

SEZION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Commercial name	Oxygen
Our code	12002001 – 12002001-2
Chemical description	EU Index No: 008-001-00-8 EC No: 231-956-9 CAS No: 7782-44-7 Chemical formula: O ₂

1.2. Relevant identified uses of the substance or mixture and uses advised against

Industrial sector	Refrigeration and air-conditioning
Identified pertinent uses	Test gas / Calibration gas. Welding, cutting, heating and brazing. Shield gas for welding processes. Laser gas. Laboratory use.
Application	Industrial and professional. Perform risk assessment prior to use.

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) 1272/2008 (CLP)**

Physical Hazards	Oxidising Gases	Category 1	H270
	Compressed gas		H280

2.2. Label elements**Dangerous pictogram****GHS03****GHS04**

Signal word	Danger	
Hazard statements (H)	H270	May cause or intensify fire; oxidiser.
	H280	Contains gas under pressure; may explode if heated.
Precautionary statements (P)		
Prevention	P220	Keep away from clothing and other combustible materials.
	P244	Keep valves and fittings free from oil and grease.
Response	P370+P376	In case of fire: stop leak if safe to do so.
Storage	P403	Store in a well ventilated place.

2.3. Other hazards

n.a.

SECTION 3: Composition/information on ingredients**3.1. Substances**

Substance name	Contents	Index No.	EC No.	CAS No.	REACH No.	Classification Regulation (EC) n. 1272/2008 (CLP)
Oxygen	100%	008-001-00-8	233-032-0	10024-97-2	*	Ox. Gas 1, H270 Press. Gas (Comp.), H280

* Listed in Annex IV / V REACH, exempted from registration.

Contains no other components or impurities which will influence the classification of the product.

For more information, see section 8, 11, 12 and 16.

SECTION 4: First aid measures

General information: If the person is unconscious, place it in the recovery position and get immediately medical attention. Do not give anything to an unconscious person. If breathing is irregular, give oxygen. If breathing stopped, administer artificial respiration. If symptoms persist, call a physician.

4.1. Description of first aid measures

Inhalation	Remove patient to uncontaminated area. Keep victim warm and rested. Administer oxygen if necessary. Obtain immediate medical attention. Perform cardiopulmonary resuscitation if breathing stopped.
Skin contact	In case of frostbite, spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Eye contact	Immediate flush eyes thoroughly with plenty of water of at least 15 minutes.
Ingestion	Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

For more information, see section 11.

4.3. Indication of any immediate medical attention and special treatment needed

n.a.

SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable extinguishing media	Water spray, alcohol-resistant foam, dry chemical or CO ₂
No suitable extinguishing media	None to our knowledge.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Supports combustion. Contents under pressure. On heating: heating will cause a rise in pressure with a risk of bursting. Toxic and corrosive vapours are released. Cool down the containers exposed to heat with a water spray. Vapours are heavier than air and can cause rapid suffocation by reducing oxygen available for breathing.
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5.3. Advice for firefighters*Specific method*

Use fire control measures appropriate for the surrounding fire.
Exposure to fire and heat radiation may cause gas receptacles to rupture.
Cool endangered receptacles with water spray jet from a protected position.
Prevent water used in emergency cases from entering sewers and drainage system.

Special protective equipment for fire fighters

Wear self-contained positive pressure breathing apparatus (SCBA) and protective suit.
Avoid contact with skin and eyes.
Do not breathe gas/fumes/vapour.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Immediately contact emergency personnel.

Immediately evacuate personnel to safe areas. Unprotected persons must be kept away.

Wear personal protective equipment refer to section 8 "Exposure controls/personal protection".

Remove all sources of ignition.

Try to stop leak if safe to do so.

Avoid contact with skin (possible frostbite).

Ventilate the area/local. In case of insufficient ventilation, wear self-contained breathing apparatus.

Prevent from entering sewers and basements, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Do not allow product to spread into the environment.

Avoid spillage and prevent possible losses.

6.3. Methods and material for containment and cleaning up

Ventilate / aerate the area or local.

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (ground free from frost).

