



MATERIAL SAFETY DATA SHEET

(based on regulations (EC) 1272/2008 and (EU) 453/2010)

Data Sheet No. 4803 – Rev.5 dated 03/12

OXYGEN

Page 1 of 9

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1	Product identifier	
	Name	Oxygen
	Registration No.	None: substance exempted pursuant to Annex XIV to Regulation 1907/2006 (REACH)
1.2	Relevant identified uses of the substance or mixture	
	Description/use	In the field of welding and cut. Oxidizer in industrial processes and water treatment
1.3	Details of the supplier of the safety data sheet	
	Company name	OXYTURBO Srl
	Address and Country	Via Serio, 4/6 25015 – Desenzano del Garda (BS) Italy
	Telephone	+39.030.9911855
	Fax	+39.030.9911270
	E-mail address of the concerned person in charge of the safety data sheet	livio.simoni@oxyturbo.it
1.4	Emergency telephone number	Ca' Granda Hospital Drug and Poison Information Centre - Piazza Ospedale Maggiore, 3 - Milan (Italy) Tel. 02/64441 (24/24 h)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The product is classified as hazardous according to directive 67/548/EEC and CLP Regulation CE 1272/2008 (as amended). Therefore an MSDS as per regulation EC 1907/2006, as amended, is required for this product.

2.1.1 As per CLP Regulation EC 1272/2008, as amended

Hazard classification and indicators:

Ox. Gas 1 H270

Press. Gas H280

2.1.2 As per European Directive 67/548/EEC, as amended

Hazard Symbols: O

R phrases: R8

For the full text of both the risk phrases (R) and the hazard indicators (H), see Section 16.

2.2 Label elements

Pictograms (unless art. 33 CLP is applied, use of pictograms indicated in point 14. Information on transport)



Warning

Hazard

Hazard indicators:

H270

May cause or intensify fire; oxidizer

H280

It contains pressurized gas: it may explode when heated

Caution advices:

P220

Keep/Store away from clothing/flammable and reducing substances/combustible materials

P244

Keep reduction valves free from grease and oil

P370+P376

In case of fire, stop leak if safe to do so

P410+403

Protect from sunlight. Store in a well ventilated place.

2.3 Other hazards

Results of PBT and vPvB assessments: not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Identifier	Concentration (% weight)	CAS number	EC number	EC index number	67/548/EEC Classification	1272/2008 Classification (CLP)
oxygen	100	7782-44-7	231-956-9	008-001-00-8	O R8	Ox. Gas 1 H270, Press. Gas H280

It does not contain any other component and/or impurity which influence product classification.

For the full text of both the risk phrases (R) and the hazard indicators (H), see Section 16.

3.2 Mixtures

Not applicable.

4. FIRST AID MEASURES

4.1 Description of first aid measures

- **Eye contact:** wash with running water within several minutes keeping the eyelids up.
- **Skin contact:** generally the product is not irritating for skin. Immediately take off contaminated clothes and wash the part concerned for at least 15 minutes.
- **Ingestion:** Seek medical help should the pain persist.
- **Inhalation:** move to a well ventilated place, in case of disorder seek medical help. Continuous inhalation of oxygen at concentrations exceeding 75% vol. may cause nausea, vertigo, respiratory distress, and convulsions. Wearing a self-contained breathing apparatus, move the victims to a ventilated place and keep them lying warm. Provide artificial ventilation only if the breath has stopped.

4.2 Most important symptoms and effects, both acute and delayed

For symptoms and effects due to the substances contained, please refer to Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Follow the physician's advice.

5. FIREFIGHTING MEASURES**5.1 Extinguishing media**

Suitable extinguishing media: CO₂, dust, or nebulised water.

Unsuitable extinguishing media: none.

5.2 Special hazards arising from the substance or mixture

It feeds combustion. The container exposure to fire may cause it to explode.

