

SECTION 1: IDENTIFICATION OF THE SUBSTANCE OR COMPOUND AND THE COMPANY / ENTERPRISE

1.1	Product identification	
	Denomination	MAXY GAS
	Registration No.	Not applicable (the product is a compound): see the information related to the constituent substances in section 3.2.
1.2	Identified pertinent uses of the substance or compound and uses not recommended	
	Description/use	Combustible gas cartridge for welding and for reloading portable professional tools
1.3	Information on the safety data sheet supplier	
	Company name	OXYTURBO SpA
	Address and state	Via Serio, 4/6 25015 – Desenzano del Garda (BS) Italy
	Telephone	+39.030.9911855
	Fax	+39.030.9911271
	E-mail of the person responsible for the safety data sheet	safety@oxyturbo.it
1.4	Emergency telephone number	
	List of Poison Control Centre telephone numbers in Italy	
	Bergamo	Papa Giovanni XXII Hospital 800883300
	Florence	"Careggi" Hosp. Medical Toxicology Dept. 055-7947819
	Foggia	Foggia Univ. Hosp. 0881-732326
	Milan	Niguarda Ca' Granda Hosp. 02-66101029
	Naples	"A. Cardarelli" Hosp. 081-7472870
	Pavia	PCC National Centre of Toxicological Information 0382-24444
	Rome	PCC "Bambino Gesù Paediatric Hosp." 06-68593726
	Rome	PCC "Umberto I" Polyclinic 06-49978000
	Rome	PCC "A. Gemelli" Polyclinic 06-3054343

SECTION 2: IDENTIFICATION OF HAZARDS

2.1 Classification of the substance or compound

The product is classified as hazardous pursuant to EC Regulation 1272/2008 (CLP) as amended and updated). The product therefore requires a safety data sheet in compliance with the provisions of EC Regulation 1907/2006 as amended and updated.

Hazard classification and indications:

Flam. Gas 1 H220
Press. Gas H280

Does not contain 1,3-butadiene (<0.1%) (therefore, for classification, note K of Reg. 1272/2008 applies).

The complete text of the hazard indications (H) can be found in section 16 of the safety data sheet.

2.2 Elements of the label

Pictograms



Warning

Hazard

Hazard indications:

H220

Highly flammable gas

Recommended cautions:

P102 Keep out of reach of children.
 P210 Keep away from heat sources, hot surfaces, sparks, open flames or other ignition sources. Do not smoke
 P377 In the event of fire due to gas leak, do not extinguish unless it is impossible to stop the leak without danger.
 P381 Eliminate any source of ignition if there is no danger.
 P403 Store in a well ventilated place.
 P410+P412 Protect from sunlight. Do not expose to a temperature higher than 50°C/122°F.
 The hazard indications are simplified pursuant to the exemption provided by Annex 1, Section 1.3.2 of EC Regulation 1272/2008.

2.3 Other hazards

Physical hazards:

The accumulation of vapours in confined environments can form explosive compounds with the air, especially in closed environments.

The strong heating of the container (for example, in the event of a fire) causes a significant increase in volume of the liquid and pressure with the danger of explosion for the container.

Occupational health and safety hazards:

The direct spray of liquid gas on the skin and eyes can cause localised freezing of the skin and the conjunctiva.

The introduction or presence of the gas in confined environments can lead to the risk of asphyxiation. Keep the oxygen concentration above 17% (normal value = 20.9%)

With a lack of oxygen, the combustion of the gas may also be incomplete and in this case the toxic gas carbon monoxide is formed.

Inhalation of the gases as they are may lower activity of the central nervous system and therefore lead to drowsiness and dizziness. Possibility of cardiac sensitization (arrhythmia) in the event of elevated exposure.

Hazards for the environment:

As a volatile organic compound (VOC), the gas is subject to photochemical reactions which generate hazardous atmospheric pollutants (ozone, organic nitrates).

SECTION 3: COMPOSITION/INFORMATION ON THE INGREDIENTS

3.1 Compound (*)

Odorised compound of combustible gases and liquids, under pressure in liquid state.

Does not contain 1.3-butadiene (<0.1%).

