SAFETY DATA SHEET
Hydrochloric Acid

SDS 003 R07
2021-06-20

Reg. No. 2003/017152/07

Safety Data Sheet (SDS) According to ISO/SANS 11014:2009/2010; UN Transport of Dangerous Goods; UN Globally Harmonised System of Classification & Labelling; EC Directive 1272/2008, and the SA HCA Regulations

SECTION 1. Identification – Chemical Product and Company

Product Identifier

Trade name	:	Hydrochloric Acid
Chemical Name / Proper Shipping Name	:	**HYDROCHLORIC ACID**
UN number	:	1789
CAS number	:	7647-01-0
Alternate names	:	Muriatic Acid, Spirits of salt
Chemical Family	:	Inorganic Acid
Other means of identification	:	Clear, Colourless to pale yellow liquid

Recommended use and restrictions on use

Recommended use	:	Industrial use pH regulation, water treatment, metal extraction, metal pickling, hydrolysis, organic and inorganic chlorides, cleaning products - de-scaling, pharmaceutical, and laboratory chemicals
Restrictions on use	:	Not for use by untrained persons or retail use without repacking (S7) and GHS compliance for packing and labeling – follow safety precautions!

Supplier's details	**:**	NCP Chlorchem (Pty) Ltd, a Bud Group Company
Address	:	Cnr. Allandale Road and Chloor Road Chloorkop, Gauteng, South Africa: PO Box 150, Kempton Park 1620, South Africa
Telephone No.	:	+27 (0) 11 976 2115
24hour Emergency phone number	:	+27 (0) 11 921 3333

SECTION 2. Hazards Identification

GHS classification of the substance: Corrosive liquid

Hazard classes/Hazard categories **Transport – Class 8 Corrosive**		Hazard Statement
Corrosive to metals	Category 1	H290 May be corrosive to metals
Skin corrosion/irritation	Category 1B	H314 Causes severe skin burns
Serious eye damage/irritation	Category 1	H318 Causes serious eye damage
STOT SE - respiration	Category 3	H335 May cause respiratory irritation

The most important adverse effects to know in emergency are –

Corrosive – may cause severe skin damage, burns and irritation, serious eye damage and irritation, as well as burns to the mucous membranes, and respiratory damage and/or irritation if fumes inhaled.

GHS label elements, including Precautionary Statements:

Signal word - Danger
Corrosive – metals and skin

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Health – serious skin and eye damage, and/ or irritation

Precautionary statements:

P280 wear protective gloves, eye protection /face protection.
P262 do not get on skin, in eyes or on clothing.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke while using this product.
P302 +P352 if on skin - wash off with plenty of water.
P332 + P313 if skin irritation occurs or persists get medical attention.
P362 + P364 take off contaminated clothing and wash before reuse.
P308 + P311 If exposed or concerned call a doctor / seek medical attention.
P305 + P351 + P338 If in EYES rinse continuously with water for several minutes, remove contact lenses if present and easy to do. Continue rinsing.
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 or shower.
P261 avoid breathing fumes/ mist/ vapours or spray.
P304 + P340 If INHALED remove person to fresh air and keep comfortable for breathing,

Other hazards not covered by the GHS:
Reacts strongly with water thus always add acid to water NOT vice versa to dilute or for water treatment, to avoid “spitting” and fumes. Corrosive to and can react with metals.

Response:
Refer Sections 5, 6 and 8
Storage:
Refer Section 7
Special Labelling requirements – refer Section 14 for transport labels.

SECTION 3. Composition/information on ingredients

Chemical identity	:	Substance
Other means of identity	:	Colourless or pale-yellow liquid
Common name, synonyms, etc	:	Muriatic Acid, chlorohydric Acid, spirits of salt, HCl
Impurities and stabilizing additives	:	None

Ingredient name	%	CAS number	EC number
Hydrochloric acid	30 - 36.5	7647 – 01 – 0 for gaseous form	231 – 595 -7

SECTION 4. First-aid measures

Description of most important symptoms/effects, acute and delayed and necessary measures:
Exposure may require medical attention:

Product on skin - avoid direct contact where possible by wearing protective gloves and clothing.
Remove any contaminated clothing, shoes, and leather goods (e.g. watchbands, belts) and wash all contaminated areas with lukewarm, gently running water for at least 10 minutes.
If irritation persists, obtain medical attention immediately.
Completely decontaminate clothing, shoes and leather goods before re-use or discard.

Product in eye

Immediately flush the contaminated eye(s) with gently running water for at least 10 minutes, holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Continue rinsing taking care not to rinse contaminated water into the non-affected eye. If irritation persists, **obtain medical attention immediately**.