5.3 Advice for firefighters

Extinguish vast fires with nebulised water or alcohol resistant foam.

In event of fire use self-contained breathing apparatus and adequate protective clothes.

If possible, stop product leakage. Move away from the receptacle, confine the area, and provide water from a safe position until receptacle has cooled down.

Please remember that the product, if released, is denser than the air and it tends to stay close to the floor.

6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel: ensure sufficient ventilation. Move flammable sources away. Evacuate the concerned area. Please remember that the gas is heavier than the air and therefore it tends to stratify on the floor. Containers, if exposed to heat sources, may explode. Implement other procedures as provided for by the emergency plan (if any).

For emergency responders: wear protective clothes and PPE, and follow the emergency procedures (refer to Section 8). Intervene in the concerned area wearing a self-contained breathing apparatus if it is not sure that the air is breathable.

6.2 Environmental precautions

Try to stop the leakage. Prevent it to get into sewers, cellars, or excavated areas where accumulation may be hazardous. Please refer to Sections 12 and 13.

6.3 Methods and material for containment and cleaning up

Provide sufficient ventilation.

If the leakage affects a mobile container and it may not be stopped, move the container outdoors in a isolated area and empty in the atmosphere. Please refer to Sections 12 and 13.

6.4 Reference to other sections

For information concerning safe handling, please refer to Section 7.

For information concerning PPE, please refer to Section 8.

For information concerning waste disposal, please refer to Section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Open and handle the receptacles with care. Do not use oil or grease in contact with the product. Do not completely empty the receptacle. Keep away from heat sources, do not smoke. Avoid bumps and frictions.

7.2. Conditions for safe storage, including any incompatibilities

Keep the gas in its original containers, sealed, and in a cold place far from heat (at a temperature below 50°C), and far from flames and sparks, including electrostatic charges. Avoid storage next to receptacles containing flammables (e.g. hydrogen, acetylene ...), as well as next to deposits of incompatible substances as per Section 10.

7.2 Specific end uses

No more information available.

8. PERSONAL PROTECTION EXPOSURE CONTROL

8.1 Control parameters

Components whose limit values shall be kept under control in workplaces: Not required.

8.2 Exposure controls

8.2.1 Professional exposure control

The following protective equipment is indicated, with specifications by the manufacturer of protective equipment:

- for the respiratory tract: Use a respiratory protection suitable for the task. In non sufficiently ventilated places, wear a protective mask.
- for the hands: Use gloves suitable for the task:
 - o The glove material shall be tight and stable against the product/substance/formulation.
 - o Glove material: Choosing the suitable gloves is not only based on material but also on other quality features which may vary depending on the manufacturer.
 - o Penetration time of glove material: Ask the glove manufacturer the precise strike-through time and comply with it.
- for the eyes: Use goggles or shield suitable for the task.
- for the skin: Wear clothes suitable for the task. Wash your hands before a break or when the work is over.

8.2.2 Environmental exposure control

Avoid generating over-oxygenated atmospheres ($O_2 > 23\%$) providing adequate ventilation. Assess if the oxygen content in the room shall be tested.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	Gaseous
b) Odour	Odourless
c) Odour threshold	Not applicable
d) pH at 20°C	Not determined
e) Freezing point	- 219 °C
f) Boiling point	- 183 °C
g) Flash point	Not applicable
h) Evaporation rate	Gas
i) Flammability	Not applicable
j) Upper/lower flammability limits	Not applicable
k) Vapour pressure	Not applicable
l) Relative vapour density	1.105 (air=1)
m) Relative density	1.141 (water= 1)
n) Solubility	
	Water solubility 39 mg/l (15 °C, 1.103 bar)
	Fat solubility Not determined
o) Partition coefficient (n-octanol/water)	Not determined
p) Auto-ignition temperature	Not applicable
q) Decomposition temperature	Univocal values not available in scientific literature
r) Viscosity;	Not determined
s) Explosive properties	Oxidizer
t) Critical temperature	- 118.6 °C (50.43 bar)
u) Critical pressure	5042.95 kPa

9.2 Other information

Molecular weight: 32 g/mol

Gas heavier than the air. It may accumulate in closed places, in particular at ground level or beneath, even because when it comes out of a cylinder it is very cold.

