

SAFETY DATA SHEET (SDS)

Methane

Please ensure that this SDS is received by the appropriate persons

Review Date: 24/7/2023 v01

Emergency: 0860 02 02 02


Document Number: AFX-SDS-0053

1. PRODUCT AND COMPANY IDENTIFICATION

Product Synonym	Methane Methane
Chemical Formula	CH ₄
Trade Name	Methane
Colour Coding	Red with black shoulder lime green valve guard
Product Code	541403-SE-C
Company Identification	African Oxygen Limited Grayston Office Park Building 7 128 Peter Road Sandown, Sandton, 2196 Tel. No: (011) 490-0400 Fax No: (011) 490-0530 Email: customer.service@afrox.linde.com www.afrox.com
Emergency Numbers	0860 02 02 02 (Afrox)

GHS Signal Words	Danger
GHS Hazard Statements	- H220: Extremely flammable gas - H280: Contains gas under pressure; may explode if heated
GHS Precautionary Statements	Prevention: P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Response: P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely P381: Eliminate all ignition sources if safe to do so Storage: P410 + P403 Protect from sunlight. Store in a well-ventilated place. Disposal - None
Other Hazards that do not result in classification	- Asphyxiant in high concentrations

2. HAZARD IDENTIFICATION

Classification	- Classification under South African Hazardous Chemical Substances Regulations subsequently amended. (HCS) - Classification under the Globally Harmonized System of classification and labelling of chemicals (GHS) - EXTREMELY FLAMMABLE GAS – Category 1 - Gases under pressure
Emergency Overview	Colour: None Odour: None Taste: None Physical State: Compressed Gas Form: Gas under pressure
	- All cylinders are portable gas containers and must be regarded as pressure vessels at all times. - Methane does not support life.
Adverse Health Effects	- Asphyxiant
Chemical Hazards	- Flammable
Biological Hazards	- The greatest physiological effect of Methane is to cause asphyxiation.
Vapour Inhalation	- Asphyxiation as it will displace air
GHS Classification	- Gas under pressure
GHS Pictogram	

3. COMPOSITION OF INGREDIENTS

Chemical name	Methane
Chemical family	Methane
CAS No	74-82-8
UN No	1971 (gas)
ERG No	115
Hazard class	Class 2.1
Hazchem Warning	2SE Flammable gas

4. FIRST AID MEASURES

Eye contact	- Rinse the eye with water immediately. - Flush thoroughly with water for at least 15 minutes. - Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.
Skin Contact	- For exposure to liquid, immediately warm frostbite area with warm water not to exceed 41°C. Water temperature should be tolerable to normal skin. - Maintain skin warming for at least 15 minutes or until normal colouring and sensation have returned to the affected area. - In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.
Ingestion	- Ingestion is not considered a potential route of exposure.
Inhalation	- In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. - Remove victim to uncontaminated area wearing self-contained breathing apparatus.

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	- Keep victim warm and rested. Seek medical attention. Apply artificial respiration if breathing stopped
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5. FIRE-FIGHTING MEASURES	
Suitable extinguishing media	- Dry chemical or CO2. Water spray (fog). DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED - Material will burn. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	- None.
Specific Hazards	- Extremely flammable gas. Contains gas under pressure; may explode if heated - If possible, stop the flow of gas. Do not extinguish the fire until supply is shut off as otherwise an explosive-ignition may occur - If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere - Ventilation fans must be explosion proof - Use non-sparking tools to close container valves - Extremely flammable gas. May form explosive mixtures with air. Will be easily ignited by heat, sparks or flames. Vapors may travel to source of ignition and flash back. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
Special fire fighting procedures:	- In case of fire: Stop leak if safe to do so. Continue water spray from protected position until container stays cool. Use extinguishants to contain the fire - Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. - For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Damaged cylinders should be handled only by specialists
Special protective equipment for firefighters:	- Exposed Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces a self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	- WARNING! Liquid and gas under pressure. Rapid release of gaseous Methane through a pressure relief device (PRD) or valve can result is very cold and can cause frostbite. - Ensure adequate ventilation, especially in confined areas. Consider the risk of potentially explosive atmospheres. Monitor oxygen level. Use non-sparking tools and equipment. All equipment used when handling the product must be grounded. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. - Evacuate area. - Provide adequate ventilation. - Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. - In an enclosed or non-ventilated space, a self-contained breathing apparatus must be used.
Environmental Precautions	- Prevent further leakage or spillage if safe to do so - Prevent spreading of vapours through sewers, ventilation systems and confined areas
Methods and material for containment and cleaning up:	- Provide adequate ventilation

7. HANDLING AND STORAGE	
Safe Handling	- Only experienced and properly instructed persons should handle gases under pressure. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. Secure cylinders in an upright position at all times, close all valves when not in use. Provide adequate ventilation. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Observe all regulations and local requirements regarding storage of containers. When using do not eat, drink or smoke. Store in

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	accordance with local/regional/national/international regulations. Never use direct flame or electrical heating devices to raise the pressure of a container. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Damaged valves should be reported immediately to the supplier Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Replace valve outlet caps or plugs and container caps were supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. If user experiences any difficulty operating container valve discontinue use and contact supplier. Never attempt to transfer gases from one container to another. Container valve guards or caps should be in place.
Conditions for safe storage, including any incompatibilities	-Containers should not be stored in conditions likely to encourage corrosion. Keep away from food, drink and animal feeding stuffs. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep pressure containers away from combustible material

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Occupational Exposure Hazards (HCS)	-Not specified
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. Local exhaust ventilation to prevent accumulation of high concentrations and maintain air-oxygen levels at or above 19.5%. Explosion proof ventilation systems. Oxygen detectors should be used when asphyxiating gases may be released. Consider installation of leak detection systems in areas of use and storage. Systems under pressure should be regularly checked for leakages.

