Safety Data Sheet

CARBON DIOXIDE (CO2)

Revision no. 03
Date of Revision 22/02/2017

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 n°	124-38-9
EINECS n°	204-696-9

1.2 Use of the substance/ mixture

Food additive (E290) to charge / refrigerate drinks with gas
C02 enrichment for aquariums
Technical gas – industrial use

1.3 Company identification

Corporate name	Billi Pty Ltd
Address, City	42 Lucknow Crescent, Thomastown
Region and Country	Victoria Australia
Phone Number	+61 9469 0400
Email Address	service@billi.com.au

Section 2: Classification of the substance or mixture

2.1 Classification of the substance or mixture

Classification under (EC) Regulations N° 1272/2008: GAS UNDER PRESSURE - PRESSURIZED GAS
Classification under Directive N° 67/548/CEE: PRODUCT NOT CLASSIFIED AS DANGEROUS
Free from the recording obligation according to the enclosures IV and V of the (EC) regulation nr. 1907/2006 (REACH)

2.2 Label elements

GHS Danger Symbols :  GHS04

Signal Word: Warning

Hazard Statements H280: Contains gas under pressure; may explode if heated

Storage Statements P403: Store in a well-ventilated place
P410: Protect from sunlight

Danger symbols under the Directive no. 67/578/CEE: None
"R" Phrases: None
"S" Phrases: None

ADR symbols  Label No 2.2: Carbon dioxide is a non-flammable, non-toxic gas

2.3 Danger identification

At high concentration, may cause suffocation.

Section 3: Composition/ information on ingredients

3.1 Substance

IUPAC name	CAS n°	EINECS n°	Concentration
Carbon dioxide	124-38-9	204-696-9	≥ 99,99%

Carbon dioxide does not contain other products and / or impurities that can modify its classification

Section 4: First aid measures

4.1 Description of first aid measures

Immediately seek medical advice.
Wearing breathing apparatus, move the exposed individual from the exposure to fresh air and keep warm expanses.
If unconscious, loose clothes and lay down on one side.
If the patient is experiencing breathing difficulties, give oxygen under low pressure.
If the patient is not breathing, give artificial respiration. In case of cardiac arrest, carry out a heart massage.

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.

Section 4 Continued

EYE CONTACT:
Immediately wash down for at least 15 minutes. Immediately seek medical advice.

INHALATION:
In case of illness or suffocation symptoms, move the injured person away from the accident site to a 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.
At low concentrations may cause narcotic effects, symptoms may include dizziness, headache, nausea and loss of coordination.
The use of masks with filters is not effective.

Section 5: Firefighting measures

5.1 Extinguishing media

All known extinguishing media can be used.

5.2 Special hazards arising from the substance or mixtures

Fire exposure can cause an explosion or a burst of the cylinder.

5.3 Special protection devices

Use the breathing apparatus in confined space.

5.4 Advice for firefighters

Cool the cylinder with water from a protected position.
Equipment: Wear complete equipment with eye shield helmet and neck protection, pressure or demand breathing apparatus

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use the breathing apparatus to enter the concerned area. Evacuate the area and ensure proper ventilation.
Wear protective equipment to avoid skin and eye contact or inhalation.
If the release is in a small area with poor ventilation, it may cause suffocation. Wear breathing apparatus.

6.2 Environmental precautions

Prevent it from entering sewers, basements, excavations and workpits where accumulations can be dangerous.

6.3 Methods and material for containment and clearing up

If the loss is in confined area with poor ventilation, it could cause the suffocation, otherwise no other procedures are necessary.

Section 7: Handling and storage

7.1 Precautions for safe handling

Avoid direct contact with the product.
Do not eat, drink or smoke in the working areas or plants.
For container handling, use proper personal protective equipment such as safety shoes and gloves.
Carefully handle the containers, thus avoiding violent collisions between them or against other surfaces, as well as falls and other mechanical strains susceptible to damage their integrity / resistance.
Do not allow backflow into the cylinder.
Do not completely empty the cylinder.
In case of doubt, please contact your supplier.

