MATERIAL SAFETY DATA SHEET (MSDS)
PROPANE

Please ensure that this MSDS is received by the appropriate person

DATE: February 2014 Version 2

Ref. No.: MS110

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name	PROPANE
Chemical Formula	C_3H_8
Trade Name	Propane, Technical Grade Propane, Instrument Grade Propane, Pure
Colour coding	Propane, Technical Grade Propane, Instrument Grade Silver (Plascon 720/022) body with a Red (A11) circle, 250 mm dia, below the valve. Propane Pure Dulux Light Weatherwork Grey body with a Red (A11) shoulder.
Valves	OMECA – Brass 5/8 inch BSP left hand female for all the above grades (Vapour outlet). ¼ inch flare for liquid withdrawal on Propane, Pure cylinders
Company Identification	African Oxygen Limited 23 Webber Street Johannesburg, 2001 Tel. No: (011) 490-0400 Fax No: (011) 490-0506

EMERGENCY NUMBER 0860 020202 or +27(0) 11 821 3000 (24 hours)

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Propane
Chemical Family	Paraffins
CAS No.	74-98-6
UN No.	1978
ERG No.	115
Hazchem Warning	2 A Flammable gas

3 HAZARDS IDENTIFICATION

Main Hazards	All cylinders are portable gas containers. The hazards due to the handling of Propane stem mainly from its extreme flammability. The flammability limits in the air are between 2,2 and 9,5%. by volume.	
Adverse Health effects	Propane has some degree of anaesthetic action and is mildly irritating to the mucous membranes and/or acts as a simple asphyxiant.	
Chemical hazards	None. Propane is a stable gas.	
Biological Hazards	No known effect	
Vapour Inhalation	Propane is non-toxic. Prolonged inhalation could have an anaesthetic effect. Since it can displace oxygen in the air it could also act as a simple asphyxiant.	
Eye contact	Gas	No known effect
	Liquid	Could cause frostbite
Skin contact	Gas	No known effect
	Liquid	Could cause frostbite
Ingestion	Not likely, however the liquid could cause frostbite.	

Hazard Category 1

Danger
Extremely flammable gas

4 FIRST AID MEASURES

If the subject is conscious, he should be taken to an uncontaminated area and inhale fresh air or oxygen. In the event the subject is overcome by a massive exposure, he should be carried to an uncontaminated area and given artificial respiration and oxygen simultaneously. Treat symptomatically thereafter. In case of skin contact with liquid propane, frostbite may develop. If frostbite occurs, cover the frost-bitten part with a warm hand or woollen material. If the fingers or hand are frost-bitten, have the victim hold his hand in his armpit, next to his body. Then place the frost-bitten part in warm water, about 42°C. If warm water is not available, or impractical to use, wrap the affected part gently in blankets. Let the circulation re-establish itself naturally. Encourage the victim to exercise the affected part while it is being warmed.

5 FIRE FIGHTING MEASURES

Extinguishing media	Do not extinguish fire unless the leakage can be stopped. Do not use water jet. Use dry chemical, CO_2 or foam.
Specific hazards	The rupturing of cylinders or bulk containers due to excessive exposure to a fire could result in a BLEVE (Boiling Liquid Expanding Vapour Explosion), with disastrous effects. As the flammability limits in the air for Propane are between 2,2 and 9,5%, extreme care must be taken when handling leaks.
Emergency actions	If possible, shut off the source of the spillage. Evacuate area. Post notices, "No naked lights - No smoking." Prevent liquid or vapour from entering sewers, basements and workpits. Keep cylinders or bulk vessels cool by spraying with water if exposed to a fire. If tanker has overturned, do not attempt to right or move it. CONTACT THE NEAREST AFROX BRANCH.
Protective clothing	Self-contained breathing apparatus. Safety gloves and shoes, or boots, should be worn when handling containers.
Environmental precautions	Vapourised propane gas is heavier than air and could form pockets of oxygen-deficient atmosphere in low-lying areas

6 ACCIDENTAL RELEASE MEASURES

Personal precautions	Do not enter any area where Propane has been spilled unless tests have shown that it is safe to do so.
Environmental precautions	The danger of widespread formation of explosive propane/air mixtures should be taken into account. Accidental ignition could result in a massive explosion.
Small spills	Do not extinguish the fire unless the leakage can be stopped immediately. Once the fire has been extinguished, and all spills have been stopped, ventilate the area.
Large spills	Stop the source if it can be done without risk. Contain the leaking liquid with sand or earth, or disperse with special water/fog spray nozzle. Allow to evaporate. Take the precautions as listed above under "Emergency Actions". Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced draught if necessary. All electrical equipment should be flameproof.