CAS number	EC number	Index number	Registration number REACH	% [in weight]	Denomination	Classification in accordance with (EC) regulation No. 1272/2008 (CLP)
106-97-8	203-448-7	601-004-00-0	01-2119474691-32-XXXX	50-55	Flam.	butane Gas 1; H220 Press. Gas; H280
115-07-1	204-062-1	601-011-00-9	01-2119447103-50-XXXX	40-45	Flam	propylene Gas 1; H220 Press. Gas; H280
74-98-6	200-827-9	601-003-00-5	01-2119447103-50-XXXX		Flam.	propane Gas 1; H220 Press. Gas; H280
67-64-1	200-662-2	606-001-00-8	01-2119471330-49-XXXX	5-7	acetone	Eye Irrit. 2; H319 Flam. Liq. 2; H225 STOT SE 3; H336, EUH066

The complete text of the hazard indications (H) can be found in section 16 of the safety data sheet.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

- **Contact with the eyes:** after contact with the liquid phase of the product, wash immediately with water for at least 15 minutes, keeping your eyelid raised. Do not use hot water and do not rub. See your doctor in the event of irritation, watering, altered vision or eye damage.
- **Contact with the skin:** after contact with the liquid phase of the product, submerge the frozen part in water for about 5 minutes. Do not use hot water and do not rub. In the event of injury to the skin tissue, see your doctor.
- **Ingestion:** this event is deemed improbable, given the high volatility of the product. Nevertheless, it can cause severe freezing damage to the mucous membrane and the mouth tissue, oesophagus and stomach. In the unlikely event, do not induce vomiting and see a doctor immediately.
- **Inhalation:** remove the injured person from the hazardous area. If there is an asphyxiating atmosphere and the injured person must be rescued, use the appropriate means of protection, During the rescue, do not use objects that can trigger explosions. Have the injured person breathe fresh air and see a doctor immediately. In case of breathing difficulty, administer first aid. Symptoms connected with the absorption of gases and vapours (drowsiness, blurred vision, any arrhythmia) may be delayed, therefore you must see a doctor immediately as soon as any symptoms of illness appear, taking the product label or safety data sheet.

4.2 Main symptoms and effects, both acute and delayed

For symptoms and effects due to the contained substances, see section 11.

4.3 Indications of the possible need to immediately seek medical attention and special treatments

Follow doctor's instructions.

SECTION 5: FIRE PROTECTION MEASURES

5.1 Means of extinguishing

Suitable means of extinguishing: carbon dioxide, foam, chemical powder.

Unsuitable means of extinguishing: full water jet.

5.2 Special hazards stemming from the substance or the compound

If involved in a fire, the container could explode with the emission of irritating fumes and toxic gases (carbon monoxide) and with the projection of metallic fragments.

5.3 Recommendations for fire fighting personnel

Never extinguish a fire if you are not sure that you can immediately intercept the gas leak, in other words, if you are not sure that the leaking gas cannot reignite. It is preferable to have an ignited leak, rather than a cloud of gas that spreads toward a source of ignition. Ask the Fire Brigade to respond if you are not certain that you can extinguish the fire in a short amount of time with the available means of extinguishing.

Remember that the product, if leaked, is denser than the air and tends to stay closer to the ground.

Use sprayed water to cool the containers exposed to the fire and to reduce the entity of the fire.

In the event of a fire, use an approved type self-contained breathing apparatus (EN 137 type), gloves and emergency protection clothing.

SECTION 6: MEASURES IN CASE OF ACCIDENTAL SPILL

6.1 Personal precautions, protection devices and procedures in case of emergency

6.1.1 For non-emergency personnel:

check for the possibility of explosions (presence of trigger sources, damaged containers), remove ignition sources and ensure adequate ventilation for the rooms. Notify people nearby and particularly those downwind of the gas leak and the danger of fire and the possibility of explosion. Bear in mind that the gas is heavier than the air and therefore tends to settle in a layer on the ground. Activate any other procedures required by the emergency plan.

6.1.2 For emergency responders:

Wear protective clothing (antistatic) and personal protection equipment in order to prevent inhalation and contact with the eyes and skin and follow the emergency procedures (see section 8).

