

SAFETY DATA SHEET (SDS) Hydrogen Chloride

Please ensure that this SDS is received by the appropriate persons


Review Date: 18/07/2023 v01

Emergency: 0860 02 02 02

Document Number: AFX-SDS-0048

1. PRODUCT AND COMPANY IDENTIFICATION	
Product Synonym	Hydrogen Chloride Hydrogen Chloride
Chemical Formula	HCl
Trade Name	Hydrogen Chloride
Colour Coding	Silver body with yellow shoulder and valve guard
Product Code	541801-SO-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) - GASES UNDER PRESSURE - Liquefied gas - ACUTE TOXICITY (inhalation) - Category 3 - SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 - SKIN CORROSION/IRRITATION - Category 1 Sub-category A - SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
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. - Hydrogen Chloride 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	- Corrosive toxic

GHS Pictogram	
GHS Signal Words	Danger
GHS Hazard Statements	H331: Toxic if inhaled H314: Causes severe skin burns and eye damage H400: Very toxic to aquatic life H280: Contains gas under pressure; may explode if heated H335: May cause respiratory irritation H336: May cause drowsiness or dizziness
GHS Precautionary Statements	Prevention - P261 Avoid breathing fume/gas/mist/vapours/spray - P271 Use only outdoors or in a well-ventilated area - P264 Wash exposed skin thoroughly after - P280 Wear protective gloves/protective clothing/eye protection/face protection appropriate for chemical substances - P273: Avoid release to the environment - P262: Do not get in eyes, on skin, or on clothing - P284: Wear respiratory protection - Response - P304+P340: IF INHALED: remove to fresh air and keep at rest in a position comfortable for breathing - P311: Call a POISON CENTRE/doctor for emergency medical advice - P312: Call a POISON CENTRE/doctor if you feel unwell - P321 Specific treatment (see section 4 for first aid) - P301+P330+P331: IF SWALLOWED: Rinse mouth. Do not induce vomiting - P303+P361+P353: IF ON SKIN (or hair): Immediately remove or take off all contaminated clothing. Immediately 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 - P320: Specific treatment is urgent (see first aid measures section) Storage - P403 + P233: Store in a well-ventilated place. Keep container tightly closed - P405: Store locked up

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	- P410 + P403: Protect from sunlight. Store in a well- ventilated place Disposal - Do not dispose of content, return unused product in container to supplier
Other Hazards that do not result in classification	- Heavier than air will displace oxygen in low lying area.

3. COMPOSITION OF INGREDIENTS

Chemical name	Hydrogen Chloride
Chemical family	Hydrogen Chloride
CAS No	7647-01-0
UN No	1050
ERG No	125
Hazard class	Class 2.3
Hazchem Warning	2RE

4. FIRST AID MEASURES

Eye contact	The liquid may cause frostbite - Rinse the eye with water immediately. - Remove contact lenses, if present and easy to do. Continue rinsing. - Flush thoroughly with water for at least 30 minutes. - Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.
Skin Contact	- Immediately flush skin with plenty of water for at least 30 minutes. - Remove contaminated clothing and shoes. Immediate medical attention is required.
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. - If breathing is difficult, give oxygen - Keep victim warm and rested. Seek medical attention. Apply artificial respiration if breathing stopped. - Low concentrations of Hydrogen Chloride will not cause irritation - If breathing has stopped, give artificial respiration. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	- Material will not burn. In case of fire in the surroundings: use appropriate extinguishing agent. - Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists
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Unsuitable extinguishing media:	- None.
Specific Hazards	- Acid corrosive - Liquid may cause cryogenic burns - Non-flammable gas. The product causes burns of eyes, skin and mucous membranes. Highly soluble in water-will react to yield dense, acrid - HCL fumes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. Cylinders may rupture under extreme heat.
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 - Wear chemically protective gloves/clothing and eye/face protection

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	- WARNING! Liquid and gas under pressure. Rapid release of gaseous Hydrogen Chloride through a pressure relief device (PRD) or valve can result in 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 - Prevent spreading of vapours through sewers, ventilation systems and confined areas. Do not allow into any sewer, on the ground or into any body of water. Prevent product from entering drains. See Section 12 for additional ecological information
Methods and material for containment and cleaning up:	- Provide adequate ventilation - Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1

7. HANDLING AND STORAGE

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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 incompatibilities	<p>-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.</p>