Product ingested

Do NOT induce vomiting. Give water or milk to drink if conscious. Only when casualty is conscious, rinse mouth with plenty of water. Never give anything by mouth if victim is losing consciousness or is unconscious. Obtain medical assistance **immediately**.

Product inhaled

Remove casualty out of danger area to fresh air or a well-ventilated space and keep at rest in a position comfortable for breathing and obtain medical attention. If breathing has stopped, or other severe symptoms symptoms occur get **immediate medical attention.**

If symptoms persist get further medical assistance / consult a doctor.

SECTION 5. Fire-fighting measures

Suitable extinguishing media if involved in a fire - Product is not flammable, however if involved in a large, fierce fire it will burn giving off acrid fumes.

Carbon dioxide, dry chemical, dry sand, water spray or alcohol resistant foam can be used to extinguish fires.

Unsuitable extinguishing media –

- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water will generate heat which will also increase the concentration of fumes in the air.

Small Fire - immediate response action should quickly put out the fire

Large fires – evacuate area, move containers out and away from fire if can be done safely without increasing risk, or cool containers with water spray. Isolate and contain fire as much as possible, and dike or use inert material to contain run-off water for later disposal. Do not scatter the material. Water spray (not streams), fog or alcohol-resistant foam.

Special hazards:

- Substance is non-combustible but may decompose on heating to produce corrosive and/or toxic fumes.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance reacts strongly with water, releasing corrosive fumes and runoff.
- Containers may explode when heated thus keep containers cool if possible, using water spray.
- Ventilate any closed space before entering and wear breathing apparatus.

NB: Always stay upwind, and uphill when fighting fires, and keep unauthorised persons away!
Large fires may require assistance of professional Emergency Response teams

Protective clothing - Wear full chemical protective clothing and self-contained, positive pressure breathing apparatus for large fires.

Special protective equipment for fire-fighters – protective clothing should be resistant to both chemicals and heat.

SECTION 6. Accidental release measures

Stop release if safe to do so! Evacuate personnel to safe areas and keep upwind.

Shut valves if tank or pipeline release **if possible to do so safely,** use salvage packaging for leaking drums. Use absorbent material, sand or soil to dike and prevent spread of leak.

Personal precautions, protective equipment and emergency procedures.

Wear chemical resistant protective clothing and self-contained breathing apparatus for large spills.
Avoid inhaling any fumes or vapours and avoid contact with eyes and skin.

Environmental precautions
Prevent any spills from flowing off site by diking, and from flowing into storm water drains or down stairways or into basements. Do not dispose large volumes of any chemical into watercourses or sewers.
Suppress / knock down any gas/mists with water spray jet, taking care for any heat that may be produced, and to contain run-off.

Clean-up methods
Small Spills: Cover with dry earth, dry sand or other non-combustible material and collect material into plastic containers for disposal and label clearly.

Large Spills: Call for emergency response assistance -

- Stop the leakage e.g. by shutting valves, if this can be done safely. Collect leaking product in suitable acid-proof containers.
- Do not allow spills to enter into drains or surface waters.
- Retain leaking product with diatomaceous earth or universal absorbent. Collect contaminated material in acid-proof containers. Dispose of contaminated material and its container as hazardous waste according to local regulations.
- In case of entry into waterways, drains or soil inform the responsible authorities as soon as possible.

Disposal - dispose of product and containers in accordance with National and/or Regional Regulations refer National Environmental Management: Waste Act and to licensed premises as per the **SAWIC website** **http://sawic.environment.gov.za /**

SECTION 7. Handling and storage

Storage requirements
Storage tanks should be in a bunded area with impermeable flooring and corrosion resistant equipment refer SANS 310 for Storage tank design and operation.
Containers should be kept tightly closed in a dry and well-ventilated area with provision of sufficient air exchange and/or exhaust in operational areas and work rooms where decanting may occur.
In warehousing and storage, observe compatibility rules for separation and segregation, and always store solids above liquids, not vice-versa in case of leaks which could affect/react with the solid product.

Handling precautions – wear acid-resistant protective clothing

- Keep drums, jerricans and IBCs tightly closed when not in use. Avoid contact with skin, eyes or clothing. Avoid breathing mist. Handle as a corrosive liquid, wear rubber gloves if likely to come into skin contact, face shield / safety glasses and acid respirator to protect against splashes and fumes.
- Eating, drinking and smoking shall be prohibited in areas where chemicals are handled, stored or processed**.** Workers must wash hands before eating, drinking or smoking to remove any chemicals that could be ingested or inhaled.
- Remove contaminated clothing and protective equipment before entering eating areas and leaving the work premises.