7 HANDLING AND STORAGE

Cylinders containing Propane should only be handled and stored in the vertical position. Cylinders should never be rolled. Do not allow cylinders to slide or come into contact with sharp edges and they should be handled carefully. Ensure that cylinders are stored away from other oxidants. Comply with all local legislation. Keep out of reach of children.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure hazards	As vapourised Propane 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 exposures. General methods include forced draught ventilation, separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at, or near, floor level. Ensure that all electrical equipment is flameproof.
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 containers.

Skin Wear loose-fitting overalls, preferably without pockets.

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9 PHYSICAL AND CHEMICAL PROPERTIES

Chemical Symbol	C_3H_8
Molecular Weight	44,10
Specific volume @ 20°C & 101,325 kPa	547 ml/g
Autoignition temperature	480°C
Relative density (air = 1)	1,55
Flammability limits in air	2,2 - 9,5% (by volume)
Critical temperature	96,67°C
Colour	Clear
Taste	None
Odour	Ethyl mercaptan added For Pure grade the odour is pleasant.

10 STABILITY AND REACTIVITY

Conditions to avoid	The dilution of the oxygen concentration in the atmosphere to levels which cannot support life. The formation of explosive gas/air mixtures.
Incompatible materials	Any common, commercially available metals may be used with commercial (or higher) grades of propane because it is non-corrosive, though installations must be designed to withstand the pressures involved and must comply with all state and local regulations.
Hazardous Decomposition Products	Propane is relatively stable. However, on combustion, toxic compositions, typically carbon monoxide may be formed, depending on conditions.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	TLV 800 ppm
Skin & eye contact	No known effect.
Chronic Toxicity	No known effect.
Carcinogenicity	Severe cold burns can result in carcinoma
Mutagenicity	No known effect.
Reproductive Hazards	No known effect

(For further information see Section 3, Adverse health effects

12 ECOLOGICAL INFORMATION

Vapourised Propane is heavier than air, and can cause pockets of oxygen-depleted atmosphere in low-lying areas. It does not pose a hazard to the ecology, unless the gas/air mixture is ignited.

13 DISPOSAL CONSIDERATIONS

Disposal Methods	Disposal of Propane, as with other flammable gases, should be undertaken only by personnel familiar with the gas and the procedures for disposal. Contact the supplier for instructions. In general, should it become necessary to dispose of Propane, the best procedure, as for other flammable gases, is to burn them in suitable burning unit available in the plant. This should be done in accordance with appropriate regulations.
Disposal of packaging	The disposal of cylinders must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No.	1978
ERG No	115
Hazchem warning	2 A Flammable gas
SEA TRANSPORTATION	
IMDG	1978
Class	2.1
Label	Flammable gas
AIR TRANSPORTATION	
ICAO/IATA Code	1978
Class	2.1
Packaging group	None
Packaging instructions	
- Cargo	200
- Passenger	Forbidden
Maximum quantity allowed	
- Cargo	150 kg
- Passenger	Forbidden

15 REGULATORY INFORMATION

SUPPLEMENT TO SANS 10234:2008
Edition 1
Annex A Index No. 608-011-00-8

Hazard & Precautionary statement codes

H220	Extremely Flammable Gas
P210	Keep away from heat/sparks/open flames/ hot surfaces – NO SMOKING (Manufacture, supplier or the competent authority to specify ignition sources)
P377	Leaking gas fire: Do not extinguish unless leak can be stopped safely
P381	Eliminate all ignition sources if safe to do so
P403	Store in a well-ventilated place

16 OTHER INFORMATION

Bibliography

Handbook of Compressed Gases - 3rd Edition
Matheson. Matheson Gas Data Book - 6th Edition
Supplement to SANS 10234 – List of classification and labelling of chemicals in accordance with Globally Harmonized System (GHS)

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