Section 1: Identification of the substance / mixture and of the Company

1.1 Identification of the substance or mixture

IUPAC name	CARBON DIOXIDE
Synonym	CO_2
CAS Number	124-38-9
CE Number	204-696-9
Index Number	Not included in Annex VI
Registration Numbers	This substance is exempted from Registration according to the provisions of Article 2(7)(a) and Annex IV of REACH

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

* Relevant identified uses: technical gas
Industrial use: shielding gas in welding processes.
Hobby applications: aquariology.
Uses advised against: all those not identified as relevant.

1.3 Details of the supplier of the safety data sheet

Supplier	Borg & Overström (Morton House Ltd & Matthew J Harvey t/a Azure UK t/a)
Street address	Synergy House, Fakenham Road, Morton on the Hill, Norfolk
Country	United Kingdom
Telephone number	+44 (0)1362 695 006
e-mail address	sales@borgandoverstrom.com

Section 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]
Press. Gas, H280

2.2 Label elements

Hazard pictogram(s)

Signal word	Warning	
Hazard statement(s)	H280:	Contains gas under pressure; may explode if heated.
Precautionary statement(s)	P410 + P403:	Protect from sunlight. Store in a well-ventilated place

2.3 Other hazards

Do no expose to temperatures exceeding 50°C/ 122°F.

Section 3: Composition/information on ingredients

3.1 Substances

IUPAC Nomenclature	Carbon dioxide
Index number	Not included in Annex VI
CAS number	124-38-9
EINECS number	204-696-9
Concentration:	≥ 99,99%

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

Section 4: First aid measures

4.1 Description of first aid measures

High concentrations can cause rapid suffocation and can also increase respiration and heart rate. Contact with liquid may cause frostbite. Avoid breathing gas. Self contained breathing apparatus (SCBA) may be required by rescue workers

POTENTIAL HEALTH EFFECTS

Inhalation: Carbon dioxide is an asphyxiant. Concentrations of 10% or more can produce unconsciousness or death.
Eye contact: Contact with liquid or cold vapor can cause freezing of tissue.
Skin contact: Contact with liquid or cold vapor can cause frostbite.

4.2 Most important symptoms and effects, both acute and delayed

SKIN CONTACT: In case of lesions due to low temperature, please refer to the here below instructions:
Immediately remove the contaminated clothes.
Do not rub the skin burn or break blisters.
Put the burned body parts in the lukewarm water (40°C).
In case of burn of your fingers and/or hands, if it is possible, separate them with strips of gauze or clean clothes.
EYE CONTACT:
Immediately wash down for at least 15 minutes.

Immediately seek medical advice.
INHALATION:
In case of indisposition or suffocation symptoms, move the injured person away from the accident site to a fresh and ventilated place. Immediately call a doctor.
In high concentrations may cause asphyxiation. Symptoms may be loss of mobility and consciousness. Victims may not be aware of. At low concentrations may cause narcotic effects, symptoms may include dizziness, headache, nausea and loss of coordination. The use of masks with filters is ineffective.

4.3 Indication of any immediate medical attention and special treatment needed

NOTES TO PHYSICIAN: There is no specific antidote. Treatment for overexposure should be directed at the control of symptoms and the clinical condition
EXPOSURE INFORMATION.
Route of entry: Inhalation
Target organs: Central nervous system
Effect: Asphyxiation (suffocation). Overexposure may cause damage to retinal ganglion cells and central nervous system
Symptoms: Headache, sweating, rapid breathing, increased heartbeat, shortness of breath, dizziness, mental depression, visual disturbances, and shaking.
Chronic effects: None established.
Medical conditions aggravated by overexposure: None

Section 5: Fire safety measures

5.1 Extinguishing media

All known extinguishing can be used.
Carbon dioxide is nonflammable and does not support combustion.
Carbon dioxide is an extinguishing agent for class B and C fires.

5.2 Special hazards arising from the substance or mixture

Fire exposure can cause the breaking and explosion of the cylinder(s).

5.3 Advice for firefighters

In confined space use self-contained breathing apparatus
Move away from the container and cool with water from a protected position.
If possible, stop flow of products.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuated unnecessary personnel.
Ensure adequate air ventilation.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

If the cylinder loss and it can not be stopped, bring the cylinder outdoors, in a ventilated area, and after that empty it in the atmosphere.

6.4 Reference to other sections

For information regarding personal protection and disposal considerations see section 8 and 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

For container handling, use proper personal protective equipment such as safety shoes and gloves.
Do not allow back feed into the cylinder.
Suck back of liquids into the container must be prevented.
Use only properly specified equipments which are suitable for this product.
Open slowly the valve to avoid pressure blows.
Avoid the direct contact of the product.
Handle carefully the cylinders, thus avoiding violent collisions between them or against other surfaces, as well as falls and other mechanical strains susceptible to damage their integrity/resistance.
Contact your supplier if in doubt.

7.2 Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well ventilated place.
Avoid against collisions.

7.3 Specific end use(s).

technical gas - industrial use. Welding applications; Food additive (E290) to charge/ refrigerate drinks with gas; C02 enrichment for aquariums.

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	colourless gas
b)	Odour	odourless
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 nonferrous 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 Toxicological effects

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 centres, 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 Toxicity

Test	Area	Organism test	Taxonomic group	Toxycological 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 advers effects

* Global warming potential (GWP) [CO2=1]
Effects on global warming: contains greenhouse gases.
If discharged in large quantities can contribute to the greenhouse 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

* The symbol * indicates that the information has been updated to the current revision.

GENERAL BIBLIOGRAPHY:

1. (EC) Regulation no. 1907/2006 of the European Parliament (REACH) with its amendment Regulation (EU) 2015/830
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.