1 – PRODUCT AND COMPANY IDENTIFICATION

1.1 PRODUCT IDENTIFIER :

1.1.1 PRODUCT NAME Carbon dioxide

1.1.2 SYNONYMS Carbonic, Carbon Dioxide, Carbonic Anhydride, R744, Carbon Dioxide USP

1.1.3 CAS NUMBER 124-38-9

1.1.4 CHEMICAL FORMULA CO₂

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST :

1.2.1 RELEVANT IDENTIFIED USES Synthetic/Analytical chemistry.

1.3 DETAILS OF THE SUPPLIER :

1.3.1 COMPANY IDENTIFICATION Sharjah Oxygen Company

1.4 EMERGENCY TELEPHONE NUMBER :

1.4.1 EMERGENCY PHONE NUMBER(S) +971-6-5336481

2 – HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF SUBSTANCE OR MIXTURE :

GASES UNDER PRESSURE - Liquefied gas Simple asphyxiant.

2.2 LABEL ELEMENTS :

2.2.1 LABELING PICTOGRAMS

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## 2.2.2 SIGNAL WORD
Warning

## 2.2.3 HAZARD STATEMENT
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation. May increase respiration and rate.

## 2.2.4 PRECAUTIONARY STATEMENT
Read and follow all Safety Data Sheets (SDS) before use. Read label before use.
Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.

## 3 – COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 SUBSTANCES:

<table>
<thead>
<tr>
<th>3.1.1 CHEMICAL IDENTITY OF THE SUBSTANCE</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.2 COMMON SYNONYM(S) NAME(S)</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>3.1.3 CAS NO.</td>
<td>124-38-9</td>
</tr>
<tr>
<td>3.1.4 IMPURITIES AND STABILIZING ADDITIVES WHICH ARE THEMSELVES CLASSIFIED AND WHICH CONTRIBUTE TO THE CLASSIFICATION OF THE SUBSTANCE</td>
<td>There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.</td>
</tr>
</tbody>
</table>

### 3.2 MIXTURES:
Carbon Dioxide: 100%

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4 - FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES:

4.1.1 INHALATION
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.1.2 SKIN CONTACT
Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

4.1.3 EYE CONTACT
Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

4.1.4 INGESTION
As this product is a gas, refer to the inhalation section.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS BOTH ACUTE AND DELAYED:

4.2.1 ACUTE SYMPTOMS AND EFFECTS
No known significant effects or critical hazards.

4.2.2 DELAYED SYMPTOMS AND EFFECTS
No known significant effects or critical hazards.

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F/OPS/D65 Issue 01 Rev. 00 Issue Date: 01/02/2016
SHARJAH OXYGEN COMPANY
4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:
Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 – FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

5.1.1 SUITABLE EXTINGUISHING MEDIA
Use an extinguishing agent suitable for the surrounding fire.

5.2 SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

5.2.1 DURING FIRE
In a fire or if heated, a pressure increase will occur and the container may burst or explode.

5.3 ADVICE FOR FIRE FIGHTERS:

5.3.1 FIRE FIGHTING INSTRUCTIONS
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

5.3.2 PROTECTION DURING FIRE FIGHTING
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 – ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

6.1.1 GENERAL MEASURES
No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas.

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6.1.2 PROTECTIVE EQUIPMENT FOR NON-EMERGENCY PERSONNEL

Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

6.1.3 PROTECTIVE EQUIPMENT FOR EMERGENCY RESPONDERS

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 ENVIRONMENTAL PRECAUTIONS:

Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7 – HANDLING AND STORAGE

7.1 PRECAUTION FOR SAFE HANDLING:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas.

7.2 CONDITION FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

7.2.1 SAFE REQUIREMENTS

Store in accordance with local regulations. Store in a segregated and approved area. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

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7.2.2 KEEP AWAY FROM
Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials

8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

8.1.1 OCCUPATIONAL EXPOSURE:

ACGIH TLV (United States, 3/2015). Oxygen Depletion [Asphyxiant].
STEL: 54000 mg/m³ 15 minutes.
STEL: 30000 ppm 15 minutes.
TWA: 9000 mg/m³ 8 hours.
TWA: 5000 ppm 8 hours.

NIOSH REL (United States, 10/2013).
STEL: 54000 mg/m³ 15 minutes.
STEL: 30000 ppm 15 minutes.
TWA: 9000 mg/m³ 10 hours.
TWA: 5000 ppm 10 hours.

OSHA PEL (United States, 2/2013).
TWA: 9000 mg/m³ 8 hours.
TWA: 5000 ppm 8 hours.

STEL: 54000 mg/m³ 15 minutes.
STEL: 30000 ppm 15 minutes.
TWA: 18000 mg/m³ 8 hours.
TWA: 10000 ppm 8 hours.