Bear in mind that the gas is heavier than the air and therefore tends to settle in a layer on the ground. The gas in the air may generate an explosive atmosphere even with a minimum ignition source. The containers can also explode when exposed to heat sources.

6.2 Environmental precautions

Prevent from entering sewers, basements and workpits or any place where accumulation can be dangerous. See sections 12 and 13.

6.3 Methods and materials for containment and reclamation

If the product is not volatilized, clean and collect the residues, using absorbent material if necessary (sand, sepiolite, cement, sawdust). Do not use metallic objects for these operations. Leave the contaminated materials outdoors before beginning disposal of waste materials. See sections 12 and 13.

6.4 Reference to other sections

Any information concerning personal protection and disposal can be found in sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

The product can generate explosive atmospheres. The containers must be handled with care. Ensure adequate ventilation of the work location or in any case of the location where the gas is used.

Enforce a no smoking policy. Do not vaporise/spray the gas on an open flame or on other incandescent bodies.

Avoid any possibility of physically damaging the container (corrosion, falls, mechanical action).

Check for any gas leaks (water and soap solution) and protect from any ignition sources (flames, sparks, ionising radiation, laser radiation, microwaves, static electricity).

Avoid contact with sprays of compressed and liquefied gas and the eyes and skin. Do not breathe in the gas as it is or the gases stemming from combustion (use PPE indicated in section 8).

Do not eat, drink or smoke during use of the product.

7.2. Conditions for safe storage, including any incompatibilities

Store the gas in the original containers, kept well sealed, in a cool place far from heat (at a temperature lower than 50°C) and far from flames or sparks.

The warehouse locations for combustible gas must be adequately ventilated and separate from oxidising or combustible substance warehouses (oxygen, nitrous oxide), as well as separate from warehouses where incompatible substances indicated in section 10 are stored.

7.3 Specific end uses

Use for purposes other than those indicated in subsection 1.2 is not recommended.

See the technical instructions for safe use of the product. Specifically ensure that you have carefully read the instructions on inserting the cartridge prior to use.

SECTION 8: EXPOSURE CONTROL/INDIVIDUAL PROTECTION

8.1 Control parameters (*)

For acetone, professional exposure limits have been established by European legislation (Legislative Decree 09/04/2008, No. 81, Directive 2000/39/EC and 2006/15/EC).

Average exposure limit values have also been established (TWA) at 8 hours by the American Conference of Governmental Industrial Hygienists (ACGIH, USA, 2010).

Avoid exposure to environmental concentrations higher than:

Substance	Regulatory source	Limit value for 8 hours (TWA)	Limit value for brief exposure – STEL / IDLH (1)
butane	NIOSH, 2010	800 ppm	=
propane	NIOSH, 1994	=	2100 ppm (v/v)
propylene	ACGIH, USA, 2010	500 ppm	=
acetone	Legislative Decree 09 Apr 2008, No. 81	500 ppm	=
	ACGIH, USA, 2010	500 ppm	750 ppm

(1) Value over which exposure must not take place, referring to a danger in the order of 15-30 minutes

8.2 Exposure checks

Professional exposure check

Assess the risks in accordance with Legislative Decree 81/2008 as updated and amended. The following means of protection are indicated, with specifications from the manufacturer concerning the protection equipment:

the respiratory system: in the event of insufficient ventilation, wear a full mask (EN 136 type) with a filter for organic vapours or, better yet, a self-contained breathing apparatus (EN 137 type) with a full mask.

hands: thermo-insulating gloves (EN 511 type). Possibility of surface cooling up to -50°C.

eyes: goggles (EN 166 type), face shield.

skin: work garments (EN 340 type).

Environmental exposure check

Operate only in an equipped area with ventilation systems and emergency equipment (extinguishers).