10. STABILITY AND REACTIVITY

10.1 Reactivity

It may strongly react with flammables and reducing agents.

10.2 Stability

The product does not decompose (it is stable) if used in accordance with the regulations.

10.3 Possibility of hazardous reactions

Reactions with reducing agents and flammable substances. Reactions partially strong with bases and several classes of organic materials such as alcohols and amines.

10.4 Conditions to avoid

Avoid contact with flammable, combustible, and reducing substances. Avoid contact with oils, greases, and any source of ignition.

10.5 Incompatible materials

Caution! Do not use in combination with other products. Hazardous gases (chlorine) may be generated.



MATERIAL SAFETY DATA SHEET

(based on regulations (EC) 1272/2008 and (EU) 453/2010)

Data Sheet No. 4803 – Rev.5 dated 03/12

OXYGEN

Page 6 of 9

Avoid contact with organic materials which oxidize quickly.

10.6 Hazardous decomposition products

Hazardous decomposition products unknown.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Non toxic

Inhalation: Inhaling oxygen at concentrations exceeding 80% vol. at atmospheric pressure may cause cough, throat irritation, chest pain, and respiratory distress. Inhaling pure pressurized oxygen may cause damages to bronchial tubes and lungs, vertigo, uncoordinated movements, tingle in the limbs, vision and hearing disorders, twitches, loss of consciousness, convulsions.

Ingestion: No toxicological effect known.

Skin or eye contact: Skin / eye contact may cause severe cold burns. No toxicological effect known.

Primary irritability:

- on the skin: No irritant effects.
- on the eyes: Non irritant.

Sensitisation: No sensitizing effects known.

12. ECOLOGICAL INFORMATION

There are no experimental data available concerning the mixture.

12.1 Toxicity

It may cause damages to vegetation, due to freezing.

Water toxicity: No more information available.

12.2 Persistence and degradability

No more information available.

12.3 Bioaccumulative potential

No more information available.

12.4 Mobility in soil

No more information available.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects

Generally non hazardous.

No more information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Do not dispose the product with home wastes. Do not dispose into sewers.

Dispose in compliance with the regulation in force (Italian Legislative Decree 152/2006, as amended).

Unclean packing: Dispose in compliance with law (Italian Legislative Decree 152/2006, as amended).

14. TRANSPORT INFORMATION

Road and rail transport ADR / RID (2009):



Class ADR / RID: 2.2

Classification code: 10

Kemler number: 25

UN number: 1072

UN shipping name: Compressed oxygen

Hazard label: 2.2+5.1

Packaging group: -

Tunnel restriction code: E

Exemptions related to quantities carried per transport unit (1.1.3.6 ADR 2011) = category 3 = 1000 L container nominal capacity

Maritime transport IMDG (2008 amdt 34-08):



Class IMDG: 2.2

UN number: 1072

UN shipping name: Compressed oxygen

Label: 2.2+5.1

Packaging group: -

EMS number: F-C, S-W

Marine pollutant: No

Air transport ICAO-TI / IATA-DGR (2009):



Class ICAO / IATA: 2.2

UN number: 1072

UN shipping name: Compressed oxygen

Label: 2.2+5.1

Packaging group: -



MATERIAL SAFETY DATA SHEET

(based on regulations (EC) 1272/2008 and (EU) 453/2010)

Data Sheet No. 4803 – Rev.5 dated 03/12

OXYGEN

Page 8 of 9

Transport of substances in bulk based on Annex II to MARPOL 73/78 and IBC code: Not applicable

15. REGULATORY INFORMATION

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

The user shall verify and comply with the national, regional, and local regulations on hazardous activities and environment protection (e.g. liquid, solid, and gaseous emissions) which are not included in this document.

