

CARBON DIOXIDE

SDS n. 4853

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Code: 4853
Product name: CARBON DIOXIDE
CAS nr.: 124-38-9
CE nr.: 204-696-9

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

Intended use: Industrial and professional uses: perform risk assessment prior to use.
Test gas/Calibration gas - Purge gas, diluting gas, inerting gas - Shield gas for welding processes - Use for manufacture of electronic/photovoltaic components - Extinguishing agent - Laser gas - Pharmaceutical industry - Medical applications.

1.3. Details of the supplier of the safety data sheet

Name: OXYTURBO SpA
Full address: Via San Michele Arcangelo, 3
District and Country: 25017 - Lonato del Garda (BS) - Italy
Tel. +39.030.9911855

e-mail address of the competent person responsible for the Safety Data Sheet: sds@dgsasrl.it

1.4. Emergency telephone number

For urgent inquiries refer to: ENGLAND, SCOTLAND (NHS 24) WALES (NHS Direct Wales) - For medical advice contact 111

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878.

Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Gases under pressure: Press. Gas (Liq.) H280 Contains gas under pressure; may explode if heated.

2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Warning

Hazard statements:

H280 Contains gas under pressure; may explode if heated.

Precautionary statements:

P102 Keep out of reach of children.

P410+P403 Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

In high concentrations CO₂ causes rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.

Asphyxiant in high concentrations.

Contact with liquid may cause cold burns/frostbite.

On the basis of available data, the product does not contain any PBT or vPvB in percentage $\geq$ than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration $\geq$ 0.1%.

SECTION 3. Composition/information on ingredients

3.1.. Substance

Identification	x = Conc. %	Classification 1272/2008 (CLP)
CARBON DIOXIDE		
CAS: 124-38-9	100	Press. Gas (Liq.) (H280)
CE: 204-696-9		
INDEX: --		
RRN: *1		

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

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

SECTION 4. First aid measures

4.1. Description of first aid measures

EYES: Immediately flush eyes thoroughly with water for at least 15 minutes.

SKIN: In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

INHALATION: remove victim to uncontaminated area. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

INGESTION: ingestion is not considered a potential route of exposure.

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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.

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

If you feel unwell, seek medical advice.



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SECTION 5. Firefighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT

Water spray or fog.

UNSUITABLE EXTINGUISHING EQUIPMENT

Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products: none.

5.3. Advice for firefighters

GENERAL INFORMATION

If possible, stop flow of product.

Cool endangered receptacles with water spray jet from a protected position.

Cool the surrounding area with water (from a protected position) to contain the fire

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Firefighters must use standard protective equipment, including fireproof suit, helmet with face shield, gloves, rubber boots and, indoors, SCBA self-contained breathing apparatus.

Standard - EN 469 - Protective clothing for firefighters.

Standard - EN 15090: Footwear for use by firefighters.

Standard - EN 659: Protective gloves for, firefighters.

Standard - EN 443: Firefighters' helmets protecting for firefighting in buildings and other structures.

Standard - EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate air ventilation.

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

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

Eliminate sources of ignition.

Evacuate area.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Ventilate area.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

SAFE USE OF THE PRODUCT.

Do not breathe gas.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

Only experienced and properly instructed persons should handle gases under pressure.

The substance must be handled in accordance with good industrial hygiene and safety procedures.

Avoid suck back of water, acid and alkalis.

Ensure the complete gas system was regularly checked for leaks before use.

Contact your gas supplier if in doubt.

SAFE HANDLING OF THE GAS RECEPTACLE.

Do not allow back feed into the container.

Open the pressure reducer slowly to avoid pressure strokes.

Protect cylinders from physical damage; do not roll, slide or drop.

If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

Never attempt to repair or modify container valves or safety relief devices.

Damaged valves should be reported immediately to the supplier.

Close pressure reducer after each use and when empty, even if still connected to equipment.

Never use direct flame or electrical heating devices to raise the pressure of a container.

Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2. Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well-ventilated place.

Observe all regulations and local requirements regarding storage of pressure receptacles.

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

Containers should be stored in the vertical position.

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

7.3. Specific end use(s)

Refer to sub-section 1.2.