Refer to the current prevailing regulation on environmental pollution - Legislative Decree 03/04/2006 No. 152 as updated and amended

SECTION 9: physical and chemical properties

9.1 Information on the fundamental physical and chemical properties (*)

- | | |
|---|---|
| a) Appearance | Liquid under pressure, gas at 15.6°C and 1 bar. Colourless. |
| b) Odour | Characteristic of odourised combustible gases, slightly aromatic |
| c) Olfactory threshold | butane: between 2.9 and 14.6 mg/m ³
propylene: between 39.6 and 116.27 mg/m ³
acetone: between 47.5 and 1613.9 mg/m ³ |
| d) pH at 20°C | not relevant |
| e) Freezing point | lower than 0°C |
| f) Boiling point | - 0.5 °C |
| g) Flash point | butane: - 60°C
propane: - 104.4 °C
propylene: - 108 °C
acetone: - 74 °C |
| h) Evaporation rate | the liquid evaporates quickly in the atmosphere, causing abrupt cooling of the exposed surfaces |
| i) Flammability | Flammable gas with air (at 20 °C and 101.3 kPa) |
| j) Upper / lower flammability limits | flammable gas / air mixtures can explode if the gas is present in a concentration between the lower (LEL) and upper (UEL) explosion limits:
butane: LIE = 1.8% e LSE = 8.4%
propane: LIE = 2.2% e LSE = 10%
propylene: LIE = 2.4% e LSE = 10.3%
acetone: LIE = 2.5% e LSE = 12.8% |
| k) Vapour pressure | butane: 1820 mmHg at 25°C
propane: 7150 mmHg at 25°C
acetone: 231 mmHg at 25°C |
| l) Relative vapour density: | butane: 2.07 (air=1)
propane: 1.56 (air=1)
propylene: 1.49 (air=1) |
| m) Relative density | butane: 0.6 (water=1)
propane: 0.5 (water=1)
acetone: 0.8 (water=1) |
| n) Solubility | |
| Water solubility | butane: 61.2 mg/l at 25°C
propane: 62.4 ppm at 25°C
propylene: 200 mg/L at 25°C |
| Lipophilicity | soluble in ether, chloroform |

o) Partition ratio (n-octanol/water)	Log Kow: butane: 2.89 propane: 2.36 acetone: -0.24
p) Autoignition temperature	not tested on the compound
q) Decomposition temperature	no unique values available in scientific literature
r) Viscosity	butane: 0.30 cSt at 20°C (liquid) propane: 0.20 cSt at 20°C (liquid) acetone: 0.32 cSt at 20°C
s) Combustive properties	none
t) Critical temperature	butane: 153.2°C propane: 96.81°C propylene: 91.8°C
u) Critical pressure	butane: 35.7 atm propane: 42.01 atm propylene: 45.6 °C

9.2 Other information

Not present.

SECTION 10: STABILITY AND REACTIVITY**10.1 Reactivity**

The bursting or opening of the container due to unsuitable storage conditions can immediately generate an explosive atmosphere (see subsection 10.3).

10.2 Chemical stability

The strong heating of the containers triggers their rapid decompression and gas leaks. For handling instructions, see section 7. Also refer to subsection 10.4.

10.3 Possibility of hazardous reactions (*)

Contact with strong oxidising agents (hypochlorites, nitrates, perchlorates, permanganates, dichromates) triggers a strong reaction, can react violently with the combustive substances (peroxides, chlorine dioxides, nitrogen dioxides). Contact with halogens, chlorine, fluorine and acetylene can cause strong exothermic explosive reactions.

10.4 Conditions to avoid

Take precautionary measures to avoid exposing the bottles to direct sunlight and heat sources. Do not expose to temperatures higher than 50°C. Avoid conditions that can cause the containers to corrode and break.

10.5 Incompatible materials

Strong oxidising agents, combustive substances, halogens, chlorine, fluorine and acetylene.

10.6 Hazardous decomposition products

Toxic gases (carbon monoxide) and highly flammable (hydrogen, ethylene) irritating carbon fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

Experimental data on the compound is not available. (*)

Connected symptoms:

Inhalation: the inhalation of the fogs containing the product may cause irritation of the mucous membranes and apnoea.

Absorption of the gas triggers a narcotic effect (depression of the central nervous system) which may therefore cause dizziness or asphyxia without early warning signs. At the highest exposure (1% - 10% in air) effects on pulmonary and cardiac functionality can be associated (arrhythmia, cardiac arrest).

