Keep container closed when not in use. Protect cylinders from physical damage; do not drag, roll, slide or drop. Store in well ventilated area.

Incompatible products : None known.
 Incompatible materials : Flammable materials. Combustible materials. Reducing agents.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide adequate ventilation. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available).

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Gloves. Safety glasses. Protective clothing. Safety shoes.



Hand protection : Wear working gloves when handling gas containers.
 Eye protection : Wear safety glasses with side shields.
 Skin and body protection : Wear suitable protective clothing, e.g. lab coats, coveralls or flame resistant clothing.
 Respiratory protection : None necessary during routine operations. See Sections 5 & 6.
 Thermal hazard protection : None necessary during routine operations.
 Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.
 Other information : Wear safety shoes while handling containers.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas
 Appearance : Colorless gas.
 Molecular mass : 31.9988 g/mol
 Color : Colorless.
 Odor : Odorless.
 Odor threshold : No data available
 pH : Not applicable.
 pH solution : No data available
 Relative evaporation rate (butyl acetate=1) : No data available
 Relative evaporation rate (ether=1) : Not applicable for gases and gas mixtures.
 Melting point : -219 °C
 Freezing point : -219 °C
 Boiling point : -181.95 °C
 Flash point : Not applicable - not flammable
 Critical temperature : -117.55 °C
 Auto-ignition temperature : Not applicable.
 Decomposition temperature : No data available
 Flammability (solid, gas) : See Section 2.1 and 2.2
 Vapor pressure : 28.1 mbar 23°C
 Vapor pressure at 50 °C : No data available
 Critical pressure : 5043 kPa
 Relative vapor density at 20 °C : 1.105
 Relative density : 1.1
 Relative density of saturated gas/air mixture : No data available
 Density : 1.4289 kg/m³ (at 21.1 °C)
 Relative gas density : 1.1
 Solubility : Water: 39 mg/l
 Log Pow : Not applicable for inorganic gases.
 Log Kow : No data available



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Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Viscosity, kinematic (calculated value) (40 °C)	: No data available
Explosive properties	: Not applicable (non-flammable gas).
Oxidizing properties	: Not combustible but enhances combustion of other substances. May intensify fire. Oxidizer.
Explosive limits	: Not applicable - not flammable
Lower explosive limit (LEL)	: No data available
Upper explosive limit (UEL)	: No data available

9.2. Other information

Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	: None known.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Violently oxidizes organic material.
Conditions to avoid	: None under recommended storage and handling conditions (see section 7).
Incompatible materials	: Combustible materials. Flammable materials. Reducing agents.
Hazardous decomposition products	: Under normal conditions of storage and use hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Inhalation: gas: Not classified.

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LC50 inhalation rat (ppm)	: 800000 ppm/4h
ATE CA (gases)	: 800000.00000000 ppmv/4h
Skin corrosion/irritation	: Not classified pH: Not applicable.
Serious eye damage/irritation	: Not classified pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: No ecological damage caused by this product.
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12.2. Persistence and degradability

Oxygen (compressed) (7782-44-7)

Persistence and degradability	: No ecological damage caused by this product.
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12.3. Bio accumulative potential

Oxygen (compressed) (7782-44-7)

Log Pow	: Not applicable for inorganic gases.
Bio accumulative potential	: No ecological damage caused by this product.



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12.4. Mobility in soil

Oxygen (compressed) (7782-44-7)

Log Pow : Not applicable for inorganic gases.
Ecology - soil : No ecological damage caused by this product.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded.
Waste disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

Transportation of Dangerous Goods

UN-No. (TDG) : UN1072
TDG Primary Hazard Classes : 2.2 - Class 2.2 - Non-Flammable, Non-Toxic Gas.
TDG Subsidiary Classes : 5.1
Transport Document Description : UN1072 OXYGEN, COMPRESSED, 2.2
Proper Shipping Name : OXYGEN, COMPRESSED
Hazard labels (TDG) : 2.2 - Non-flammable, non-toxic gases
5.1 - Oxidizing substances



ERAP Index : 3 000
Explosive Limit and Limited Quantity Index : 0.125 L
Excepted quantities (TDG) : E0
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : 75 L

14.2. Transport information/DOT - USA

Department of Transport

DOT NA no. : UN1072
UN-No.(DOT) : 1072
Transport Document Description : UN1072 Oxygen, compressed, 2.2
Proper Shipping Name (DOT) : Oxygen, compressed
Contains Statement Field Selection (DOT) : DOT_TECHNICAL - Proper Shipping Name - Technical (DOT)
Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115
Division (DOT) : 2.2
Hazard labels (DOT) : 2.2 - Non-flammable gas
5.1 - Oxidiser



Dangerous for the environment : No



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DOT Special Provisions (49 CFR 172.102)	: 110 - Fire extinguishers transported under UN1044 may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft
DOT Packaging Exceptions (49 CFR 173.xxx)	: 306
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 302
DOT Packaging Bulk (49 CFR 173.xxx)	: 314;315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 150 kg
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel
Emergency Response Guide (ERG) Number	: 122 (UN1072)
Special transport precautions	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. 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. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.
Other information	: No supplementary information available.

14.3. Air and sea transport

IMDG

UN-No. (IMDG)	: 1072
Proper Shipping Name (IMDG)	: COMPRESSED GAS, OXIDIZING, N.O.S.



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Class (IMDG)	: 2 - Gases
MFAG-No	: 122
Ship Safety Act	: Gases under pressure/Gases nonflammable nontoxic under pressure(Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)
Port Regulation Law	: Hazardous materials/High pressure gas (Article 21, Paragraph 2 of Law, Article 12 rule, notice attached table that defines the type of dangerous goods)

IATA

UN-No. (IATA)	: 1072
Proper Shipping Name (IATA)	: COMPRESSED GAS, OXIDIZING, N.O.S.
Class (IATA)	: 2
Civil Aeronautics Law	: Gases under pressure/Gases nonflammable nontoxic under pressure(Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)

SECTION 15: Regulatory information

15.1. International regulations

Oxygen (compressed) (7782-44-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)

SECTION 16: Other information

Full text of H-statements:

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

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, GASAL MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.