

SAFETY DATA SHEET (SDS)

Nitrous Oxide

Please ensure that this SDS is received by the appropriate persons


Review Date: 22/8/2022 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0032

1. PRODUCT AND COMPANY IDENTIFICATION	
Product Synonym	Nitrous Oxide Nitrous Oxide, laughing gas, Dinitrogen oxide
Chemical Formula	N ₂ O
Trade Name	Nitrous Oxide Medical Nitrous Oxide
Colour Coding	Special: Blue cylinder with white shoulder and blue valve guard Medical: Blue cylinder
Product Code	508503-RC-C 141-CB-PI 1,60Kg PI 141-HB-PI 6,30Kg PI 141-HB 6,30Kg BN 141-KB 15,70Kg BN 141-RB 31,30Kg BN
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) - Classification under the Globally Harmonized System of classification and labelling of chemicals (GHS)
Emergency Overview	Colour: None Odour: Slight sweet odour 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.
Adverse Health Effects	- Adverse symptoms may include the following: nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness
Chemical Hazards	- Oxidising gas
Biological Hazards	- None

Vapour Inhalation	- Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
GHS Classification	- Oxidizing gases - Gas under pressure
GHS Pictogram	
GHS Signal Words	Danger
GHS Hazard Statements	May cause or intensify fire; oxidizer. Contains gas under pressure; may explode if heated.
GHS Precautionary Statements	Storage: - P403 : Store in a well-ventilated place. Prevention: - P280 : Wear protective gloves/eye protection/face protection. Response: - None Disposal - None
Other Hazards that do not result in classification	- Asphyxiant in high concentrations

3. COMPOSITION OF INGREDIENTS	
Chemical name	Nitrous Oxide
Chemical family	Nitrous Oxide
CAS No	10024-97-2
UN No	1070 (gas) 2201 (liquid)
ERG No	122 (gas) 122 (liquid)
Hazard class	Class 2.2
Hazchem Warning	May cause or intensify fire; oxidizer. Contains gas under pressure; may explode if heated.

4. FIRST AID MEASURES	
Eye contact	- No known effect
Skin Contact	The liquid may cause frostbite. - 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.

SAFETY DATA SHEET (SDS)

Nitrous Oxide

Please ensure that this SDS is received by the appropriate persons

Review Date: 22/8/2022 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0032

Inhalation	<p>- Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.</p>
-------------------	--

Environmental Precautions	- Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up:	- Provide adequate ventilation.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	- Material will not burn but as an oxidiser it will support the fire vigorously. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	- None.
Specific Hazards	- May cause or intensify fire; oxidizer. Contains gas under pressure; may explode if heated.
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:	<p>- WARNING! Liquid and gas under pressure. Rapid release of gaseous Nitrous Oxide through a pressure relief device (PRD) or valve can result in very cold and can cause frostbite.</p> <p>- Evacuate area.</p> <p>- Provide adequate ventilation.</p> <p>- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.</p> <p>- In an enclosed or non-ventilated space, a self-contained breathing apparatus must be used.</p>
---	---

7. HANDLING AND STORAGE

Safe Handling	<p>- 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.</p>
Conditions for safe storage, including any	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

SAFETY DATA SHEET (SDS)

Nitrous Oxide

Please ensure that this SDS is received by the appropriate persons

Review Date: 22/8/2022 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0032

incompatibilities	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
Eyes	- Wear safety glasses
Hands	- Guideline: Protective gloves against mechanical risks. - Additional Information: Wear working gloves while handling containers
Body protection:	- Wear leather apron when handling liquid containers
Feet	- Wear safety shoes while handling containers

9. PHYSICAL AND CHEMICAL PROPERTIES	
Chemical Name	<u>Nitrous Oxide</u>
Chemical Symbol	N ₂ O
Physical state	Gas
Form:	Gas
Colour:	Colourless
Odour:	Odourless
Odour Threshold:	Odour threshold is subjective and is inadequate to warn of over-exposure.
pH:	No effect in water
Melting Point:	-90.8°C
Boiling Point:	-88.5°C
Sublimation Point:	Not applicable

Critical Temp. (°C):	36.55°C
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability (gas):	Supports fire
Flammability limit - upper (%):	Not applicable
Flammability limit - lower(%):	Not applicable
Vapour pressure:	Permanent gas
Vapour density	1.841 @ 20°C
Relative density:	1.504 @ 20 °C
Solubility(ies)	
Solubility in Water:	0.61 l/kg water 20°C
Partition coefficient (n-octanol/water):	0.36
Autoignition Temperature:	Not applicable
Decomposition Temperature:	Not known
Viscosity	
Kinematic viscosity:	No data available
Dynamic viscosity:	No data available
Explosive properties:	Not applicable
Oxidising Properties:	Strong oxidiser
Molecular weight	44.01 g/mol

10. STABILITY AND REACTIVITY	
Reactivity	Strong oxidiser
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Gas under high pressure. Accumulate in low lying areas.
Conditions to avoid	Overheating of cylinders. Never use cylinders as rollers or supports; or for any other purpose than the storage of Nitrous Oxide
Incompatible Materials	Oxidisable material
Hazardous Decomposition of Products	Will decompose at high temperature.

11. TOXOLOGICAL INFORMATION	
Acute Toxicity	Nontoxic
Skin & eye contact	No adverse effect
Chronic Toxicity	Based on available data, the classification criteria are not met.
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	No ecological damage caused by this product.
Persistence and degradability	Not applicable to gases and gas mixtures.
Bio-accumulative Potential	No bio-accumulating hazard.

SAFETY DATA SHEET (SDS)

Nitrous Oxide

Please ensure that this SDS is received by the appropriate persons

Review Date: 22/8/2022 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0032

Product	
Mobility in soil	No hazard
Results of PBT and vPvB assessment	Not classified as persistent, bio-accumulating and toxic (PBT).
Other adverse effects	No ecological damage caused by this product.
Effect on ozone layer	None
Effect on the global warming CO₂ =1	GWP = 273

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.	1070 (gas)
Shipping Name	Nitrous Oxide
ERG No.	122
Class	2.1
Subsidiary Risk	Oxidizer
Hazchem Warning	Oxidizer

Sea Transportation

IMDG	1070 (gas)
Shipping Name	Nitrous Oxide
ERG No.	122
Class	2.1
Subsidiary Risk	Oxidiser
Label	Danger

Air Transportation

ICAO/IATA Code	1070 (gas)
Class	2.1
Packing Group:	-
Packaging instructions	- Cargo: 150 kg - Passenger: 75 kg

15. REGULATORY INFORMATION

EEC Hazard class: Oxidiser. 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 asphyxiation hazard
- Regularly check supplier's information sources for updated versions of SDS's

Revision Date	22/8/2022 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

Whilst AFROX made best endeavour to ensure that the information contained in this publication is accurate at the date of publication, AFROX does not accept liability for an inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.