

# MATERIAL SAFETY DATA SHEET

## FOODFRESH (GRADES 1-10; 21 & 23)

DATE: April 2001

### 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT IDENTIFICATION

Product Names	FOODFRESH PACKAGING GAS MIXTURES
Chemical Formula	CO2 PLUS N2
Trade Names	FoodFresh 1 FoodFresh 2 FoodFresh 3 through 10 FoodFresh 21 FoodFresh 23
Colour Coding	FoodFresh 1. Green (H.07) body with "FoodFresh 1" Stencilled on the body of the cylinder
Valve	3S – Brass 0,860 inch x 14 t.p.i, right hand male
Colour Coding	FoodFresh 2. French Grey (H.30) body with a Black shoulder, with "FoodFresh 2" stencilled on the body of the cylinder
Valve	3 SN – Brass, 3/4 inch BSP, right hand female.
Colour Coding	FoodFresh 3 – 10, 21 & 23. Ivory bodies with the relevant grades stencilled on their bodies
Valve	3SO – Brass, 5/8 inch BSP, right hand female
Company Identification	African Oxygen Limited 23 Webber Street Johannesburg, 2001 Tel. No: (011) 490-0400 Fax No: (011) 490-0506

### 2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Names	Carbon dioxide plus Nitrogen	
	<u>Carbon Dioxide</u>	<u>Nitrogen</u>
Cas No.	124-38-9	7727-37-9
UN No.	1013	1066
	<u>Carbon Dioxide /Nitrogen Mixtures</u>	
UN No.	1956	
ERG No	121	
Hazchem Warning	2 C Non-flammable gas	

### 3 HAZARDS IDENTIFICATION

**Main Hazards.** All Cylinders are portable gas containers, and must be regarded as pressure vessels at all times. The listed grades of FoodFresh do not support life. They can act as simple asphyxiants by diluting the concentration of oxygen in air below the levels necessary to support life. Excepting for FoodFresh 2, they are all heavier than air, and will tend to concentrate at lower levels.

**Adverse Health effects.** The carbon dioxide component contained in the relevant grades of FoodFresh acts as a stimulant and a depressant on the central nervous system. Increases in heart rate and blood pressure have been noted at a concentration of 7.6 percent, and dyspnea (laboured breathing), headache, dizziness and sweating occur if exposure at that level is prolonged. In the case of FoodFresh 2, the inhalation of nitrogen in excessive concentrations can result in dizziness, nausea, vomiting, loss of consciousness and death.

**Chemical hazards.** Both the carbon dioxide and nitrogen components of the listed grades of FoodFresh are relatively non-reactive and non-toxic. They will not burn or support combustion.

**Biological hazards.** The greatest physiological effect of carbon dioxide is to stimulate the respiratory centre, thereby controlling the volume and rate of respiration. It is able to cause dilation and constriction of blood vessels and is a

vital constituent of the acid-base mechanism that controls the pH of the blood.

**Vapour inhalation.** At concentrations of 10 % and above of carbon dioxide, unconsciousness can result in one minute or less. Impairment in performance has been noted during prolonged exposure to concentrations of 3 percent carbon, dioxide even when the oxygen concentration was 21 percent. In the case of FoodFresh 2, the nitrogen acts as a simple asphyxiant, death may result from errors in judgement, confusion, or loss of consciousness which prevents self-rescue.

<b>Eye Contact</b>	No known effect
<b>Skin Contact</b>	No known effect
<b>Ingestion</b>	(See "Vapour Inhalation" above)

### 4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to FoodFresh. Rescue personnel should be equipped with self-contained breathing apparatus. For the listed grades of FoodFresh that contain carbon dioxide, concentrations of 10 percent or more can produce unconsciousness or death. Lower concentrations may cause headache, sweating, rapid breathing, increased heartbeat, shortness of breath, dizziness, mental depression, visual disturbances and shaking. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area and given mouth-to-mouth resuscitation and supplemental oxygen.

<b>Eye contact</b>	No known effect
<b>Skin contact</b>	No known effect
<b>Ingestion</b>	(See section 3 above)

### 5 FIRE FIGHTING MEASURES

**Extinguishing media.** The listed range of FoodFresh mixtures do not support combustion, but could act as extinguishing media.

**Specific hazards.** The range of FoodFresh mixtures do not support life. They can act as simple asphyxiants by diluting the concentration of oxygen in the air below the levels to support life.

**Emergency actions.** If possible, shut off the source of excess FoodFresh. Evacuate area. All cylinders should be removed from the vicinity of the fire. Cylinders that cannot be removed should be cooled with water from a safe distance. Cylinders which have been exposed to excessive heat should be clearly identified and returned to supplier. CONTACT THE NEAREST AFROX BRANCH.

**Protective clothing.** Self-contained breathing apparatus. Safety goggles and shoes, or boots, should be worn when handling cylinders.