7.2 Conditions for safe storage, including any incompatibilities

Gas containers cannot be directly exposed to sunshine, nor be close to heat sources or in places where temperature is above 50°C.
Ensure proper ventilation (natural or forced) where carbon dioxide is stored and/or used.

Section 8: Exposure controls/personal protection

8.1 Control parameters

Carbon dioxide: 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 Eye 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 in well ventilated work 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

Molecular weight	44 g/mole
Melting point	-78,5 °C
Boiling point	-56,6 °C
Critical temperature	31 °C
Relative density, gas (air=1)	1,52
Relative density, liquid (water=1)	1,03
20°C Vapour pressure	57,3 bar
Solubility in water (mg/l)	2000 (15 °C; 1,013 bar)
Colour	colourless
Odour	No odour warning properties
Auto-ignition temperature	not applicable
Ignition limit (% vol. in air)	not applicable
Solubility in other solvents	not applicable
Partition coefficient: n-octane-water	not applicable
Other information	Gas/vapour heavier than air. May accumulate in confined areas, particularly at ground or below ground level.

9.2 Other information

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 stagnant conditions CO2 accumulations can persists for many hours.

Section 10: Stability and reactivity

10.1 Reactivity

The product is reactive with some substances, for example: ammonia or amines.

10.2 Chemical stability

Stable under normal use and storage conditions.

10.3 Possibility of hazardous reactions

CO_2 in water forms carbonic acid (H2CO3) which is a slightly acid and is corrosive to carbon steel and some non-ferrous materials.

10.4 Conditions to avoid

Avoid the storage of the product in confined areas

10.5 Incompatible materials

None

10.6 Hazardous decomposition products

None

Section 11: Toxicological information

11.1 Information on toxicological effects

There are no known toxicological effects from this product. The substance forms under-oxygenated atmospheres.
You can have health problems if you breathe air containing more than 5000 ppm (0.5%) of CO2 for more than 8 hours. If the concentration increases up to 15000 ppm (1.5%) problems appear after just 10 minutes. At 2% of concentration, you may experience headaches and loss of concentration. At higher levels, around 10%, the CO2 can cause asphyxiation and paralysis of the respiratory centres. Air 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.

Section 12: Ecological information

12.1 Persistence and degradability

No data available.

12.2 Bio-accumulative potential

Low

12.3 Mobility in soil

No data available.

12.4 Results of PBT and vPvB assessment

A chemical safety report was not requested

12.5 Other adverse effects

Carbon dioxide (C02) is the main cause of the accelerated greenhouse effect

Section 12: Ecological information continued

12.6 Toxicity

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

Section 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment methods have to be verified with reference to the waste composition, National and EC standards in force. For handling and precautions in case of accidental waste, please refer to points 6 and 7. Actions or precautions must be verified according to the waste composition.

Section 14: Transport information

14.1 UN number

UN 1013

14.2 UN proper shipping name

CARBON DIOXIDE

14.3 Transport hazard class

2

14.3 Label

2.2

14.4 Packing group

Not applicable

14.5 Sea transport

EMS: F-C, S-V Proper Shipping name: Carbon dioxide

14.6 Air transport

Cargo Packaging instruction: 200 Max. quantity: 150kg
Passenger Packaging instruction: 200, Max. quantity: 50kg ERG Code: 2L

14.7 Environmental hazards

Not applicable

14.8 Special precautions for users

Avoid transport on vehicles where the loading area is not separated from the cabin or does not have ventilation.
Assure that the driver knows the potential dangers of the loading and is able to operate in case of emergency.

14.9 Transport in bulk according to Annex II of MARPOL 73/78 and IBC code

Not applicable

Section 15: Regulatory information

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

Ensure all National/local regulations are observed.

15.2 Chemical safety assessment

A chemical safety report was not requested.

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. The Merck Index. Ed. 10
4. Handling Chemical Safety
5. Niosh - Registry of Toxic Effects of Chemical Substances
6. INRS - Fiche Toxicologique
7. Patty - Industrial Hygiene and Toxicology
8. N.I. Sax - Dangerous properties of Industrial Materials-7 Ed., 1989

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.