6.4. Reference to other sections

For further on personal protection, refer to section 8 and 13.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Safe use	<p>For more guidance on safe use, refer to the EIGA Doc.176 "Safe practices for storage and handling of Nitrous oxide", downloadable at http://www.eiga.eu" and consult your supplier.</p> <p>Protect from sunlight and do not expose to temperatures exceeding 50° C (122 °F).</p> <p>Clean all surfaces in direct contact with Nitrous oxide as for oxygen service.</p> <p>Nitrous oxide transfer pumps shall be provided with an interlock to prevent dry running.</p> <p>Only experienced and properly instructed persons should handle gases under pressure.</p> <p>Consider pressure relief device(s) in gas installations.</p> <p>Ensure the complete gas system was (or is regularly) checked for leaks before use.</p> <p>Keep equipment free from oil and grease.</p> <p>Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.</p> <p>Avoid suck back of water, acid and alkalis.</p> <p>Avoid release of product into atmosphere.</p> <p>Do not spray on a naked flame or any incandescent material.</p> <p>Do not use in area without adequate ventilation.</p> <p>Do not pierce or burn, even after use.</p> <p>Follow the general precautions for handling, storing, and using compressed gases.</p>
Safe handling	<p>Refer to supplier's container handling instructions.</p> <p>Protect cylinders from physical damage: do not drag, roll, slide or drop.</p> <p>When moving the cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders</p> <p>Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.</p> <p>Never attempt to repair or modify container valves or safety relief devices.</p> <p>Damaged valves should be reported immediately to the supplier.</p> <p>Keep container valve outlets clean and free from contaminants particularly oil and water.</p> <p>Close container valve after each use and when empty.</p> <p>Never attempt to transfer gases from one cylinder/container to another.</p> <p>Never use direct flame or electrical heating devices to raise the pressure of a container.</p> <p>Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.</p> <p>Open valve slowly to avoid pressure shock.</p>
Industrial hygiene	<p>The product must be handled in accordance with good industrial hygiene and safety procedures.</p> <p>Ensure adequate ventilation of the working area.</p> <p>Do not drink, eat or smoke in the working area.</p>

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.

Containers should not be stored in conditions likely to encourage corrosion.

Container valve guards or caps should be in place.

Containers should be stored in the vertical position and properly secured to prevent them from falling over.

Stored containers should be periodically checked for general condition and leakage.

Keep containers tightly closed in a dry, cool and well-ventilated place, away from any ignition or heat sources.

Store containers in location free from fire risk and away from sources of heat and ignition.

Keep away from combustible materials, flammable gases and other flammable materials in store.

Protect from sunlight and do not expose to temperatures exceeding 50° C (122 °F).

7.3. Specific end use(s)

For professional and industrial use only.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OEL (Occupational Exposure Limit) No data available

DNEL (Derived No Effect Level) No data available

PNEC (Predicted No Effect Concentration): No data available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ensure and provide adequate air ventilation, including appropriate local extraction, to ensure that the defined OEL is not exceeded.

Product to be handled in a closed system.

Systems under pressure should be regularly checked for leakages.

Ensure exposure is below OEL (where available).

Gas detectors should be used when oxidising gases may be released.

Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, such as personal protective equipment

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

a) Eye/face protection Safety glasses with side-shields. Standard EN 166 - Personal eye protection - Specifications

b) Skin protection

i) Hand protection Standard EN 388 - Protective gloves against mechanical risks.

Standard EN 511: Cold insulating gloves.

ii) Other Consider the use of flame resistant safety clothing (EN ISO 14116).

Wear safety shoes while handling containers (EN ISO 20345).

c) Respiratory protection

Evaluate the use of flame-resistant safety clothing.

EN ISO 14116 - Limited flame spread materials and clothing.

Wear safety shoes when handling containers.

EN ISO 20345 - Personal protective equipment - Safety footwear.

Standard EN 14387 – Gas filter(s), combined filter(s) and full face mask – EN 136.

Keep self-contained breathing apparatus readily available for emergency use.

Self-contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation system.

Standard EN 136 – Standard EN 137 – Standard EN 14387.



8.2.3. Environmental exposure controls

Handling in accordance with good industrial hygiene and safety practice.