	A Risk assessment should be conducted to evaluate the suitability of PPE to the task being performed
Personal Protection	- When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. Self-contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Eyes	-Wear safety glasses
Hands	-Guideline: Protective gloves against mechanical risks. -Additional Information: Wear working gloves while handling containers
Body protection:	- Flame retardant overall - Anti-static materials for clothes
Feet	- Wear safety shoes while handling containers - Anti-static safety boots

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	<u>Methane</u>
Chemical Symbol	CH ₄
Physical state	Gas
Form:	Gas
Colour:	Colourless
Odour:	Odourless
Odour Threshold:	Not applicable
pH:	No effect in water
Melting Point:	-182°C
Boiling Point:	-161°C
Sublimation Point:	Not applicable
Critical Temp. (°C):	-82°C
Flash Point:	-187.7°C
Evaporation Rate:	Not applicable.
Flammability (gas):	Extremely Flammable
Flammability limit - upper (%):	15%
Flammability limit - lower(%):	4.4%
Vapour pressure:	
Vapour density (air=1)	0.56
Relative density:	0.6784@ 20 °C)
Solubility(ies)	
Solubility in Water:	0.0331/kg water @1 bar
Partition coefficient (n-octanol/water):	Not known
Autoignition Temperature:	537°C
Decomposition Temperature:	Not known.
Viscosity	

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Kinematic viscosity:	No data available.
Dynamic viscosity:	Not applicable
Explosive properties:	Not applicable
Oxidising Properties:	Not applicable
Molecular weight	16.04 g/mole

10. STABILITY AND REACTIVITY

Reactivity	-Extremely flammable
Chemical stability	- Stable under normal conditions.
Possibility of hazardous reactions	- Extremely flammable - May form explosive mixtures with air. May react violently with oxidizers
Conditions to avoid	- Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible Materials	Oxidizers
Hazardous Decomposition of Products	Will not produce any hazardous products

11. TOXOLOGICAL INFORMATION

Acute Toxicity	Non-toxic
Skin & eye contact	Not available
Chronic Toxicity	Not available
Carcinogenicity	Not available
Mutagenicity	Not available
Reproductive Hazards	Not available

12. ECOLOGICAL INFORMATION

Toxicity	Not available
Persistence and degradability	Not available
Bioaccumulative Potential Product	Not available
Mobility in soil	Not available.
Results of PBT and vPvB assessment	Not available
Other adverse effects	Not available
Effect on ozone layer	Not available
Effect on the global warming (CO₂=1)	80 times more than CO ₂

13. DISPOSAL CONSIDERATIONS

Disposal Methods	- Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well-ventilated place. .
Disposal of Packaging	- The container is the property of the supplier, and the disposal of the containers must only be handled by the supplier.

14. TRANSPORT INFORMATION

Road Transportation

UN No.	1971
Shipping Name	Methane
ERG No.	115
Class	2.1
Subsidiary Risk	Flammable
Hazchem Warning	2SE Flammable Gas

Sea Transportation

IMDG	1971
Shipping Name	Methane
ERG No.	115
Class	2.1
Subsidiary Risk	Flammable
Label	2C Flammable Gas

Air Transportation

ICAO/IATA Code	1971
Class	2.1
Packing Group:	-
Packaging instructions	- Cargo: not allowed - Passenger: not allowed

15. REGULATORY INFORMATION

EEC Hazard class: Toxic, Corrosive gas. National legislation OHSact and Regulations 85 of 1993.	
SANS 11014:2010 Edition 1	Safety data sheet for chemical products - Content and order of sections
SANS 10228:2012 Edition 6	The identification and classification of dangerous goods for transport by road and rail modes
SANS 10234:2019 Edition 2	Globally Harmonized System of classification and labelling of chemicals (GHS)
SUPPLEMENT TO SANS 10234 Edition 1	List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)

16. OTHER INFORMATION

- Ensure all national/local regulations are observed.
- Ensure users and relevant persons understand the flammable and explosive hazard
- Regularly check supplier's information sources for updated versions of SDS's

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Bibliography

Compressed Gas Association, Arlington, Virginia
 Handbook of Compressed Gases - 3rd Edition
 Matheson Gas Data Book - 6th Edition
 SANS 11014 - Safety data sheet for chemical products: Content and order of sections
 SANS 10234 - List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)
 SANS 10265 – Classification and Labelling of Dangerous Substances

EXCLUSION OF LIABILITY

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