BR

4 First aid

– **Inhalation** : High concentrations can cause asphyxiation. Symptoms can include loss of mobility and consciousness. The victim does not notice the asphyxiation. Low concentration of CO2 can cause accelerated breathing and headaches. The victim should be made to wear respiratory equipment and brought into fresh air. Keep them warm and calm. Consult a doctor. Attempt artificial respiration if the victim stops breathing.

– **Contact with skin or eyes** : Rinse the eyes immediately in water for at least 15 minutes. Rinse any cold burns immediately in water for at least 15 minutes. Cover with a sterile dressing. Consult a doctor.

– **Ingestion** : Ingestion is not seen as a possible method of exposure.

5 Fire-fighting measures

Specific risks : The effect of fire can cause the container to burst/explode.

Hazardous combustion products : None.

Extinguishing agent

- **Suitable extinguishing agent** : All normal extinguishing agents can be used.

Specific methods : If possible, stop gas leakage. Move away from the container and cool with water from a safe position.

Special protective gear for the fire department : Use respiratory equipment in confined spaces.

6 Measures if released accidentally

Personnel-related precautions : Ensure adequate ventilation. Use respiratory gear to enter the area unless the atmosphere can be proven to be safe.

Environmental protection : Attempt to stop the gas leak. Prevent entry into sewer systems, basements, pits or other areas where accumulation could be hazardous.

Cleaning methods : Ventilate the area.

7 Handling and storage

Handling : Prevent ingress of water into the gas container.
Prevent back-flow into the gas container.
Only use equipment suitable for this product and the pressure and temperature specified. In case of doubt, consult the gas supplier.
Follow the instructions of the gas supplier.

Storage : Store the containers in a well ventilated place at less than 50°C.

8 Restricting and monitoring of exposure/personal protective gear

Personal protective gear : Ensure adequate ventilation.

Workplace limit : Carbon dioxide: ILV (EC) - 8 H - [mg/m³] : 9000
Carbon dioxide: ILV (EC) - 8 H - [ppm] : 5000
Carbon dioxide: TLV© -TWA [ppm] : 5000
Carbon dioxide: TLV© -TWA [ppm] : 5000
Carbon dioxide: TLV© -STEL [ppm] : 30000
Carbon dioxide: TLV© -STEL [ppm] : 30000

9 Physical and chemical characteristics

Physical state at 20 °C	: Gas.
Color	: Colorless.
Smell	: Odorless, so no warning signs.
Molecular weight	: 44
Melting point [°C]	: -56.6
Boiling point [°C]	: -78.5 (s)
Critical temperature [°C]	: 31
Vapor pressure [20°C]	: 57.3 bar
Relative density, gas (air=1)	: 1.52
Relative density, liquid (water=1)	: 0.82
Solubility in water [mg/l]	: 2000
Flash point [Vol.% in air]	: Non-flammable.
Other information	: Gas/vapors are heavier than air. They can accumulate in confined spaces, especially at floor level or in lower-level areas.

10 Stability and reactivity

Hazardous decomposition products : None.

Incompatible materials : Stable under normal conditions.

11 Information on toxicology

Toxicological information : There are no known toxic effects of the product.

12 Environmental information

Environment-specific information : Can contribute to the greenhouse effect if large quantities are emitted.
Greenhouse potential [CO2=1] : 1

13 Notes on disposal

General : Do not allow to flow into sewers, basements, pits and similar places where the accumulation of gas could be hazardous.
Release into the atmosphere in a well ventilated place.
Avoid releasing large quantities into the atmosphere.
Consult your gas supplier if you require advice.

14 Notes on transport

Land transport

UN number : 1013
Ordinary UN Shipping name : CARBON DIOXIDE
ADR/RID classification code : 2 A

Special regulation 584 : This gas is not subject to the regulations of the ADR if it contains a maximum of 0.5% air in a gaseous state, if it is contained in metallic capsules (Sodors, Sparklets) which are free of faults which could impact their rigidity, if the capsule seal is leak-proof and if the capsule contains a maximum of 25 g and a maximum of 0.75 g of this gas per cm3 (=0.75 kg/l).
Labeling and shipping papers : For capsules with a maximum content of 25g (max. 33 ml volume at FF 0.75 kg/l), no labeling of the transport packaging is required on the **shipping papers**. No UN number is required either. No special shipping papers are required.

Transport by ship

UN number : 2037
GGVSee/IMO-IMDG code : Containers, small, with gas (gas cartridges), with no removal device, non-refillable
Designation of material
ADR/RID classification code : 2 A

Special regulation 191 : This gas is not subject to the IMDG regulations if it is transported in packages with a maximum capacity of 50 ml in accordance with UN2037.
No special regulations.
Labeling and Shipping papers : For capsules with a maximum volume of 50 ml and shipped in accordance with UN2037 do not require labeling (no UN number either) on the transport packaging or any special shipping papers.

14 Notes on transport (continued)

Air transport

UN number	: 1013
Ordinary UN shipping name	: CARBON DIOXIDE
ADR/RID classification code	: 2 A

The following regulations are from the IATA 52 regulations on hazardous goods valid for 2011.
According to the list of hazardous goods in Section 4 of the regulations, all gases listed under Item 2 may be transported as hazardous goods in the quantities approved on cargo planes. The alphanumeric code E1 in column F defines the maximum net quantity per internal packaging as set out in table 2.6 A of the IATA. This can be 30 g/30 ml. The net quantity is defined as the water capacity of the internal container (cylinder).
The maximum net quantity that can be contained in an outer box as a single unit is 1000 ml.

15 Legal regulations

Health and safety regulations health and environmental legal regulations for the material or the mixture	: All national/local regulations apply.
Seveso regulations 96/82/EC	: Not listed.

16 Other information

Can cause asphyxiation in high concentrations.
Keep container in a well ventilated place.
Do not inhale gas.
Contact with liquid can cause cold burns/frost bite.
The risk of asphyxiation is often overlooked and must be made clear when training employees.
This safety data-sheet has been produced in accordance with valid European directives.
It applies to all countries which have adopted these directives as part of their national legislation.

WAIVER OF LIABILITY : It is based on the latest knowledge.
The information contained in this document does not constitute a contractual assurance of product qualities. Before the product can be used in any new process or trial, careful tests of the
material compliance and safety should be carried out.

----------End of document----------