## 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<br>25015 – Desenzano del Garda (BS)<br>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<br>Press. Gas; H280 |
| 115-07-1 | 204-062-1 | 601-011-00-9 | 01-2119447103-50-XXXX | 40-45 | Flam | propylene Gas 1; H220<br>Press. Gas; H280 |
| 74-98-6 | 200-827-9 | 601-003-00-5 | 01-2119447103-50-XXXX | | Flam. | propane Gas 1; H220<br>Press. Gas; H280 |
| 67-64-1 | 200-662-2 | 606-001-00-8 | 01-2119471330-49-XXXX | 5-7 | acetone | Eye Irrit. 2; H319<br>Flam. Liq. 2; H225<br>STOT SE 3; H336,<br>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 combustive 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 odorised combustible gases, slightly aromatic |
| **c)** | **Olfactory threshold** | butane: between 2.9 and 14.6 mg/m$^3$<br>propylene: between 39.6 and 116.27 mg/m$^3$<br>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<br>propane: - 104.4 °C<br>propylene: - 108 °C<br>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:<br>butane: LIE = 1.8% e LSE = 8.4%<br>propane: LIE = 2.2% e LSE = 10%<br>propylene: LIE = 2.4% e LSE = 10.3%<br>acetone: LIE = 2.5% e LSE = 12.8% |
| **k)** | **Vapour pressure** | butane: 1820 mmHg at 25°C<br>propane: 7150 mmHg at 25°C<br>acetone: 231 mmHg at 25°C |
| **l)** | **Relative vapour density:** | butane: 2.07 (air=1)<br>propane: 1.56 (air=1)<br>propylene: 1.49 (air=1) |
| **m)** | **Relative density** | butane: 0.6 (water=1)<br>propane: 0.5 (water=1)<br>acetone: 0.8 (water=1) |
| **n)** | **Solubility** | |
| | **Water solubility** | butane: 61.2 mg/l at 25°C<br>propane: 62.4 ppm at 25°C<br>propylene: 200 mg/L at 25°C |
| | **Lipophilicity** | soluble in ether, chloroform |

| | | |
|---|---|---|
| **o)** | **Partition ratio (n-octanol/water)** | Log Kow:<br>butane: 2.89<br>propane: 2.36<br>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)<br>propane: 0.20 cSt at 20°C (liquid)<br>acetone: 0.32 cSt at 20°C |
| **s)** | **Combustive properties** | none |
| **t)** | **Critical temperature** | butane: 153.2°C<br>propane: 96.81°C<br>propylene: 91.8°C |
| **u)** | **Critical pressure** | butane: 35.7 atm<br>propane: 42.01 atm<br>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.