Occupational Exposure Hazards (HCS)	<p>-Hydrogen chloride (gas and aerosol mists) - OEL-STEL/C 4ppm</p>
Engineering Control Measures	<p>- 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 - Provide Showers and eyewash stations - Process enclosure or other engineering controls to maintain airborne levels below recommended exposure limits and maintain oxygen levels above 19.5% Exhaust gas should be vented to a gas treatment system - Consider installation of leak detection systems in areas of use and storage - Systems under pressure should be regularly checked for leakages</p> <p>A Risk assessment should be conducted to evaluate the suitability of PPE to the task being performed</p>
Personal Protection	<p>- 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.</p>
Eyes	<p>-Wear safety glasses</p>
Hands	<p>-Guideline: Protective gloves against mechanical risks. -Additional Information: Wear working gloves while handling containers</p>
Body protection:	<p>- Appropriate protective and chemical resistant gloves, clothing and splash protection, or fully encapsulating vapor protective clothing to prevent exposure. For materials of construction consult protective clothing manufacturer's specifications. Work gloves and safety shoes are recommended when handling cylinders.</p>
Feet	<p>- Wear safety shoes while handling containers</p>

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Hydrogen Chloride
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Chemical Symbol	HCl
Physical state	Gas
Form:	Gas
Colour:	Colourless
Odour:	Sharp suffocating
Odour Threshold:	Odour threshold is subjective and is inadequate to warn of over-exposure 1-5ppm
pH:	Acidic
Melting Point:	-114°C
Boiling Point:	-85 °C
Sublimation Point:	Not Known
Critical Temp. (°C):	54.4°C
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability (gas):	Non-Flammable
Flammability limit - upper (%):	Not applicable
Flammability limit - lower(%):	Not applicable
Vapour pressure:	42.6 Bar@20°C
Vapour density	1.522 @20°C
Relative density:	1.268@ 20 °C)
Solubility(ies)	
Solubility in Water:	0.823kg per litre of water @ 20°C
Partition coefficient (n-octanol/water):	Not applicable
Autoignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity	
Kinematic viscosity:	No data available.
Dynamic viscosity:	No data available
Explosive properties:	Not applicable
Oxidising Properties:	Not applicable
Molecular weight	34.082 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 - Highly soluble in water-will react to yield dense, acrid HCL fumes. Reacts vigorously with alkalis and many organic materials with liberation of heat. Strong oxidizers cause release of chlorine. Hydrochloric acid solutions react with metals to release flammable hydrogen gas
Conditions to avoid	- Overheating of cylinders. - Never use cylinders as rollers or supports, or for any other purpose than the storage of Hydrogen Chloride - Exposure to air or moisture over prolonged periods
Incompatible Materials	Avoid moisture in installation systems.

	Most common metals and their alloys. Bases. unsaturated organics. metal carbides. Fluorine. metal acetylides. potassium permanganate. sulfuric acid. Incompatible with strong acids and bases. Incompatible with oxidizing agents. Fluorine. Calcium carbide. Cesium carbide. Rubidium carbide. Lithium silicide
Hazardous Decomposition of Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition can lead to release of irritating and toxic gases and vapours

11. TOXOLOGICAL INFORMATION

Acute Toxicity	- Extremely toxic - Studies indicate that hydrogen chloride is immediately irritating to humans at concentrations of 5 ppm or greater - Corrosive to respiratory system
Skin & eye contact	- Corrosive. Causes severe irritation and or burns - Corrosive to the eyes and may cause severe damage including blindness
Chronic Toxicity	- Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects
Carcinogenicity	- Not classifiable as a human carcinogen
Mutagenicity	- Based on available data, the classification criteria are not met
Reproductive Hazards	- Embryo and fetotoxicity has been observed in female rats exposed to maternally toxic levels of hydrogen chloride

12. ECOLOGICAL INFORMATION

Toxicity	Harmful to aquatic life. May cause pH changes in aqueous ecological systems
Persistence and degradability	Not applicable to gases and gas mixtures.
Bioaccumulative Potential Product	Highly bio-accumulating hazard
Mobility in soil	No hazard
Results of PBT and vPvB assessment	Not classified as persistent, bio-accumulating, and toxic (PBT).

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Other adverse effects	Anhydrous HCl has a highly irritating effect on body tissues
Effect on ozone layer	None
Effect on the global warming (CO2=1)	0

13. DISPOSAL CONSIDERATIONS

Disposal Methods	- Only supplier may dispose of this product
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.	1050
Shipping Name	Hydrogen Chloride
ERG No.	125
Class	2.3
Subsidiary Risk	Corrosive gas
Hazchem Warning	2RE

Sea Transportation

IMDG	1050
Shipping Name	Hydrogen Chloride
ERG No.	125
Class	2.3
Subsidiary Risk	Corrosive non-flammable, toxic gases
Label	Corrosive non-flammable Gas

Air Transportation

ICAO/IATA Code	1050
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

- 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

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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

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