Prevent spillage or leakage of the product in watercourse or sewers (explosion danger).

Refer to local regulations for restriction of emissions to the atmosphere.

For more information, see section 7 and 13.

SECTION 9: Information and chemical properties**9.1. Information on basic physical and chemical properties**

a) Physical state	Gas
b) Colour	Colourless
c) Odour	Odourless
d) Melting point/freezing point	- 219 °C @ hPa
e) Boiling point or initial boiling point and boiling range	- 183 °C @ hPa
f) Flammability	Non flammable
g) Lower and upper explosion limit	n.a.
h) Flash point	Not applicable to gases and gas mixtures
i) Auto-ignition temperature	n.a.
j) Decomposition temperature	n.a.
k) pH	Not applicable to gases and gas mixtures
l) Kinematic viscosity	Not applicable to gases and gas mixtures
m) Solubility (in the water)	39 mg/l
n) Partition coefficient n-octanol/water (log value)	n.a.
o) Vapour pressure	n.a.
p) Density and/or relative density	1,1 (air=1)
q) Relative vapour density	1.1 (water=1)
r) Particle characteristics	Not applicable to gases and gas mixtures

9.2. Other information

Molecular mass	32 g/mol.
Critical temperature	-118 °C
Coefficient of oxygen equivalency (Ci)	1

SECTION 10: Stability and reactivity**10.1. Reactivity**

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal handling and storage conditions.

10.3. Possibility of hazardous reactions

This product is non-reactive under normal handling and storage conditions.

10.4. Conditions to avoid

Contains under pressure, may explode if heated.

Protect from sunlight and do not expose to temperatures exceeding 50 °C.

Keep away from heat, sparks, open flame or other sources of ignition. Do not smoke.

Do not pierce or burn, even after use.

Do not spray on a naked flame or any incandescent material.

10.5. Incompatible materials

No reaction with common materials in dry or wet conditions.

May react violently with combustible materials and reducing agents.

10.6. Hazardous decomposition products

No hazardous decomposition under normal conditions.

Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

a) acute toxicity	Based on available data, the classification criteria are not met.
b) skin corrosion/irritation	Based on available data, the classification criteria are not met.
c) serious eye damage/irritation	Based on available data, the classification criteria are not met.
d) respiratory or skin sensitisation	Based on available data, the classification criteria are not met.
e) germ cell mutagenicity	Based on available data, the classification criteria are not met.
f) carcinogenicity	Based on available data, the classification criteria are not met.
g) reproductive toxicity	Based on available data, the classification criteria are not met.
h) STOT-single exposure	Based on available data, the classification criteria are not met.
i) STOT-repeated exposure	Based on available data, the classification criteria are not met.
j) aspiration hazard	Based on available data, the classification criteria are not met.

11.2 Information on other hazards

n.a.

SECTION 12: Ecological information

12.1. Toxicity

No ecological damage caused by this product.

Fish	LC50 96 h (mg/l): Study scientifically unjustified
Aquatic invertebrates	EC50 48 h (mg/l): Study scientifically unjustified
Algae	EC50 72 h (mg/l): Study scientifically unjustified

12.2. Persistence and degradability

No ecological damage caused by this product.

12.3. Bioaccumulative potential

No ecological damage caused by this product.

12.4. Mobility in soil

No ecological damage caused by this product.

12.5. Results of PBT and vPvB assessment

This product does not contain any substances classified as PBT or vPvB.

12.6. Endocrine disrupting properties

n.a.

12.7. Other adverse effects

Ozone Depletion Potential	ODP (R-11=1) = 0
Global Warming Potential	GWP (CO2=1) = 0

SECTION 13: Disposal consideration

13.1. Waste treatment methods

General information	Take all necessary measures to prevent the production of residuals, value the possible methods of regeneration or recycling. Do not discharge into drains or environment. Ensure that the emission levels from local regulations or operating permits are not exceeded. Dispose of contents and container in accordance with Directive 2008/98/EC and all local, regional, national or international regulations.
Disposal method	Refer to the EIGA Practice Code (Doc. 30 "Gas Disposal", downloadable from http://www.eiga.org) for better guidance on the disposal methods available. Contact the supplier for the correct disposal of the container. Discharging, treatment or disposal may be subject to national, state or local regulations.

