AFROX

# MATERIAL SAFETY DATA SHEET

# NITROGEN

DATE: April 2001

## 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

| | |
|---|---|
| Product Name | NITROGEN |
| Chemical Formula | $N_2$ |
| Trade Names | Nitrogen, Compressed<br>Nitrogen, Instrument Grade<br>Nitrogen, Pharmaceutical Grade<br>Nitrogen, ELCAP |
| Colour Coding | Compressed, Instrument, Ultra High Purity & Pharmaceutical Grades have French Grey (H.30) bodies, with Black shoulders. The relevant decals or stencilling shall be on the bodies of the cylinders. ELCAP shall have a Protea Pink (A.58) body, with "ELCAP" stencilled on the body of the cylinder. |
| Valves | ELCAP: No.2 type-Brass 5/8inch BSP right hand female. All the other grades shall be fitted with 3 SN – Brass, ¾ inch BSP right hand female valves. |
| Company Identification | African Oxygen Limited<br>23 Webber Street<br>Johannesburg, 2001<br>Tel. No: (011) 490-0400<br>Fax No: (011) 490-0506 |

## 2 COMPOSITION/INFORMATION ON INGREDIENT

| | |
|---|---|
| Chemical Name | Nitrogen |
| Chemical Family | Inert gas |
| CAS No. | 7727-37-9 |
| UN No. | 1066 |
| ERG No. | 121 |
| Hazchem Warning | 2 C Non-flammable gas |

## 3 HAZARDS IDENTIFICATION

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| **Main Hazards** | All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. Nitrogen does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in air below the levels necessary to support life. |
| **Adverse Health effects** | Inhalation of nitrogen in excessive concentrations can result in dizziness, nausea, vomiting, loss of consciousness and death. |
| **Chemical Hazards** | Nitrogen is relatively inert to most materials under ordinary conditions. It becomes more reactive at elevated temperatures, and combines with hydrogen, oxygen and some metals. |
| **Biological Hazards** | No known effect. |
| **Vapour Inhalation** | As nitrogen acts as a simple asphyxiant death may result from errors in judgement, confusion, or loss of consciousness which prevents self-rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning. |
| **Eye Contact** | No known effect. |
| **Skin Contact** | No known effect. |
| **Ingestion** | (See "Vapour Inhalation" above). |

## 4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to Nitrogen. Rescue personnel should be equipped with self-contained breathing apparatus. 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.

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| **Eye Contact** | No known effect. |
| **Skin Contact** | No known effect. |
| **Ingestion** | (See section 3 above) |

## 5 FIRE FIGHTING MEASURES

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| **Extinguishing media** | As Nitrogen is an inert gas, it does not contribute to a fire, but could help with the extinguishing by reducing the oxygen content of the air by dilution to below the level to support combustion. |
| **Specific Hazards** | Nitrogen does not support life. It can act as a simple asphyxiant 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 Nitrogen. 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 gloves and shoes, or boots, should be worn when handling cylinders. |
| **Environmental precautions** | Nitrogen is lighter than air and disperses rapidly in the atmosphere. Care should be taken when entering a potentially oxygen-deficient environment. If possible, ventilate the affected area. |

## 6 ACCIDENTAL RELEASE MEASURES

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| **Personal Precautions** | Do not enter any area where nitrogen has been spilled unless tests have shown that it is safe to do so. |
| **Environmental precautions** | Nitrogen does not pose a hazard to the environment. |
| **Small spills** | Shut off the source of escaping nitrogen. 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. Nitrogen cylinders 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

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|---|---|
| **Occupational Exposure Hazards** | As nitrogen is a simple asphyxiant, 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**

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|---|---|
| Chemical Symbol | $N_2$ |
| Molecular Weight | 28,013 |
| Specific Volume @ 20°C & 101,325 kPa | 861,5ml/g |
| Density, gas @ 101,325 kPa and 20°C | 1,25 kg/$m^3$ |
| Relative density (Air = 1) @ 101,325 kPa | 0,967 |
| Colour | None |
| Taste | None |
| Odour | None |

## 10 STABILITY AND REACTIVITY

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

**Incompatible Materials** As Nitrogen is inert it 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

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|---|---|
| Acute Toxicity | No known effect. |
| 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

Nitrogen is lighter than air and can cause pockets of oxygen depleted atmosphere in low-lying areas. It does 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**

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|---|---|
| UN No. | 1066 |
| ERG No | 121 |
| Hazchem warning | 2C Non-flammable gas |

**SEA TRANSPORTATION**

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|---|---|
| IMDG | 1066 |
| Class | |
| Packaging group | |
| Label | Non-flammable gas |

**AIR TRANSPORTATION**

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|---|---|
| ICAO/IATA Code | 1066 |
| Class | 2.2 |
| Packaging group | |
| Packaging instructions | |
| - Cargo | 200 |
| - Passenger | 200 |
| Maximum quantity allowed | |
| - Cargo | 150kg |
| - Passenger | 75kg |

## 15 REGULATORY INFORMATION

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|---|---|
| EEC Hazard class | Non-flammable |
| Risk phrases | R20 Harmful by inhalation<br>R44 Risk of explosion if heated under confinement |
| Safety phrases | S2 Keep out of reach of children<br>S9 Keep container in a well-ventilated place<br>S15 Keep away from heat<br>S37 Wear suitable gloves<br>S38 In case of insufficient ventilation, wear suitable respiratory equipment<br>S51 Use only in well-ventilated areas |
| 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 - 3rd Edition
Matheson. Matheson Gas Data Book - 6th Edition
SABS 0265 - Labelling of Dangerous Substances

## 17 EXCLUSION OF LIABILITY

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