11.1 Information on toxicological effects**a) Acute toxicity:**

Inhalation: butane – EC50 = 658 mg/l/4 h (rats) – information on humans inconclusive

propane – EC50 = 280000 ppm (rats) – information on humans inconclusive

propylene – values on animal studies unreliable - information on humans inconclusive

acetone - EC100=20,000 ppm/8h (guinea pig) - information on humans indicate that there is an effect of depression on the central nervous system and a possible state of confusion at 700-800 ppm.

Ingestion: acetone: LD50 = 3000 mg/kg bw (mouse); LD50 = 5340 mg/kg bw (rabbit)

Contact with the skin/eyes: information on humans and animals inconclusive

b) Skin corrosion/skin irritation: does not have irritating effects.

c) Serious eye damage/eye irritation: non irritant

d) Respiratory or skin sensitisation: no sensitising effects are known

e) Mutagenicity on germ cells: based on available data, the classification criteria are not met

f) Carcinogenicity: based on available data, the classification criteria are not met

g) Toxicity for reproduction: based on available data, the classification criteria are not met

h) Specific target organ toxicity (STOT) — single exposure: based on available data, the classification criteria are not met

i) Specific target organ toxicity (STOT) — repeated exposure: based on available data, the classification criteria are not met

j) Aspiration hazard: not applicable to gases and gas compounds.

SECTION 12: ECOLOGICAL INFORMATION

Experimental data on the compound is not available.

12.1 Toxicity

acetone: LC50/24h (*Oncorhynchus mykiss*) = 6100 mg/L

EC50/24h (*Daphnia magna*) = 10 mg/L

EC50/7d (*Lemna minor*) = 11.4 g/L

For the other components of the compound, there is no conclusive evidence concerning harmful effects on the environment.

12.2 Persistence and degradability

The product does not appear capable of causing damage to activated sludge of biological purification plants. The organic substances contained in the product are biodegradable.

12.3 Bioaccumulation potential

The bioconcentration factors (Log BCF between 0.7 and 2, estimated for the contained substances) suggest that the bioconcentration is potentially moderate. It should be remembered that, in this case as well, given the poor solubility of the gas in water and the gas content in the product, the volatilisation into the atmosphere is expected to be the dominating process.

12.4 Mobility in the soil

The product spreads into the soil, the water and the air.

12.5 Results of PBT and vPvB assessment

Information not available.

12.3 Other adverse effects

The emission into the atmosphere of hydrocarbons and organic solvents contributes to the photochemical creation of ozone, a dangerous gas on an atmospheric level and the formation of organic nitrates.

SECTION 13: CONSIDERATIONS FOR DISPOSAL

13.1 Waste treatment method

The product conveys a character of danger to the waste which contain residues of it due to the flammability and the possibility of the formation of explosive atmospheres.

Avoid compacting or in any case damaging the containers. Apply the same safety standards to the waste that is foreseen for the entire product and in particular, the standard of not perforating the container or subjecting it to combustion.

Collect and deliver the waste (product and contaminated packaging) to specifically qualified disposers who are authorised to dispose of hazardous flammable waste.

Refer the prevailing regulation on hazardous waste disposal (Legislative Decree 152/2006 as updated and amended).

SECTION 14: INFORMATION ON TRANSPORTATION

14.1 UN number: 2037

14.2 UN proper shipping name: GAS CARTRIDGES

14.3 Hazard class(es) connected to transport: 2.1

14.4 Packaging group: not applicable

14.5 Hazards for the environment: material non hazardous for the environment

14.6 Special precautions for the users:

- avoid transport on vehicles where the loading area is not separate from the driver and passenger compartment.
- Ensure that the driver is informed of the potential risk of the load and that he or she knows what to do in the event of an accident or emergency.
- Exemption for limited quantities (Section 3.4) = 1 litre / 30 kg.
- Tunnel restriction code: D
- Maritime transport: EmS: F-D, S-U
- Air transport: Packing instruction Y203

14.7 Bulk transport in accordance with Annex II of MARPOL and the IBC code: not applicable

SECTION 15: INFORMATION ON REGULATION

15.1 Health, safety and environmental standards and legislation specific for the substance or compound

Risk of significant accident: product included for its flammable properties in annex 1, part 2 of DIRECTIVE 2012/18/EU. With the exception of what is indicated in the field of application and in the exclusions in the indicated regulation, for storage greater than the quantities indicated in said annex, refer to Art. 6, 7 or 8 of the above mentioned regulation.

