AFROX
A Member of The Linde Group

MATERIAL SAFETY DATA SHEET (MSDS)
CO-METHCAL GAS STANDARDS
(Please ensure that this MSDS is received by the appropriate person)

DATE: April 2017 **Version 3** **Ref. No.: MS047**

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name	Carbon Monoxide/Methane/Air calibration gas standards
Chemical Formula	CO plus CH_4 plus O_2 plus N2.
Trade Names	COMETHCAL 100/14 (105 – 120 vpm CO. 1,3 – 1,5% CH4) COMETHCAL 130/15 (120 – 140 vpm CO. 1,4 – 1,6% CH4) The above figures in brackets indicate the tolerances for CO & CH4 in these mixtures. The actual concentrations would be indicated on the analytical certificates attached to the cylinders.
Colour Coding	Silver body with a Red (A.11) shoulder, and Yellow circular band just below the Red shoulder. The relevant "COMETHCAL" decal shall be affixed centrally to the body of the cylinder.
Valve	3SH – Brass, 5/8-inch BSP left hand female. N.B. ONLY Aluminium cylinders are used for the above calibration mixtures
Company Identification	African Oxygen Limited 23 Webber Street Johannesburg, 2001 Tel. No: (011) 490-0400 Fax No: (011) 490-0506
EMERGENCY No	**0860 020 202 or 086 011 1185 (24 hours)**

2 HAZARDS IDENTIFICATION

Main Hazards.. The carbon monoxide component of the above gas standards is a chemical asphyxiant. Although the Methane component of these gas mixtures will burn when ignited by a flame, the Methane will not add significantly to the fire. All cylinders are transportable gas containers.

Adverse Health effects. Concentrations in excess of 50 ppm carbon monoxide will produce symptoms of poisoning if breathed for a sufficiently long time.

Chemical Hazards. There are no hazardous products formed when methane burns in air.

Biological Hazards. None.

Vapour inhalation. Carbon monoxide combines with the haemoglobin in the blood to form carboxyhaemoglobin, which is unable to transport oxygen. The symptoms of carbon monoxide poisoning are largely due to anoxia.

Eye Contact. No known effect.

Skin Contact. No known effect.

Ingestion. (See "Vapour Inhalation" above).

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Names	Carbon monoxide plus Methane Oxygen plus Nitrogen

Do not allow cylinders to slide or come into contact with sharp edges. Cylinders of CO-Methcal should not be stored near cylinders of acetylene or other combustible gases. CO-Methcal cylinders may be stacked horizontally provided that they are firmly secured at each

5 FIRE FIGHTING MEASURES

Extinguishing media. The release of either of these gas standards in the vicinity of a fire will not significantly add to the fire. Suitable extinguishing media for the surrounding fire should be used.

Specific hazards. The possibility of inhaling excessive amounts of carbon monoxide.

Emergency actions. 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. No known effect.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions. Ensure that the surrounding atmosphere is safe before entering an area where large volumes of CO- MethCal have been released.

Environmental Precautions. The gas standards do not pose a hazard to the environment.

Small spills. No known effect.

Large spills. Beware of the possible increase in the levels of carbon monoxide.

7 HANDLING AND STORAGE

Engineering control measures.

Engineering control measures are preferred to reduce exposures. General methods include mechanical ventilation, process or personal enclosure, and control of process conditions. Administrative controls and personal protective equipment may also be required. Use a suitable flameproof ventilation system separate from other exhaust ventilation systems. Exhaust direct to outside. Supply sufficient replacement air to make up for air removed by exhaust system.

Exposure control and personal protection.

Occupational Exposure Hazards: Prolonged exposure to low concentrations of carbon monoxide may cause permanent harmful effects.

Personal protection: use self-contained breathing apparatus when fighting large fires.

Eyes: use safety glasses

Hands: use suitable protective gloves

Skin No known effect.

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 the "first-in first-out" inventory system to prevent full cylinders from being stored for excessive periods of time. Keep out of reach of children.

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7 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Carbon Monoxide

Chemical Symbol	CO
Molecular Weight	28, 01
Specific volume @ 20°C & 101,325 kPa	858 ml/g
Relative density of gas @ 101,325 kPa (Air=1)	0,967
Colour	None
Taste	None
Odour	None

Methane

Chemical Symbol	CH_4
Molecular Weight	16,043
Specific volume @ 20°C & 101,325 kPa	1474 ml/g
Relative density of gas @ 101,325 kPa (Air=1)	0,555
Colour	None
Taste	None
Odour	None

Nitrogen

Chemical Symbol	N_2
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

Oxygen

Chemical Symbol	O_2
Molecular Weight	32,00
Specific volume @ 20°C & 101,325 kPa	755 ml/g
Relative density of gas @ 101,325 kPa (Air=1)	1,053
Colour	None
Taste	None
Odour	None

8 STABILITY AND REACTIVITY

Conditions to avoid. The build up of carbon monoxide in the atmosphere to potentially hazardous concentrations. Never use cylinders as rollers or supports, or for any other purpose than the storing of CO-Methcals. Never expose the cylinders to excessive heat, as this may cause sufficient build-up of pressure to rupture the cylinders.

Incompatible Materials.

As dry CO-Methcals 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

9 TOXICOLOGICAL INFORMATION

Acute Toxicity	CO: TLV 50 ppm (8 hrs)
Skin & eye contact	No known effect
Chronic Toxicity	Similar to acute toxicity
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

These gas standards do not pose a hazard to the ecology.

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 containers must only be handled by the gas supplier.

13 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No.	1955
Subsidiary risk	Chemical Asphyxiant
ERG No	119
Hazchem warning	2 A Flammable gas
SEA TRANSPORTATION	
IMDG	1955
Class	2.3
Label	Toxic gas
AIR TRANSPORTATION	
ICAO/IATA Code	1955
Class	2.3
Packaging instructions	
- Cargo	Forbidden
- Passenger	Forbidden
Maximum quantity allowed	
- Cargo	Forbidden
- Passenger	Forbidden

14 REGULATORY INFORMATION

EEC Hazard class Toxic gas

OHSAct 85 of 1993 and Regulations

SANS 10234

SANS 10234 – Supplement

ISO 11014

15 OTHER INFORMATION

Bibliography

Compressed Gas Association, Arlington, Virginia
Handbook of Compressed Gases 3rd Edition
Matheson Gas Data Book 6th Edition.

EXCLUSION OF LIABILITY

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