Italian Legislative Decree 81/08, as amended - Health and Safety on the Workplace

Italian Legislative Decree 334/99, as amended - Activity at risk of relevant accidents

Italian Legislative Decree 152/06, as amended - Environment protection provisions

Seveso category: 3

Restrictions on placing on the market and use: no restrictions based on Annex XVII to the Regulation EC 1907/2006 (REACH), as amended

Substances in Candidate List (Art. 59 REACH): None.

Substances subject to authorization (Annex XIV REACH): None.

15.2 Chemical safety assessment

A chemical safety assessment has not been elaborated for this substance.

16. OTHER INFORMATION

Text of the hazard indicators (H) mentioned in Sections 2 and 3 of this data sheet

Ox. Gas 1 – Oxidizing gas, cat. 1

Press. Gas – Pressurized gas

H270 – May cause or intensify fire; oxidizer

H280 – It contains pressurized gas: it may explode when heated

Text of the risk phrases (R) mentioned in Sections 2 and 3 of this Data Sheet

O – Oxidizer

R8 – Contact with combustible material may cause fire

Indications concerning this revised version

Each section of this data sheet has been revised due to the updating of the regulation and the information concerning safety and health of workers and environment. In particular:

- classification and labelling have been revised to comply with Regulation EC 1272/2008;
- form and substance required for Safety Data Sheets have been revised in accordance with changes to Regulation EC 1907/2006 occurred when the Regulation EU 453/2010 came into effect. This Data Sheet has been written in accordance with the indications provided for by Annex I of the previously mentioned Regulation.

Main literature references and sources for data

- National Institute for Occupational Safety and Health (NIOSH, USA): Registry of Toxic Effects of Chemical Substances, 2010.
- American Conference of Governmental Industrial Hygienists (ACGIH), 2010.
- The National Library of Medicine (USA): Hazardous Substances Data Bank (HSDB), ed. 2010.
- Environmental Protection Agency (USA): Integrated Risk Information System (IRIS), ed. 2006.
- Department of Transportation (USA): Chemical Hazard Response Information System (CHRIS), ed. 2006.



MATERIAL SAFETY DATA SHEET

(based on regulations (EC) 1272/2008 and (EU) 453/2010)

Data Sheet No. 4803 – Rev.5 dated 03/12

OXYGEN

Page 9 of 9

- CRC Press (USA): Handbook of Chemistry and Physics, 77th ed., 1997.
- Institut National de Recherche et de Sécurité (INRS - F): Les Melanges Explosifs, ed. 1994.
- NIOSH Pocket Guide to Chemical Hazards & Other Databases. U.S. Department of Health & Human Services, Public Health Service, Center for Disease Control & Prevention. DHHS (NIOSH) Publication No. 2001-145 (CD-ROM) August 2001
- Daubert, T.E., R.P. Danner. Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, D.C.: Taylor and Francis, 1989.
- O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. 13th Edition, Whitehouse Station, NJ: Merck and Co., Inc., 2001., p. 1397
- Argon Safety Data Sheet Rev. No. 2 dated 07/12/2010

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

Advice on training

Staff in charge of handling and using the product must be trained on specific risks and safety measures.

Written references: Please refer to technical instructions indicated on the product

Technical Contact Centre: Telephone +39.030.9911855

Notes for users

The information provided in this Data Sheet are based on our present knowledge about safety, health and environment. It aims at enabling the professional user of the product to identify both preventive and protective measures for safe operations.

The user of the product, prior to use the product for purposes different from the ones indicated, shall verify whether further information is needed, provided the relevant legislation and the operational good practice.

No liability is accepted for any improper or incorrect usage of the product.

The features mentioned shall not be considered as warranty of specific properties of the product.

Always present either the label or the Data Sheet of the product when consulting a physician.