European Waste Code (EWC)

Product 16 05 04* Gases under pressure containers (including halons) containing dangerous substances.

Packaging 15 01 11* Metallic packaging containing a hazardous solid porous matrix (for example asbestos), including empty pressure containers.

SECTION 14: Transport information**14.1. UN number or ID number**

ADR-RID-ADN-IMDG-ICAO UN 1072

14.2. UN proper shipping name

ADR-RID-ADN-IMDG-ICAO OXYGEN, COMPRESSED

14.3. Transport hazard class(es)

ADR-RID-ADN: 2
IMDG-ICAO: 2.2 (5.1)



Label: 2.2



Label: 5.1

Additional information

Tunnel restriction code (ADR) E
EmS (IMDG) F-C, S-W

14.4. Packing group

ADR-RID-ADN-IMDG-ICAO n.a.

14.5. Environmental hazards

Dangerous for the environmental NO
Maritime pollution NO

14.6. Special precautions for user

The transport, including loading and unloading, must be carried out by persons who have received appropriate training concerning required by the modal regulations. Road transport must be carried out by vehicles authorized for the transport of dangerous goods in accordance with the requirements of the current edition of the ADR Agreement and the applicable national provisions. 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. Ensure that containers are firmly secured. Ensure there is adequate ventilation.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

Regulation (EC) No 1272/2008 (CLP), Part 3 of Annex VI: Included

Regulation (EC) No 649/2012 concerning the export and import of hazardous chemicals (PIC): Not included

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work: Not included

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances - Seveso III: Included (P4)

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work.

Directive 92/85/EC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding.

National standards

Adoption of National legislation on working with chemical agents.

15.2. Chemical safe assessment

No Chemical Safety Assessment (CSA) has been carried out for this product.

SECTION 16: Other information

This Material Safety Data Sheet has been made according European Directive in force.

Text of hazard (H) and precautionary (P) statements in section 2 e 3

H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
P220	Keep away from clothing and other combustible materials
P244	Keep valves and fittings free from oil and grease
P370+P376	In case of fire: stop leak if safe to do so.
P403	Store in a well ventilated place

Test of "Hazard Class and Category Code" in section 2 and 3, according to Regulation (EC) n. 1272/2008 (CLP)

Ox. Gas 1 Oxidising gases, Category 1
 Press. Gas (Comp.) Gases under pressure : Compressed Gas

History	Version 5	Version 4	Version 3	Version 2	Version 1
	Date: 05/2022	Date: 05/2021	Date: 05/2019	Date: 08/2018	Date: 02/2013

b) Abbreviations and acronyms

ADN	Agreement Dangerous goods by inland waterways
ADR	Accord Dangerous Route
CAS	Chemical Abstracts Service
CE / EC	European Community
CLP	Classification, Labelling, Packaging
CSA	Chemical Safety Assessment
DNEL	Derived No Effect Level
EC50	Effective Concentration 50%
EIGA	European Industrial Gases Association
EmS	Emergency Schedule
EWC	European Waste Code
GHS	Global Harmonized System
GWP	Global Warming Potential
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods code
IMO	International Maritime Organization
LC50	Lethal Concentration 50%
log Pow (Kow)	Partition coefficient n-octanol/water
n.a.	not applicable / non available
ODP	Ozone Depletion Potential
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Rail International Dangerous goods transport
STOT-RE	Specific target organ toxicity - repeated exposure
STOT-SE	Specific target organ toxicity - single exposure
UE / EU	European Union
vPvB	very Persistent very Bioaccumulative

Notice of liability

This information should not constitute a guarantee for any specific product properties. This information are only a guidance for safe handling, use, processing, storage, transportation, disposal and release and are not to be considered a warranty or a quality specification.

The information contained in this safety data sheet are based on our current knowledge and EU and national laws; they describe the product only with regard to safety requirements. The conditions of the user are beyond our knowledge and control. The product should not be used for purpose other than those specified. It is always the responsibility of the user to take all the necessary measures to comply with the requirements of current legislation. The information contained in this form should not considered as a guarantee of its properties.
