MATERIAL SAFETY DATA SHEET (MSDS)

LIQUEFIED PETROLEUM GAS & PROPANE

Please ensure that this MSDS is received by the appropriate person

DATE: May 2008 Version no.1

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name	HANDIGAS (LIQUEFIED PETROLEUM GAS)
Chemical Formula	C3H8 PLUS C4 H10 PLUS C3 H6
Trade Name	Handigas
Colour Coding	Plascon Dark Admiralty Grey (SABS 1091 – G.12) body, with a HANDIGAS decal affixed to the cylinder. All cylinders fitted with an internal eductor tube for liquid withdrawal shall be clearly marked with two Yellow (B.49) stripes painted diametrically opposite each other along the length of the cylinder.
Valve	Brass 5/8 inch BSP left hand female, either single or two-way outlet.
Company Identification	African Oxygen Limited 23 Webber Street Johannesburg, 2001 Tel. No: (011) 490-0400 Fax No: (011) 490-0506
EMERGENCY No	**0800147112 (24 hr) (HAZMAT)**

1075**2** COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Butane / Propane / Propylene		
Chemical Family	Aliphatic Hydrocarbon		
CAS No.	Butane	106-97-8	UN No. 1075
	Propane	74-98-6	UN No. 1978
	Propylene	115-07-01	UN No. 1077
UN No.	1075		
ERG No.	115		
Hazchem Warning	2A Flammable gas		

3 HAZARDS IDENTIFICATION

Main Hazards All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. Vapourised liquefied petroleum gas is highly flammable and can form explosive mixtures with air. The vapourised liquid does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in the air below the levels necessary to support life. It can act as a simple asphyxiant.

Adverse Health effects. The liquefied petroleum gases are non-toxic. Prolonged inhalation of high concentrations has an anaesthetic effect.

Chemical Hazards Propane and butane (known most extensively in commercial and popular terms as LP gas or LPG) have an extremely wide range of domestic, industrial, commercial, agricultural and internal combustion engine uses. It is estimated that the two gases, un-mixed and in mixtures, have several thousand industrial applications and many more in other fields. Their very broad application stems from their occurrences as hydrocarbons between natural gas and natural gasoline, and from their corresponding properties. As a result of their wide application, misuse could result in serious chemical hazards.

Biological Hazards. Contact with the liquid phase of liquefied petroleum gases with the skin can result in frostbite.

Vapour Inhalation As the vaporized liquid 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	The liquid can cause severe burn-like injuries.
Skin Contact	Contact with the liquid phase can cause severe burn-like injuries.
Ingestion	No known effect.

4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to vaporized liquefied petroleum gas. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frostbitten part in warm water, about 40 - 42°C. If warm water is not available, or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. 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.

Eye Contact (With the liquid phase)	Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.
Skin Contact With the liquid phase)	See above for handling of frostbite.
Ingestion	No known effect.

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 air for the main constituents of liquefied petroleum gas vary between approximately 2 and 11% by vol, 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 liquefied petroleum 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 liquefied petroleum gas has been spilled unless tests have shown that it is safe to do so.

Environmental precautions. The danger of widespread formation of explosive LPG/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. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced-draught if necessary. All electrical equipment must be flameproof.

7 HANDLING AND STORAGE

Cylinders containing liquefied petroleum gas 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.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Hazards. As vapourised LPG is a simple asphyxiant, avoid any areas where spillage has taken place.

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 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.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Specific Volume @ 20°C & 101,325 kPa	471ml/g
Auto ignition temperature	±450°C
Relative density (Air=1) @ 101,325 kPa	+-1,75
Flammability in air	2,2 - 9,5%
Colour - Liquid	Clear
Taste	None
Odour	Ethyl Mercaptan Added
Specification	SABS 690

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 liquefied petroleum gases because they are non-corrosive, though installations must be designed to withstand the pressures involved and must comply with all state and local regulations.

Hazardous Decomposition Products. The constituents of liquefied petroleum gas are relatively stable. However, on combustion, toxic compositions, typically carbon monoxide may be formed, depending on conditions.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	TLV 1000 VPM.
Skin & eye contact	No known effect.
Carcinogenicity	Severe cold burns can result in carcinoma.

(For further information see Section 3. Adverse Health Effects).

12 ECOLOGICAL INFORMATION

Vapourised liquefied petroleum gas 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 liquefied petroleum gases, as with other 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 liquefied petroleum gases, the best procedure, as for other flammable gases, is to burn them in any 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.	1075
ERG No.	115
Hazchem warning	2A-Flammable gas

SEA TRANSPORTATION

IMDG	1075
Label	Flammable gas

AIR TRANSPORTATION

ICAO/IATA Code	1075
Class	2.1
Packaging group	
Packaging instructions	
- Cargo	200
- Passenger	Forbidden
Maximum quantity allowed	
- Cargo	150kg
- Passenger	Forbidden

15 REGULATORY INFORMATION

EEC Hazard class Flammable

Risk phrases
- R2 Risk of explosion by shock, friction, fire or other sources of ignition
- R13 Extremely flammable liquefied gas
- R18 In use may form flammable explosive vapour-air mixture
- R44 Risk of explosion if heated under confinement

Safety phrases
- S2 Keep out of reach of children
- S3 Keep in a cool place
- S4 Keep away from living quarters
- S9 Keep container in a well-ventilated place
- S15 Keep away from heat
- S16 Keep away from sources of ignition
- S29 Do not empty into drains
- S33 Take precautionary measures against static discharges
- S38 In case of insufficient ventilation, wear suitable respiratory equipment
- S41 In case of fire and/or explosion do not breathe fumes
- S51 Use only in well-ventilated areas

Refer to SANS 10265 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
SANS 10265 - Labelling of Dangerous Substances

17 EXCLUSION OF LIABILITY

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