

SAFETY DATA SHEET (SDS)

Ammonia


Please ensure that this SDS is received by the appropriate persons

Review Date: 18/07/2022 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0035

1. PRODUCT AND COMPANY IDENTIFICATION	
Product Synonym	Ammonia Ammonia
Chemical Formula	NH ₃
Trade Name	Technical Ammonia Refrigeration Grade Ammonia R717
Colour Coding	Silver body red shoulder and yellow band
Product Code	540201-LH-N 540201-TE-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)

2. HAZARD IDENTIFICATION	
Classification	- Classification under South African Hazardous Chemical Substances Regulations subsequently amended. (HCS) - FLAMMABLE GASES - GASES UNDER PRESSURE - ACUTE TOXICITY - SKIN CORROSION - SERIOUS EYE DAMAGE - AQUATIC HAZARD
Emergency Overview	Colour: None Odour: Pungent Taste: Pungent Physical State: Liquid under own vapour pressure All cylinders are portable gas containers and must be regarded as pressure vessels at all times Ammonia does not support life
Adverse Health Effects	- Harmful if inhaled.
Chemical Hazards	- Acute Toxicity
Biological Hazards	- Vapour is harmful to living organisms
Vapour Inhalation	- Acute toxicity - Will cause severe pulmonary spasms
GHS Classification	- Flammability gas 2 - Acute toxicity 3 - Acute hazard environment 1
GHS Pictogram	

GHS Signal Words	Danger
GHS Hazard Statements	H221: Flammable gas H331: Toxic if inhaled H314: Causes severe skin burns and eye damage H400: Very toxic to aquatic life
GHS Precautionary Statements	Prevention: - P260: Do not breathe gas/vapours - P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking - P271: Use only outdoors or in a well ventilated area - P262: Do not get in eyes, on skin, or on clothing - P273: Avoid release to the environment - P264: Wash hands thoroughly after handling - P280: Wear protective gloves/protective clothing/eye protection/face protection - P284: Wear respiratory protection Response: - P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely - P381: Eliminate all ignition sources if safe to do so - P304+P340: IF INHALED: remove to fresh air and keep at rest in a position comfortable for breathing - P310 & P311: Immediately call a POISON CENTRE or doctor/physician - P321: Specific treatment is urgent (see first aid measures section) - P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. - P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. - P363 Wash contaminated clothing before reuse. - P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P391: Collect spillage Storage: - P403 + P233 Store in a well-ventilated place Keep container tightly closed at all times - P405 Store locked up Disposal: - P501 Do not dispose of container, return to supplier for correct disposal
Other Hazards that do not result in classification	No information available

3. COMPOSITION OF INGREDIENTS

Chemical name	Ammonia
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Chemical family	Ammonia
CAS No	7664-41-7
UN No	1005
ERG No	125
Hazard class	Class 2.3

4. FIRST AID MEASURES

Eye contact	<p>The liquid may cause frostbite</p> <ul style="list-style-type: none"> - Rinse the eye with water immediately. - Remove contact lenses, if present and easy to do. Continue rinsing. - 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	<p>The liquid may cause frostbite.</p> <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Ingestion is not considered a potential route of exposure
Inhalation	<ul style="list-style-type: none"> - 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 Ammonia will cause irritation

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	<ul style="list-style-type: none"> - Material will burn. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	<ul style="list-style-type: none"> - None
Specific Hazards	<ul style="list-style-type: none"> - Toxic flammable gas - Liquid may cause cryogenic burns.
Special fire fighting procedures:	<ul style="list-style-type: none"> - 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:	<ul style="list-style-type: none"> - Exposed Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	<ul style="list-style-type: none"> - WARNING! Liquid and gas under pressure. Rapid release of gaseous Ammonia through a pressure relief device (PRD) or valve can result in very cold conditions 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	<ul style="list-style-type: none"> - Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up:	<ul style="list-style-type: none"> - Provide adequate ventilation.

7. HANDLING AND STORAGE

Safe Handling	<ul style="list-style-type: none"> - 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
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	where 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 kept 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)	OEL 8-hour TWA 50ppm OEL-STEL/C 70ppm
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 full face shield
Hands	-Guideline: Protective gloves against mechanical risks -Additional Information: Wear working gloves while handling containers
Body protection:	-Wear chemical resistant apron/overalls when handling liquid containers
Feet	- Wear safety shoes while handling containers

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Ammonia
Chemical Symbol	NH ₃
Physical state	Gas
Form:	Gas / Liquid
Colour:	Colourless
Odour:	Pungent
Odour Threshold:	Odour threshold is subjective and is inadequate to warn of over-exposure
pH:	10 - 12 at 50 g/l at 20 °C
Melting Point:	-77.7°C
Boiling Point:	-33.4 °C
Sublimation Point:	NA
Critical Temp. (°C):	-132.8°C
Flash Point:	Not applicable
Evaporation Rate:	Not applicable.
Flammability (gas):	Flammable
Flammability limit - upper (%):	-25% (V)
Flammability limit - lower(%):	-16% (V)
Vapour pressure:	8.65 Bar@20°C
Vapour density	0.708 @20°C
Relative density:	0.57 @20 °C
Solubility(ies)	
Solubility in Water:	629 l/kg water 20°C
Partition coefficient (n-octanol/water):	Not known
Autoignition Temperature:	651°C.
Decomposition Temperature:	> 450 °C
Viscosity	
Kinematic viscosity:	No data available.
Dynamic viscosity:	Not applicable
Explosive properties:	Not applicable
Oxidising Properties:	Not applicable
Molecular weight	17.03 g/mol

10. STABILITY AND REACTIVITY

Reactivity	Not reactive
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 Ammonia
Incompatible Materials	Mercury, Copper, Brass
Hazardous Decomposition of Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXOLOGICAL INFORMATION

Acute Toxicity	Extremely toxic
Skin & eye contact	Causes serious eye damage.
Chronic Toxicity	No data on chronic toxicity.

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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 Very toxic to aquatic life
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	None
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. Do not discharge unwanted gas, return to supplier
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.	1005
Shipping Name	Ammonia
ERG No.	125
Class	2.3
Subsidiary Risk	Flammable, toxic gases
Hazchem Warning	Toxic Flammable Gas
Sea Transportation	
IMDG	1005
Shipping Name	Ammonia
ERG No.	125
Class	2.3
Subsidiary Risk	Corrosive flammable, toxic gases
Label	Toxic corrosive flammable Gas
Air Transportation	
ICAO/IATA Code	1005
Class	2.3
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	
<ul style="list-style-type: none"> - 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	18/07/2022 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	
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