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SECTION 8. Exposure controls/personal protection

8.1. Control parameters

EU - INDICATIVE OCCUPATIONAL EXPOSURE LIMIT (IOEL)	
IOEL TWA	9000 mg/m ³
IOEL TWA	5000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
UNITED KINGDOM - OCCUPATIONAL EXPOSURE LIMITS	
WEL TWA (OEL TWA)	9150 mg/m ³
WEL TWA (OEL TWA)	5000 ppm
WEL STEL (OEL STEL)	27400 mg/m ³
WEL STEL (OEL STEL)	15000 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
DNEL Derived No Effect Level:	--
PNEC Predicted No Effect Concentration:	--

8.2. Exposure controls

8.2.1 Appropriate engineering controls

Systems under pressure should be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g., for maintenance activities.
Oxygen detectors should be used when asphyxiating gases may be released.

8.2.2 Individual protection measures, e.g., 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:
Wear safety glasses with side shields (Standard EN 166 - Personal eye-protection).
Wear working gloves when handling gas containers (Standard EN 388 - Protective gloves against mechanical risk).

8.2.3 Environmental exposure controls

None required.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	gas	@ 20°C / 1013hPa
Colour	colourless	
Odour	odourless	
Melting point / freezing point	--	Does not apply to gases
Initial boiling point	- 56,6 °C	
Flammability	not flammable	
Lower explosive limit	Not available	
Upper explosive limit	Not available	
Flash point	--	Does not apply to gases
Auto-ignition temperature	Not available	
Decomposition temperature	Not applicable	
pH	--	Does not apply to gases
Kinematic viscosity	--	Does not apply to gases
Solubility	2000 mg/l	@ 20 °C
Partition coefficient: n-octanol/water	--	does not apply to mixtures.
Vapour pressure	57,3	Not applicable
Density and/or relative density	--	Does not apply to gases
Relative vapour density	0,82	
Particle characteristics	--	Does not apply to gases

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Critical temperature: 30 °C

9.2.2. Other safety characteristics

Gas group: Liq. Gas

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 conditions.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

Avoid humidity in systems.

10.5. Incompatible materials

None.

10.6. Hazardous decomposition products

None.



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SECTION 11. Toxicological information

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

ACUTE TOXICITY

Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.

SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

SERIOUS EYE DAMAGE / IRRITATION

Does not meet the classification criteria for this hazard class

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

11.2. Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO₂ has been found to act synergistically to increase the toxicity of certain other gases (CO, NO₂). CO₂ has been shown to enhance the production of carboxy- or met-haemoglobin by these gases possibly due to carbon dioxide's stimulatory effects on the respiratory and circulatory systems.

SECTION 12. Ecological information

12.1. Toxicity

No known damage to the environment caused by this product.

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

Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

12.7. Other adverse effects

Effect on ozone layer: none

Effect on the global warming Contains greenhouse gas(es). When discharged in large quantities may contribute to the greenhouse effect.

Global warming potential (GWP): 1

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous.

List of hazardous waste codes: 16 05 05: Gases in pressure containers other than those mentioned in 16 05 04*.

Contact the supplier if instructions for use are deemed necessary.

SECTION 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

14.1. UN number or ID number

1013

14.2. UN proper shipping name

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14.3. Transport hazard class(es)

2.2

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Mixture not dangerous for the environment.



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14.6. Special precautions for user

Avoid transport on vehicles where the load space is not separated from the driver's compartment.

Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Before transporting product containers:

- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.

14.7. Maritime transport in bulk according to IMO instruments

Information not relevant.

SECTION 15. Regulatory information

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

Seveso Category - Directive 2012/18/EC: none

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006: none

Regulation (EC) No. 2019/1148 - on the marketing and use of explosives precursors: none

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

Substances subject to authorisation (Annex XIV REACH): none

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012: none

Substances subject to the Rotterdam Convention: none

Substances subject to the Stockholm Convention: none

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

15.2. Chemical safety assessment

A chemical safety assessment has not been performed for this product,

SECTION 16. Other information

This Safety Data Sheet has been drawn up on the basis of the information contained in the SDS (Rev.2 date 02/09/2022) of the supplier of the mixture.

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

H280 Contains gas under pressure; may explode if heated.

LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament



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7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)
20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

CALCULATION METHODS FOR CLASSIFICATION

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.