Sale and use restrictions: no restriction in accordance with annex XVII of EC Regulation 1907/2006 (REACH) as amended and updated.

Substances on Candidate List (Art. 59 REACH): none.

Substances subject to authorisation (Annex XIV REACH): none.

15.2 Chemical safety assessment (*)

A chemical safety assessment was not drafted for the compound.

SECTION 16: OTHER INFORMATION

The text of the hazard indications (H) mentioned in sections 2-3 of the safety data sheet (*)

Flam. Gas 1	Flammable gas, category 1
Gas Press.	Gas under pressure
Flam. Liq. 2	Flammable liquid, category 2
Eye Irrit. 2	Eye irritation, category 2
STOT SE 3	Specific target organ toxicity — single exposure, category 3

H220	Highly flammable gas
H280	Contains gas under pressure: can explode if heated
H225	Easily flammable liquid and vapours.
H319	Causes serious eye irritation.
H336	Can cause drowsiness or dizziness.
EUH066	Repeated exposure can cause drying and chapping of the skin.

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)

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)

Information on this revision

The modified sections are identified with (*)

Main sources of the data used to draft the sheet

- Safety data sheets of the raw materials.
- 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.
- ECHA Website (European Chemicals Agency)

Indications on training

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

Written references: see specific technical instruction indicated on the product.

Technical contact centre: telephone +39.030.9911855

Notes for the user

The information contained on this safety data sheet is based on our current knowledge of health, safety and the environment. The purpose of it is to allow the professional user of the product to identify preventive and protective behaviour useful for the purposes of safe operation.

The product user, prior to any use other than the foreseen use, must verify whether other information is required, in any case presuming observance of the pertinent laws and good operating practice.

We will not be liable for any improper use of the product.

The characteristics mentioned should not be considered as a guarantee of specific properties of the product.

The product label or safety data sheet should be presented in the event of any necessary medical treatment.

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

1.1	Product identification	
	Denomination	Oxygen
	Registration No.	Listed in Annex IV/V of Regulation 1907/2006/EC (REACH), exempt from registration
1.2	Identified pertinent uses of the substance or mixture and uses not recommended	
	Description/use	In the field of welding and cutting. Oxidising in industrial processes and water treatment
1.3	Information on the safety data sheet supplier	
	Company name	OXYTURBO SpA
	Address and state	Via Serio, 15 25015 – Desenzano d/Garda (BS) Italy
	Telephone	+39.030.9911855
	Fax	+39.030.9911270
	E-mail of the person responsible for the safety data sheet	info@oxyturbo.it
1.4	Emergency telephone number	+39.030.9911855 from Monday to Friday - 8:00am to 12:00pm/ 2:00pm to 6:00pm

2. IDENTIFICATION OF HAZARDS

2.1 Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions of EC Regulation 1272/2008 (CLP) (as amended and updated). The product therefore requires a safety data sheet in compliance with the provisions of EC Regulation 1907/2006 as amended and updated.

Hazard classification and indications:

Ox. Gas 1 H270

Gas Press. H280

The complete text of the hazard indications (H) can be found in section 16 of the safety data sheet.

2.2 Elements of the label

Pictograms

(subject to application art. 33 CLP use the pictograms indicated in point 14. Information on Transport)



Warning

Hazard



SAFETY DATA SHEET

in accordance with regulations (EC) 1907/2006 and (EU) 830/2015

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Hazard indications:

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

Recommended cautions:

P220 Keep away from flammable clothing/substances and reducing agents/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.
P410+P403 Protect from sunlight. Store in a well ventilated place.

2.3 Other hazards

Results of PBT and vPvB assessment: not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Identification	Concentration (% weight)	CAS No.	EC No.	EC Index No.	Classification 1272/2008 (CLP)
oxygen	100	7782-44-7	231-956-9	008-001-00-8	Ox. Gas 1 H270, Gas Press. H280

Does not contain other components and/or impurities that influence the product classification.

The text of the hazard indications (H) can be found in section 16 of the safety data sheet.

