**MATERIAL SAFETY DATA SHEET (MSDS)**

**OXYGEN**

(please ensure that this MSDS is received by the appropriate person)

**DATE: March 2017**

**Product Name:** Oxygen

**Chemical Formula:** \( \text{O}_2 \)

**Trade Names:**
- Oxygen, Compressed
- Oxygen, Instrument Grade (N2.5)
- Oxygen, EP Grade (N2.7)
- Oxygen, IG Zero (N4.5)
- Oxygen, UHP (N4.5)
- Medical Oxygen
- Oxygen Agrigas
- Oxygen Econopack
- Oxygen Portapak

**Colour Coding:**
- Compressed, IG, EP, IG Zero & UHP cylinders all have black bodies. Relevant decals or stencilling depict actual grades.
- Medical Oxygen
- Black body with a white shoulder

**Valve:**
- Oxygen AgriGas
- Black body with an orange valve guard
- Oxygen Econopack
- Black body with a blue valve guard
- Medical oxygen cylinders could also have the revenant Pin Index valves fitted.
- UHP grade has the Neriki-Brass 5/8 inch BSP right hand female valves.

**Company Identification:**
- African Oxygen Limited
- 22 Webber Street
- Johannesburg, 2001
- Tel No: (011) 490-0400
- Fax No: (011) 490-0506

**Emergency Number:**
- 0860 020202 or (011) 873 4382

**2 COMPOSITION/INFORMATION ON INGREDIENTS**

**Chemical Name:** Oxygen

**Chemical Family:** Oxidant

**CAS No:** 7782-44-7

**UN No:** 1072

**ERG No:** 122

**Hazard Warning:** 5A Non-flammable Gas

**3 HAZARDS IDENTIFICATION**

**Main Hazards:**
All cylinders are transportable gas containers. Oxygen is non-flammable, but readily supports combustion. Never permit oil, grease or other readily combustible substance to come into contact with high concentrations of Oxygen.

**Adverse Health Effects:**
Central nervous system toxicity including dizziness, convulsions and loss of consciousness can occur after only 2-3 hours of exposure to pure oxygen at 2 or more atmospheres. Retrosternal soreness, associated with coughing and breathing difficulties, made worse by smoking and exposure to cold air can occur after breathing pure oxygen at atmospheric pressure for several hours.

**Chemical Hazards:**
Oxygen is non-flammable, but strongly supports combustion (including some materials which do not normally burn in air). Since dry Oxygen is non-corrosive, most materials of construction are suitable. Avoid all flammable materials.

**Biological Hazards:**
No known effect.

**Vapour Inhalation:**
Pure oxygen is a local irritant to mucous membranes and, with extended continued exposure, can be destructive to lung tissue.

**4 FIRST AID MEASURES**

**Eye/Skin Contact:**
No known effect.

**Inhalation:**
Prompt medical attention is mandatory in all cases of overexposure to Oxygen. Rescue personnel should be cognisant of extreme fire hazard associated with oxygen-rich atmospheres. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. They should be kept warm and quiet. Quick removal from the contaminated area is most important. The physician should be informed that the patient has experienced hyperoxia.

**5 FIRE FIGHTING MEASURES**

**Extinguishing Media:**
As Oxygen is non-flammable, but strongly supports combustion; the correct type of extinguishing should be used depending on the combustible material involved.

**Specific Hazards:**
Oxygen vigorously accelerates combustion. Materials that would not normally burn in air could combust vigorously in atmospheres having high concentrations of Oxygen.

**Emergency Actions:**
If possible, shut off the source of escaping Oxygen. 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:**
Safety goggles, gloves and safety shoes should be worn when handling cylinders.

**Environmental Precautions:**
As the gas is heavier than air, pockets of Oxygen-enriched air could occur. These could lead to the fire spreading rapidly. If possible, ventilate the affected area.

**6 ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:**
Although Oxygen is not itself combustible, it supports and accelerates combustion. Clothes and other materials, not normally considered flammable, will burn fiercely in the presence of Oxygen, and can be set alight by a single spark, or even hot cigarette ash.

**Environmental Precautions:**
Oxygen does not pose a hazard to the environment. Beware of Oxygen-enriched atmospheres coming into contact with readily combustible materials. If possible, ventilate the affected area.

**Small Spills:**
Shut off the source of excess Oxygen. Ventilate the area.

**Large Spills:**
Evacuate the area. Shut off the source of the spill if this can be done without risk. 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. Cylinders of Oxygen should not be stored near cylinders of acetylene or other combustible gases. Oxygen cylinders may be stacked horizontally provided that they are firmly secured at each end to prevent rolling. Prevent dirt, grit of any sort, oil or any other lubricant from entering the cylinder valves, and store cylinders well clear of any corrosive influence, e.g., battery acid. Compliance with all relevant legislation is essential. 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
Avoid exposure to oxygen-enriched atmospheres, as this could result in clothing becoming saturated by oxygen. On ignition the clothing could burn fiercely resulting in serious burns.

Engineering Control Measures
Engineering control measures are preferred to reduce exposure to Oxygen-enriched 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
Safety goggles, gloves and shoes should be worn when handling cylinders.

Skin
No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA
Chemical Symbol: O₂
Molecular Weight: 32.00
Specific Volume @ 20°C & 101,325 kPa: 755 ml/g
Boiling Point: 101.325 kPa, 90.18 °K; -183 °C; 181.4 °F
Density, gas @ 101,325 kPa and 20°C: 1.33 kg/m³
Relative density (Air = 1) @ 101,325 kPa and 1,053 kg/m³
Solubility in Water @ 101,325 kPa @ 25°C: 4.889 cm³ O₂/100 cm³ water
Colour: None
Taste: None
Odour: None

10 STABILITY AND REACTIVITY

Conditions to avoid
The build up of Oxygen-enriched atmospheres as, depending on temperature, oxygen reacts with all of the elements, excepting the inert gases, to form oxides. These reactions can sometimes be chronic.

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

Oxygen is heavier than air and care should be taken to avoid the formation of Oxygen-enriched pockets. It does not pose a hazard to the ecology.

13 DISPOSAL CONSIDERATIONS

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

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

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION
UN No: 1072
ERG No: 122
Hazchem warning: 5A Non-flammable Gas

SEA TRANSPORTATION
IMDG: 1072
Class: Non-flammable Gas
Label: Non-flammable

AIR TRANSPORTATION
ICAO/IATA Code: 1072
Class: Non-flammable

包装 group: 2.2
包装 instructions:
- Cargo: 200 kg
- Passenger: 75 kg

15 REGULATORY INFORMATION

EEC Hazard class: Non-flammable
Reference SANS 10234 and its supplement.

16 OTHER INFORMATION

Bibliography
Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases – 3rd Edition
SABS 0265 - Labelling of Dangerous Substances

17 EXCLUSION OF LIABILITY

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