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SAFETY DATA SHEET (SDS)
HiQ Life Science 2 Gas Standard
Please ensure that this SDS is received by the appropriate persons

Review Date: 1/9/2022 v01 **Emergency: 0860 02 02 02** **Document Number: AFX-SDS-0124**

1. PRODUCT AND COMPANY IDENTIFICATION

Product Synonym	LIFE SCIENCE 2 Gas Standard LIFE SCIENCE 2Gas Standard
Chemical Formula	CO CH_4 O_2 N_2
Trade Name	LIFE SCIENCE 2
Colour Coding	Pink body yellow band and red shoulder with Lime green valve guard
Product Code	590002-NE-A
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)**

2. HAZARD IDENTIFICATION

Classification	- Classification under South African Hazardous Chemical Substances Regulations subsequently amended. (HCS) - GASES UNDER PRESSURE - TOXICITY (inhalation) - Category 2 - SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (ACUTE) - Category 1
Emergency Overview	Colour: None Odour: None Taste: None Physical State: Gas
	- All cylinders are portable gas containers and must be regarded as pressure vessels at all times. - Life science 2 Gas Standard does not support life.
Adverse Health Effects	- Harmful if inhaled.
Chemical Hazards	- Acute Toxicity
Biological Hazards	- Vapour is harmful to living organisms
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 Conscious persons should be assisted to an uncontaminated area and be treated with supplemental oxygen. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, and given artificial respiration and oxygen at the same time. The administration of the oxygen at an elevated pressure (up to 2 to 2.5 atmospheres) has shown to be beneficial as has treatment in a hyperbaric chamber. The physician should be informed that the patient has inhaled toxic quantities of carbon monoxide. Prompt medical attention is mandatory in all cases of overexposure to carbon monoxide. Rescue personnel should be equipped with self-contained breathing apparatus.
GHS Classification	Non-Flammable gas 2 Acute toxicity 3
GHS Pictogram	
GHS Signal Words	Danger
GHS Hazard Statements	H331: Toxic if inhaled H400: Very toxic to aquatic life
GHS Precautionary Statements	- P260: Do not breathe gas/vapours - P262: Do not get in eyes, on skin, or on clothing - P264: Wash hands thoroughly after handling - P271: Use only outdoors or in a well ventilates area - P273: Avoid release to the environment P391: Collect spillage - P284: Wear respiratory protection P304+P340: IF INHALED: remove to fresh air and keep at rest in a position comfortable for breathing - P310: Immediately call a POISON CENTRE or doctor/physician
Other Hazards that do not result in classification	- Gas under pressure

3. COMPOSITION OF INGREDIENTS

Chemical name Chemical family	**Oxygen**
CAS No	7782-44-7
UN No	1072
ERG No	122
Hazard class	2.2
Hazchem Warning	2C Non-flammable gas
Chemical name Chemical family	**Carbon Dioxide**
CAS No	124-38-9
UN No	1013

ERG No	120
Hazard class	2.2
Hazard Warning	2C Non-flammable gas
Chemical name	**Methane**
CAS No	74-82-8
UN No	1971
ERG No	115
Hazard class	2.1
Hazard warning	2C flammable gas
Chemical name	**Carbon monoxide**
CAS No	630-08-0
UN No	1016
ERG No	119
Hazard class	2.1
Hazard warning	2C flammable gas
Chemical name Chemical family	**Nitrogen**
CAS number	7727-37-9
UN No	1066
ERG No	121
Hazard class	2.1
Hazard warning	2C Non-flammable gas

4. FIRST AID MEASURES

Eye contact	- Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.
Skin Contact	- 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. - Keep victim warm and rested. Seek medical attention. Apply artificial respiration if breathing stopped. - Low concentrations of Life Science 1 will not cause irritation .

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	- Material will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	- None.
Specific Hazards	- Asphyxiant in high concentrations.
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.
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! gas under pressure. Rapid release of gas through a pressure relief device (PRD) or valve can result is very cold and can cause frostbite. - 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.
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 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. **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:	- Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Feet	- Wear safety shoes while handling containers

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	**Life Science 2**
Chemical Symbol	0.3%CO,0.3%CH_4 , 21%O_2, bal N_2
Physical state	Permanent Gas
Form:	Gas
Colour:	Colourless
Odour:	None
Odour Threshold:	None
pH:	Not known
Melting Point:	Not known
Boiling Point:	Not known
Sublimation Point:	Not known
Critical Temp. (°C):	Not known
Flash Point:	Not known
Evaporation Rate:	Not known
Flammability (gas):	Contains flammable components below flammability levels
Flammability limit - upper (%):	Not applicable
Flammability limit - lower(%):	Not applicable
Vapour pressure:	Not applicable
Vapour density	1.20 kg/m^3
Relative density: @20°C	1.0
Solubility(ies)	
Solubility in Water:	Not known
Partition coefficient (n-octanol/water):	Not known
Autoignition Temperature:	Not known
Decomposition Temperature:	Not known
Viscosity	
Kinematic viscosity:	Not known
Dynamic viscosity:	Not known
Explosive properties:	Not known
Oxidising Properties:	Not known
Molecular weight	28.8g/mole

10. STABILITY AND REACTIVITY

Reactivity	-Contains reactive components
Chemical stability	- Stable under normal conditions.
Possibility of hazardous reactions	- Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	- Overheating of cylinders. Never use cylinders as rollers or supports; or for any

	other purpose than the storage of Life Science 2 Gas Standard
Incompatible Materials	Oxidisers
Hazardous Decomposition of Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXOLOGICAL INFORMATION

Acute Toxicity	Contains toxic components
Skin & eye contact	- Not known.
Chronic Toxicity	- No data on chronic toxicity.
Carcinogenicity	- Based on available data, the classification criteria are not met.
Mutagenicity	- Based on available data, the classification criteria are not met.
Reproductive Hazards	Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Toxicity	Ecological damage caused by this product.
Persistence and degradability	Not applicable to gases and gas mixtures.
Bioaccumulative Potential Product	No bio-accumulating hazard.
Mobility in soil	No hazard
Results of PBT and vPvB assessment	Not classified as persistent, bio-accumulating and toxic (PBT).
Other adverse effects	No adverse effect on environment.
Effect on ozone layer	None
Effect on the global warming (CO2=1)	0

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.	1956
Shipping Name	Life Science 2 Gas Standard
ERG No.	126
Class	2.2
Subsidiary Risk	Non-flammable, toxic gases
Hazchem Warning	2TE Toxic non-flammable Gas

Sea Transportation

IMDG	1956
Shipping Name	Life Science 2 Gas Standard
ERG No.	126
Class	2.2
Subsidiary Risk	Non-flammable, toxic gases
Label	Toxic non - flammable Gas

Air Transportation

ICAO/IATA Code	1956
Class	2.2
Packing Group:	-
Packaging instructions	- Cargo: 150 kg - Passenger: 75 kg

15 REGULATORY INFORMATION

EEC Hazard class: Toxic 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)
ISO 10156 2020	Flammability calculation of gas mixtures.

16 OTHER INFORMATION

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

Revision Date	1/9/2022 v01

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