Conditions for Safe Storage - refer SANS 10263: The Warehousing of dangerous goods, and **10263 - Part 8**: The storage and handling of corrosive substances, for more specific information, relevant regulations and recognised practices for storage, warehousing and handling.

Suitable materials for storge and packaging

Store in steel tanks lined with hard rubber or other resistant coating, or in plastic containers made of PE, PP, choro or fluoro polymers, or in glass bottles.

Avoid: unprotected metals, glass-fibre reinforced plastic (GRP) containers or Tanks.
Do NOT store together with incompatible materials – **see Section 10 Stability and Reactivity**
Unsuitable materials - Mild steel, iron, copper, aluminium and alloys.

NB Anyone repacking into smaller containers for retail sale and use e.g. pool acids, shall comply with packaging and labelling as per the UN TDG, UN GHS and the Hazardous Chemical Agents Regulations.

SECTION 8. Exposure controls/personal protection

Control parameters e.g. occupational exposure limit values or biological limit values

Ingredient name	Exposure limits	SA OHS Act, HCA Regulations 2021
Hydrochloric Acid	4ppm	OEL – STEL/C
	2ppm	ACGIH TLV (TWA)

Recommended Monitoring: refer to the Hazardous Chemical Agents - HCA Regulations 2021

Engineering controls: Local exhaust or ventilation systems should be available.

Risk Assessment – Workplace RA to be done as per the HCA Regulations for worker exposure.

Respiratory protection:
- Low concentrations and short-term activity (max 15 min): filter masks with filter type E. Be aware of the filter capacity and the use-time limitation!
- High concentrations or unknown exposure or prolonged activity: self-contained breathing apparatus.

Hand protection:
- Protective gloves should conform to EN 374.
- Suitable glove material: butyl rubber, chloroprene, nitrile rubber, PVC, latex.
- The suitability of gloves from a specific supplier should be determined depending on the conditions of use (chemical, mechanical, thermal stress, and use/contact time)

Eye and face protection:
- Safety glasses with side protection shield or goggles conform to EN 166.
- Full face mask.

Skin and body protection:
- Acid-proof protective overall, safety shoes or boots.

General protective and hygiene measures:
- Avoid contact with skin and eyes.
- Do not inhale fumes or aerosol (mist).
- Wear PPE as appropriate to the work to be done.
- Do not eat or drink in an operational area.
- Wash hands immediately after handling chemicals and before breaks.
- Remove all contaminated clothing immediately, should a spill or splash occur.

Individual protection measures: refer to recommendations from the workplace Risk Assessment.

SECTION 9. Physical and chemical properties

Appearance (physical state, colour etc.)	:	Clear, Colourless to slightly yellow liquid
Odour	:	Pungent - Acrid
Odour threshold	:	No data
pH	:	1.1 (0.1 N solution) strongly acidic
Melting point/freezing point	:	- 50°C for 30% solution

Initial boiling point and boiling range	:	110°C at Normal Temp & Pressure 30% soln.
Flash point	:	Not flammable /Not applicable
Evaporation rate	:	Not volatile
Flammability (solid/gas)	:	Not flammable and liquid
Upper/lower flammability or explosive limits	:	Not applicable
Vapour pressure	:	16.5 mmHg @20°C – 30% soln.
Vapour density	:	No data available
Relative density	:	1.152 @30°C – 30% soln.
Solubility	:	Complete in water
Partition coefficient: n-octanol/water, Log K_{ow}	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	Not applicable
Viscosity	:	2mPa/Sec @25°C

SECTION 10. Stability and reactivity

Reactivity: reacts strongly with water, alkalis and metals with evolution of heat and fumes,

Chemical stability: stable under normal conditions of handling, storage and use, does NOT polymerize,

Corrosive to: iron, steel, aluminium and construction materials

Conditions to avoid: incompatible materials, metals and excess heat,

Incompatible materials:

- Alkali and organic bases with violent evolution of heat, amines.
- Limestone, marble, dolomite and other carbonic minerals with evolution of suffocating CO_2 gas
- Strong oxidants (bleaching agents, conc. H_2O_2, HNO_3, etc. and their salts, chromates, permanganates, etc. with evolution of toxic chlorine gas
- Sulphides with evolution of toxic H_2S gas
- Sulphites and pyro-sulphites with evolution of toxic SO_2 gas
- Sodium azide to highly toxic and explosive hydrazoic acid

Hazardous decomposition products:
Thermal decomposition or combustion may produce corrosive and toxic hydrogen chloride fumes.