4. FIRST AID MEASURES

4.1 Description of first aid measures

- Eye contact: Adverse effects not expected from this product.
- Skin contact: Adverse effects not expected from this product.
- Ingestion: Ingestion is not considered a likely route of exposure.
- Inhalation: Supply fresh air; consult doctor in case of symptoms.

4.2 Most important symptoms and effects, both acute and delayed

Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion. Begin rescue breathing if breathing has stopped.

4.3 Indication of any immediate medical attention and special treatment needed

Follow doctor's orders for treatment.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: CO₂, extinguishing powder or water spray jet.

Unsuitable extinguishing media: none.

5.2 Special hazards arising from the substance or mixture

Feeds combustion. Exposure to fire may cause containers explode.

5.3 Advice for fire-fighters

Extinguish large fires with water spray jets or alcohol-resistant foam.

In the event of fire, use a self-contained breathing apparatus and suitable protective clothing.

If possible, stop flow of product. Move away from the container, limit the area and spray with water from a protected position until the container is cooled.

Remember that the product, if leaked, is denser than the air and tends to stay closer to the ground.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For those not intervening directly: ensure adequate air ventilation. Remove flammable sources. Evacuate area. Bear in mind that the gas is heavier than the air and therefore tends to settle in a layer on the ground. The containers can explode when exposed to heat sources. Activate any other procedures required by the emergency plan.

For those intervening directly: wear protective clothing and personal protection equipment in order and follow the emergency procedures (see section 8). Intervene in the area with a self-contained breathing apparatus if it has not been proven that the atmosphere is breathable.

6.2 Environmental precautions

Try to stop release. Prevent from entering sewers, basements and workpits or any place where accumulation can be dangerous. See sections 12 and 13.

6.3 Methods and material for containment and cleaning up

Ventilate area.

6.4 Reference to other sections

See section 7 for information regarding safe handling.

See section 8 for information on personal protective equipment.

See section 13 for information regarding disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Open and handle containers with care. Do not use oil or grease in contact with the product. Store away from sources of heat. Do not smoke. Avoid collisions and friction.

7.2 Conditions for safe storage, including any incompatibilities

Store the gas in the original containers, kept well sealed, in a cool place far from heat sources (at a temperature lower than 50°C) and far from flames or sparks, including electrostatic charges.

Do not store near containers holding flammable materials (i.e. hydrogen, acetylene, etc.). Store segregated from warehouses where incompatible substances indicated in section 10 are stored.

7.2 Specific end uses

See section 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

OEL (Occupational Exposure Limit): data not available.

DNEL (Derived No Effect Level): data not available.

PNEC (Predicted No Effect Concentrations): data not available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Avoid the formation of oxygen rich atmospheres ($O_2 > 23\%$) by means of adequate aeration/ventilation. Evaluate if control of the oxygen content in the environment is necessary.

8.2.2 Individual protection measures, e.g. personal protective equipment

The following means of protection are indicated:

- Respiratory system: not required
- Hands: Wear safety gloves when handling loads (EN 388).
- Eyes: Protective goggles in accordance with EN 166 when using gas.
- Skin: No particular precaution.

8.2.3 Environmental exposure controls

See point 13 of the SDS for information on disposal.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	Gas
b) Odour	Odourless
c) Olfactory threshold	Not applicable
d) pH at 20°C	Not applicable
e) Melting point/freezing point	- 219 °C
f) Initial boiling point and boiling range	- 183 °C
g) Flash point	Not applicable
h) Evaporation rate	Gas
i) Flammability range (solids, gases)	Not applicable
j) Upper / lower flammability or explosion 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)
	Lipophilicity Not determined
o) Partition ratio (n-octanol/water)	Not determined
p) Autoignition temperature	Not applicable
q) Decomposition temperature	No unique values available in scientific literature
r) Viscosity	Not determined
s) Explosive properties	Not applicable
t) Oxidising properties	Not applicable

9.2 Other information

Molecular weight: 32 g/mol

Critical temperature: -118.6 °C (50.43 bar)

Critical pressure: 5042.95 kPa

10. STABILITY AND REACTIVITY

10.1 Reactivity

Can react violently with flammable and reducing agents.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Reactions with reducing agents, flammable substances. Reactions in part very violent with bases and numerous 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

Combustible materials. Reducing agents. Keep equipment free from oil and grease. For additional information on compatibility refer to the latest version of ISO 11114.