8.2 EXPOSURE CONTROLS:

8.2.1 APPROPRIATE ENGINEERING CONTROLS
Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

8.2.2 INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:
## 8.2.2.1 RESPIRATORY PROTECTION
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## 8.2.2.2 HAND PROTECTION
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

## 8.2.2.3 EYE PROTECTION
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

## 8.2.2.4 SKIN PROTECTION
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

## 8.3 ENVIRONMENTAL EXPOSURE
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9 – PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

| 9.1.1 PHYSICAL STATE | Gas. [Liquefied compressed gas.] |

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9.1.2 APPEARANCE | Colorless
9.1.3 MOLECULAR MASS | 44.01 g/mole
9.1.4 COLOR | Colorless.
9.1.5 ODOR | Odorless
9.1.6 MELTING POINT | Sublimation temperature: -79°C (-110.2 to °F)
9.1.7 FREEZING POINT | Sublimation temperature: -79°C (-110.2 to °F)
9.1.8 CRITICAL TEMPERATURE | 30.85°C (87.5°F)
9.1.9 VAPOR PRESSURE | 830 (psig)
9.1.10 RELATIVE DENSITY | 0.114 lb/ft³

10 – STABILITY AND REACTIVITY

10.1 REACTIVITY | No specific test data related to reactivity available for this product or its ingredients.
10.2 CHEMICAL STABILITY | The product is stable.
10.3 POSSIBILITY OF HAZARDOUS REACTION | Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 CONDITIONS TO AVOID | No specific data.
10.5 INCOMPATIBLE MATERIALS | No specific data.
10.6 HAZARDOUS PRODUCTS DECOMPOSITION | Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 – TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

11.1.1 ACUTE TOXICITY | Not available.

IDLH : 40000 ppm

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**11.1.2 CORROSION/ IRRITATION** | Not available.
---|---
**11.1.3 RESPIRATORY/SKIN SENSITIZATION** | Not available.
**11.1.4 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)** | Not available.
**11.1.5 MUTAGENICITY** | Not available.
**11.1.6 CARCINOGENICITY** | Not available.
**11.1.7 REPRODUCTIVE TOXICITY** | Not available.
**11.1.8 CHRONIC EFFECTS FROM SHORT TERM AND LONG TERM EXPOSURE** | Not available.

**12 – ECOLOGICAL INFORMATION**

**12.1 TOXICITY** | Not available.
**12.2 PERSISTENCE AND DEGRADABILITY** | Not available.
**12.3 BIO ACCUMULATIVE POTENTIAL** | LogPow - 0.83
BCF – none
Potential - low
**12.4 MOBILITY IN SOIL** | Not available.

**13 – DISPOSAL CONSIDERATIONS**

**13.1 WASTE TREATMENT METHODS :**

**13.1.1 PROVISION RELATING TO WASTE** | The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

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13.1.2 DISPOSAL METHODS

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

14 – TRANSPORT INFORMATION

14.1 ROAD (ADR):

14.1.1 UN NUMBER 1013
14.1.2 UN PROPER SHIPPING NAME CARBON DIOXIDE
14.1.3 TRANSPORT HAZARD CLASS (ES):

14.1.3.1 HAZARD IDENTIFICATION NUMBER 20

14.1.4 SPECIAL PRECAUTIONS FOR USER:

14.1.4.1 SPECIAL PROVISIONS

Passenger aircraft Quantity limitation: 75 kg
Cargo aircraft Quantity limitation: 150 kg

14.1.4.2 LIMITED QUANTITIES

Yes

14.2 SEA (IMDG/IMSBC):

14.2.1 UN NUMBER 1013
14.2.2 UN PROPER SHIPPING NAME CARBON DIOXIDE
14.2.3 TRANSPORT HAZARD CLASS (ES) :

14.2.3.1 CLASS 2.2

14.3 AIR (ICAO-TI/IATA-DGR) :

14.3.1 UN NUMBER 1013

14.3.2 UN PROPER SHIPPING NAME CARBON DIOXIDE

14.3.3 TRANSPORT HAZARD CLASS (ES) :

14.3.3.1 CLASS 2.2

14.3.4 SPECIAL PRECAUTIONS FOR USER :

14.3.4.1 SPECIAL PROVISIONS

14.3.4.2 PASSENGER AND CARGO TRANSPORT, LIMITED QUANTITIES, MAXIMUM NET QUANTITY PER PACKAGING

| Passenger and Cargo Aircraft | Quantity limitation: 75 kg |
| Cargo Aircraft Only | Quantity limitation: 150 kg |

15 – REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

This material is not listed.
EU Legislation. Seveso Directive 96/82 EC.

16 – OTHER INFORMATION :

Asphyxiant in high concentrations. Recipient under pressure. May cause frostbite. Keep container in a 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.

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