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<b>Carbon dioxide (Refrigerated Liquid)</b>		



### 1- IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

product name	Carbon dioxide(refrigerated)
Chemical formula	CO2
company	GASES FOR MEDICAL & INDUSTRIAL GASES CO. – 308-311 – fish pool- south port said industrial zone – port said – EGYPT
Emergency phone numbers	23818102/23818109/23818032 Hot line 19802


### 2- COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation		Substance			
Substance name	Index Nr	EEC No	CAS No	Contents	Classification
Carbon dioxide(refrigerated)	--	204-696-9	124-38-9	%100	--

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

### 3- HAZARDS IDENTIFICATION

Hazards identification	Refrigerated liquefied Gas. Contact with product may cause cold burns or frostbite. In high concentrations may cause asphyxiation.
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#### 4- FIRSTAID MEASURES

Inhalation	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Low concentrations of CO <sub>2</sub> cause increased respiration and headache. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Skin/eye contact	Immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Ingestion	Ingestion is not considered a potential route of exposure.

#### 5- FIRE FIGHTING MEASURES

Specific hazards	Exposure to fire may cause containers to rupture/explode.
Flammable Class	Non flammable
Hazardous combustion products	None
Suitable extinguishing media	All known extinguishants can be used.
Specific methods	If possible, stop flow of product. Move away from container away and cool with water from a protected position. If leaking do not spray water into container. Water surrounding area (from protected position) to contain fire.
Special protective equipment for fire fighters	In confined space use self-contained breathing apparatus.


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#### 6- ACCIDENTAL RELEASE MEASURES

Personal precautions	Evacuate area Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Environmental precautions	Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous
Clean up methods	Ventilate area.

#### 7- HANDLING AND STORAGE

General	Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide. Potential production of solid CO <sub>2</sub> particles must be ruled out. In order to rule out potential electrostatic discharge production, the system must be adequately grounded.
Storage	Keep container below 50°C in a well-ventilated place.
Handling	Water absorption into the container must be prevented. Do not allow back feeding into the container. Use only properly selected equipment appropriate for this product, supply pressure, and temperature. Contact a gas company for medical and industrial gases if in doubt. Refer to the instructions for handling containers for gases for medical and industrial gases.

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#### 8- EXPOSURE CONTROLS/PERSONAL PROTECTION


Personal protection	Ensure adequate ventilation. Protect eyes, face and skin from liquid splashes.
Occupational Exposure limits	Carbon dioxide (refrigerated) : TLV© -TWA [ppm] : 5000 Carbon dioxide (refrigerated) : TLV© -STEL [ppm] : 30000 Carbon dioxide (refrigerated) : OEL (UK)-LTEL [ppm] : 5000 Carbon dioxide (refrigerated) : OEL (UK)-STEL [ppm] : 15000 Carbon dioxide (refrigerated) : MAK - Germany [ppm] : 5000

#### 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State at 20°C	Liquefied gas.	Critical temperature	30 °C	Solubility mg/l water	2000 mg/l
Molecular weight	44	Relative density, gas (Air=1)	1.52	Appearance/Color	Colorless
Melting point	-56.6 °C	Relative density, liquid (water=1)	1.03	Odor	No odor warning properties.
Boiling point	-78.5 °C	Vapor Pressure	57.3 bar at 20°C		
Other data	Gas/vapor heavier than air. May accumulate in confined Spaces, particularly at or below ground level.				

#### 10- STABILITY AND REACTIVITY

Stability and reactivity	Stable under normal conditions Liquid spillages can cause embrittlement of structural materials.
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#### 11- TOXICOLOGICAL INFORMATION


General	In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.
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#### 12- ECOLOGICAL INFORMATION

General	When discharged in large quantities may contribute to the greenhouse effect.
Global warming factor	1

#### 13- DISPOSAL CONSIDERATIONS

General	Discharges to the atmosphere in large quantities should be avoided. Do not empty anywhere where buildup could be dangerous. Contact a gas company for medical and industrial gases if necessary.
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#### 14- TRANSPORT INFORMATION

UN Nr	2187
Proper shipping name	Carbon dioxide, refrigerated liquid
Class/Div	2.2
ADR/RID Item Nr	2.3
ADR/RID Hazard Nr	20
Labeling ADR	Label 2.2: non flammable non toxic gas
Other transport information	<p>Avoid transport on vehicles where the load space is not separated from the driver's compartment.</p> <p>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.</p> <p>Before transporting product containers ensure that they are firmly secured and:</p> <ul style="list-style-type: none"> <li>- Cylinder valve is closed and not leaking.</li> <li>- Valve outlet cap nut or plug (where provided) is correctly fitted.</li> <li>- Valve protection device (where provided) is correctly fitted.</li> <li>- There is adequate ventilation.</li> <li>- Compliance with applicable regulations.</li> </ul>

#### 15-REGULATORY INFORMATION

Number in Annex I of Dir 67/548	Not included in Annex I.
EC Classification	Not classified as dangerous preparation.
EC Labelling	No EC labelling required
Symbols	None
Risk phrases	None
Safety phrases	None

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#### 16- OTHER INFORMATION

Asphyxiant in high concentrations. May cause frostbite. Keep container in well ventilated place. Do not breathe the gas. Ensure all national/local regulations are observed. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. This MSDS is for information purposes only and is subject to change without notice.

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