

	Safety Data Sheet	Revision n. 1
	CARBON DIOXIDE	Date of revision 29/03/2018

Section 8: Exposure controls/personal protection

8.1	Control parameters	
8.1.1	threshold values:	TLV-TWA: 5000 ppm - [ACGIH 2003] ILV (EU) 8h: 5000 ppm
8.2	Exposure controls	
8.2.1	Ensure proper ventilation.	Can form sub-oxygen atmospheres (O2 less than 18%) In closed spaces, please check the percentage of oxygen in the air. Under oxygenated areas, use a breathing apparatus. Assess the opportunity to check the concentration in air
8.2.2	Eyes and face protection:	Use safety glasses and face shield in accordance with EN 166
	Skin protection:	Use gauntlet according to EN 388
	Respiratory protection:	No other protection devices are necessary in normal use condition or good ventilated working areas. In case of release, please refer to the point 6.1

Section 9: Physical and chemical properties

9.1	Information on basic physical and chemical properties	
a)	Appearance	colorless gas
b)	Odour	odorless
c)	Odour threshold	not applicable
d)	pH	3,7 (for carbonic acid)
e)	Melting point / freezing point	sublimation point -78,5 °C (109,3 °F)
f)	Initial boiling point and boiling range	sublimation point -78,5 °C (109,3 °F)
g)	Flash point	not applicable
h)	Evaporation rate	high
i)	Flammability (solid, gas)	no flammable
j)	Upper/lower flammability or explosive limits	not applicable
k)	Vapour pressure	57,3 bar (at 20 °C)
l)	Vapour density	762 kg/m ³ (liquid density)
m)	Relative density (air=1)	1,52
n)	Solubility(ies)	2000 (15 °C; 1,013 bar)
o)	Partition coefficient: n-octanol/water	not applicable
p)	Auto-ignition temperature	not applicable
q)	Decomposition temperature	not available
r)	Viscosity	not applicable
s)	Explosive properties	no explosive
t)	Oxidising properties	no oxidising
9.2	Other information	
	Critical temperature: 30.98 °C	
	Critical pressure: 73.77 bar	
	Critical density: 467.6.6 kg/m ³	
	Triple point temperature: -56.56.34 °C	
	Triple point pressure: 5.187 bar	

Gas heavier than air. May accumulate in confined areas, particularly at ground or below ground level.
Carbon dioxide (CO2) in gas is about 1,5 times heavier than the air and it tends to stratify down with the possibility to accumulate itself in pits, cellars and holes in the ground. In slackness conditions or CO2 similar accumulations can persists for many hours

Section 10: Stability and reactivity

10.1	Reactivity	Inert gas
10.2	Chemical stability	Stable under normal conditions
10.3	Possibility of hazardous reactions	CO2 dissolved in water, forms carbonic acid (H2CO3). This last one has a slightly acid reaction and it is corrosive for the carbon steel and some non ferrous materials.
10.4	Conditions to avoid	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
10.5	Incompatible materials	None
10.6	Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11: Toxicological information

11.1 Informazioni sugli effetti tossicologici

No known toxicological effects from this product.

The substance forms under-oxygenated atmospheres.

You can have health problems for more than 8 hours breathing air containing more than 5000 ppm (0.5%) of CO₂. If the concentration increases up to 15000 ppm (1.5%) have problems after just 10 minutes. At 2% of concentration, it is already experiencing a headache and loss of concentration. At higher levels, around 10%, the CO₂ can cause asphyxiation and paralysis of the respiratory centers, although the amount of oxygen in the air is still above 19% and then just for breathing. Breathe an even richer in carbon dioxide can cause immediate loss of consciousness and death. Some symptoms of asphyxiation may include: rapid breathing, fatigue, nausea, vomiting and cyanosis.

- a) acute toxicity: no known toxicological effects from this product
- b) skin corrosion/irritation: not classified
- c) serious eye damage/irritation: not classified
- d) respiratory or skin sensitisation: not classified
- e) germ cell mutagenicity: not classified
- f) carcinogenicity: not classified
- g) reproductive toxicity: not classified
- h) STOT-single exposure: not classified
- i) STOT-repeated exposure: not classified
- j) aspiration hazard: not classified

Section 12: Ecological information

12.1 Tossicità

Test	Area	Organism test	Taxonomic group	Toxicological Endpoint	Value	Test time	Method	GLP	Year	Substance test
Acute/ Chronic	Water	Oncorhynchus mykiss	Fish	LC0	240 mg/l	1 h	-	No	1984	Substance according to par. 1.1-1.4 of IUCLID dossier
Acute/ Chronic	Water	Oncorhynchus mykiss	Fish	LC0	60-240 mg/l	12 h	-	No	1984	Substance according to par. 1.1-1.4 of IUCLID dossier
Acute/ Chronic	Water	Oncorhynchus mykiss	Fish	LC0	35 mg/l	96 h	-	No	1984	Substance according to par. 1.1-1.4 of IUCLID dossier

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

Low

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

It is not requested a chemical safety report

12.6 Other adverse effects

Big quantity of Carbon dioxide (CO₂) is the main cause of the accelerated green house effect

Section 13: Disposal considerations

13.1 Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous, but in atmosphere or well ventilated area.

Our gas cylinders are not refillable. If your cylinder must be destroyed, consult distributor or supplier for specific recommendations.

Refer to section 6 and 7 for handling and action of inadvertent leakage of the waste.

Section 14: Transport information

14.1 UN number

UN 1013

14.2 UN proper shipping name

CARBON DIOXIDE

14.3 Transport hazard class(es)

2.2

14.4 Packing group

n.a.

14.5 Environmental hazards

n.a.

14.6 Special precautions for user

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

Assure that the drivers knows the potential dangers of the loading and he is able to operate in case of emergency.
Ensure that the cylinders are firmly secured.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
n.a.

Additional information

Sea transport

EMS: F-C, S-V

Proper Shipping name: CARBON DIOXIDE

Air transport:

Cargo Pkg Inst: 200
Max Net Qty/Pkg: 150kg

Passenger Pkg Inst: 200
Max Net Qty/Pkg: 75kg
ERG Code: 2L

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Seveso directive 2012/18/UE: not covered.

15.2 Chemical safety assessment
A CSA does not need to be carried out for this product

Section 16: Other information

GENERAL BIBLIOGRAPHY:

1. (EC) Regulation no. 1907/2006 of the European Parliament (REACH)
2. (EC) Regulation no. 1272/2008 of the European Parliament (CLP)
3. Guideline "Assogastecnici" - Edition May 2010
4. ESIS: European chemical Substances Information System

Remark for the User:

The information on this sheet is based on the available knowledge at the time of our last revision.

The user must make sure that information is appropriate and complete for the specific product destination.

This document cannot be considered as a warranty for specific properties of the product.

As product use does not fall on our direct control, the user must bear full responsibility for complying with all the rules and regulations in force relating to hygiene and safety. We disclaim any responsibility for improper uses.