10.6 Hazardous decomposition products

No known hazardous decomposition products.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

- a) Acute toxicity: based on available data, the classification criteria are not met.
- b) Skin corrosion/skin irritation: does not have irritating effects.
- c) Serious eye damage/eye irritation: non irritant.
- d) Respiratory or skin sensitisation: no sensitising effects are known.
- e) Mutagenicity on germ cells: based on available data, the classification criteria are not met.
- f) Carcinogenicity: based on available data, the classification criteria are not met.
- g) Toxicity for reproduction: based on available data, the classification criteria are not met.
- h) Specific target organ toxicity (STOT) — single exposure: based on available data, the classification criteria are not met.
- i) Specific target organ toxicity (STOT) — repeated exposure: based on available data, the classification criteria are not met.
- j) Aspiration hazard: not applicable to gases and gas compounds.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No known ecological damage caused by this product.

12.2 Persistence and degradability

Not applicable to gases and gas mixtures.

12.3 Bioaccumulative potential

Substance is present in nature.

12.4 Mobility in soil

No further data available. Due to the high volatility, the product is unlikely to cause soil and water pollution.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

No known ecological damage caused by this product.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous. Discharge of in a well-ventilated location.

Contact the supplier for correct container disposal.

European waste codes

Container: 16 05 04*: gases in pressure vessels (including halons) containing dangerous substances

14. TRANSPORT INFORMATION

14.1 UN number: 1072

14.2 UN proper shipping name: COMPRESSED OXYGEN

14.3 Transport hazard class/es: 2.2 + 5.1



Labelling:

14.4 Packaging group: not applicable to class 2

14.5 Hazards for the environment: none

14.6 Special precautions for the users:

- Avoid transport on vehicles where the loading area is not separate from the driver and passenger compartment.
- Ensure that the driver is informed of the potential risk of the load and that he or she knows what to do in the event of an accident or emergency.
- Exemption for transport unit (1.1.3.6 ADR) = category 3 = 1000 L of nominal capacity of the pressure vessel.
- Tunnel restriction code: E
- Sea transport: EmS: F-C, S-W
- Air transport: Packing instruction 200

14.7 Bulk transport in accordance with Annex II of MARPOL and the IBC code: Not applicable

15. REGULATORY INFORMATION



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

The user is advised to check and comply with specific national, regional and local regulations regarding hazardous activities and environmental protection (e.g. liquid, solid and gaseous emissions) which are not covered by this document.

Legislative Decree 81/08 and subsequent amendments - Occupational health and safety

DIRECTIVE 2012/18/EU on the control of major-accident hazards.

Legislative Decree 152/06 and subsequent amendments - Environmental regulations

Seveso category: P4

Sale and use restrictions: no restriction in accordance with annex XVII of EC Regulation 1907/2006 (REACH) as amended and updated.

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

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

15.2 Chemical safety assessment

CSA does not need to be carried out for this product.

16. OTHER INFORMATION

The text of the hazard indications (H) mentioned in sections 2-3 of the safety data sheet

Ox. Gas 1 – Combustible gas, cat. 1

Gas Press. – Gas under pressure

H270 – May cause or intensify fire; oxidiser.

H280 – Contains gas under pressure: can explode if heated

Information on this revision

Revised safety data sheet in accordance with Regulation (EU) 2015/830.

Main sources of the data used to draft the sheet

- Supplier Safety Data Sheets.

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)

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)

Indications on training

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

Written references: See specific technical instruction indicated on the product.

Technical contact centre: Telephone +39.030.9911855

Notes for the user

The information contained on this safety data sheet is based on our current knowledge of health, safety and the environment. The purpose of it is to allow the professional user of the product to identify preventive and protective behaviour useful for the purposes of safe operation.



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The product user , prior to any use other than the foreseen use, must verify whether other information is required, in any case presuming observance of the pertinent laws and good operating practice.
We will not be liable for any improper use of the product.