**Environmental precautions.** Excepting for FoodFresh 2, all the other listed mixtures are heavier than air, and could accumulate in low-lying areas. Care should be taken when entering a potentially oxygen-deficient environment. If possible, ventilate the affected area.

---

## 6 ACCIDENTAL RELEASE MEASURES

**Personal Precautions.** Do not enter any area where FoodFresh has been spilled unless tests have shown that it is safe to do so.

**Environmental precautions.** FoodFresh does not pose a hazard to the environment.

**Small spills.** Shut off the source of the escaping nitrogen gas mixture. Ventilate the area.

**Large spills.** Evacuate the area. Shut off the source of the spill if this can be done without risk. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced draught if necessary.

---

## 7 HANDLING AND STORAGE

Do not allow cylinders to slide or come into contact with sharp edges. Excepting for FoodFresh 1, which should be stacked vertically, all other grades may be stacked horizontally provided that they are firmly secured at each end to prevent rolling. Use a "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Keep out of reach of children.

---

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

**Occupational exposure hazards.** As FoodFresh mixtures are simple asphyxiants, avoid any areas where spillage has taken place. Only enter once testing has proved the atmosphere to be safe.

**Engineering control measures.** Engineering control measures are preferred to reduce exposure to oxygen depleted atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at, or near, floor level.

**Personal protection.** Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes, or boots, should be worn when handling cylinders.

**Skin** No known effect.

---

## 9 PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL DATA

#### Carbon Dioxide

Chemical Symbol	CO <sub>2</sub>
Molecular Weight	44,01
Specific volume @ 20°C & 101,325 kPa	547 ml/g
Relative density of gas @ 101,325 kPa (Air = 1)	1,53
Colour	None
Taste	Acidic
Odour	None

#### Nitrogen

Chemical Symbol	N <sub>2</sub>
Molecular Weight	28,013
Specific volume @ 20°C & 101,325 kPa	861,5 ml/g
Relative density of gas @ 101,325 kPa (Air = 1)	0,967
Colour	None
Taste	None
Odour	None

---

## 10 STABILITY AND REACTIVITY

**Conditions to avoid.** The dilution of oxygen in the atmosphere to levels which cannot support life. Never use cylinders as rollers or supports, or for any other purpose than the storing of FoodFresh. Never expose cylinders to excessive heat, as this may cause sufficient build-up of pressure to rupture the cylinders.

**Incompatible materials.** As dry FoodFresh mixtures are inert they may be contained in systems constructed of any of the common metals which have been designed to safely withstand the pressures involved.

**Hazardous Decomposition Products.** None

---

## 11 TOXICOLOGICAL INFORMATION

Acute Toxicity	TLV 5000 vpm (for CO <sub>2</sub> )
Skin & eye contact	No known effect
Chronic Toxicity	No known effect
Carcinogenicity	No known effect
Mutagenicity	No known effect
Reproductive Hazards	No known effect

(For further information see Section 3. Adverse health effects)

---

## 12 ECOLOGICAL INFORMATION

Excepting for FoodFresh 2, which is lighter than air, all the other listed mixtures are heavier than air, but all can cause pockets of oxygen-depleted atmosphere in low-lying areas. They do not pose a hazard to the ecology.

---

## 13 DISPOSAL CONSIDERATIONS

**Disposal Methods** Small amounts may be blown to the atmosphere under controlled conditions. Large amounts should only be handled by the gas supplier.

**Disposal of Packaging** The disposal of cylinders must only be handled by the gas supplier.

---

## 14 TRANSPORT INFORMATION

### ROAD TRANSPORTATION

UN No.	1956
ERG No	121
Hazchem warning	2C Non-flammable gas

### SEA TRANSPORTATION

IMDG	1956
Class	2.2
Label	Non-flammable gas

### AIR TRANSPORTATION

ICAO/IATA Code	1956
Class	2.2
Packaging instructions	
- Cargo	200
- Passenger	200
Maximum quantity allowed	
- Cargo	150 kg
- Passenger	75 kg

---

## 15 REGULATORY INFORMATION

EEC Hazard class	Non-flammable
Risk phrases	R20 Harmful by inhalation R34 Causes burns (FoodFresh 1. only) R44 Risk of explosion if heated under confinement
Safety phrases	S2 Keep out of reach of children S9 Keep container in a well-ventilated place S15 Keep away from heat S37 Wear suitable gloves S38 In case of insufficient ventilation, wear suitable respiratory equipment

National legislation None  
Refer to SABS 0265 for explanation of the above.

---

## 16 OTHER INFORMATION

Bibliography  
Compressed Gas Association, Arlington, Virginia  
Handbook of Compressed Gases - 3<sup>rd</sup> Edition  
Matheson. Matheson Gas Data Book - 6<sup>th</sup> Edition

---

## 17 EXCLUSION OF LIABILITY

Information contained in this publication is accurate at the date of publication. The company does not accept liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.