SECTION 11. Toxicological information

GHS Classification – HCA Regulations, EU REACH & CLP

Acute toxicity	Result	Species	Dose/ Exposure	Caution
Oral	Burns to lips, mouth & digestive tract	Rat	LD 50 - 900mg/kg	Avoid splashes & exposure
Dermal	Causes blisters burns & tissue damage		Long Term Exposure	Prevent skin contact
Inhalation	Vapours & mist will irritate throat & respiratory system		(DNEL) 8 mg/m³	Irritation

Skin Corrosion / irritation: Category 1B
Eye Damage / Irritation: Category 1
STOT SE – Specific Target Organ Toxicity, Single Exposure: Category 3 Inhalation
STOT RE – Specific Target Organ Toxicity, Repeat Exposure: not Classified
Carcinogens: not considered to be Carcinogenic by IARC, ACGIH or NIOSH**,**
Germ Cell Mutagenicity: no data to warrant classification,

Reproductive toxicity: not considered to have any adverse reproductive effects,
Aspiration Hazard: no data available but could cause irritation or burns to the respiratory tract,
Potential Acute Health effects: as above skin and eye damage, and respiratory irritation or burns. Inhalation of vapors may cause: burning sensation, cough, wheezing, shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema – if these symptoms appear, get urgent medical assistance.

SECTION 12. Ecological information

GHS – HCA Regulations, EU REACH and C & L Inventory:
Hazardous to the Aquatic Environment: Not Classified as hazardous to the environment but could impact on acidity in water with harmful effects on aquatic organisms
Hazardous to the Ozone layer: No evidence - not Classified.
Persistence and Biodegradability: Not biodegradable
Bio accumulative potential: No Bioaccumulation data available
Mobility in soil: No data available but unlikely as will be neutralised by naturally occurring alkalinity in soil.

Ecotoxicity:
Aquatic environment: not Classified as hazardous to the environment but could impact on acidity in water with harmful effects on aquatic organisms,

Toxicity to fish: Oncorhynchus mykiss; 24h LC100 - 100 mg/l
Gambusia affinis (Mosquito fish) 96h LC50 - 282 mg/l (IUCLID)

Effect on ozone layer: Not considered likely but no data available.

SECTION 13. Disposal considerations

Generation of waste – Disposal methods
Absorb and collect spills where possible,
Disposal must be made in accordance with the applicable National and Regional Government regulations at approved and permitted chemical disposal sites – refer to the SA National Environmental Management Waste Act - NEM: WA, it's Regulations and local by-laws.
SAWIC the South African Waste Information Centre informs permitted Waste Facilities and Service providers see sawic.environment.gov.za

SECTION 14. Transport information – NB Transport Risk Assessment essential/route.

General: The driver shall be Trained on the potential hazard/s of the load and, what to do in case of accident or emergency.

	UNTDG / ADR	IMDG	ICAO / IATA
UN Number	UN1789	UN 1789	UN1789
UN Proper Shipping Name	HYDROCHLORIC ACID	HYDROCHLORIC ACID	HYDROCHLORIC ACID
Transport Hazard Class 8 Corrosive			
Packing Group II	Use UN Certified packaging	Use UN Certified packaging	Use UN Certified packaging
ERG 2020 number 157	Toxic, Corrosive & non - combustible	Refer IMDG Amdt. 40-20 & Supplement	

Environmental Hazards & additional Information	Not a Marine Pollutant	IMDG supplement EMS F-A & S-B	IATA 62nd 2021 revision

SECTION 15. Regulatory information

OHS Act - Occupational Health and Safety Act 85 of 1993 and Regulations:
Hazardous Chemical Agents Regulations – HCA, 2021: regulation 14 requires GHS Classification, GHS Compliant SDS – Safety Data Sheets and Labelling, and operational site Risk Assessment to inform personnel Health / Biological Monitoring.
Major Hazards Installations Regulations - MHI: require site Risk Assessment to ascertain potential impacts outside of the site and potential impacts on the public or neighbours. Copy to be lodged with the Dept Labour, and local Emergency Services.
NEMA – National Environmental Management Act 107 of 1998: Duty of Care and Producer Responsibility for products and packaging on a Life Cycle basis. Environmental Impact Assessment Regulations for new installations or proposed increase in capacity over 25%
NEM:WA – National Environmental Waste Act 59 of 2008 and its' Regulations including Extended Producer Responsibility, and regulations for waste management, Classification and disposal, see www.sawic.environment.gov.za for licensed premises
NEM:AQA – National Environmental Air Quality Act 39 of 2004: AQA Licenses and Emissions
Road Traffic Act 93 of 1996 and its Amendments: Chapter VIII Dangerous Goods Regulations

EU Regulation EC 1272/2008 (EU GHS /CLP) – Safety Data Sheets and Labelling

SECTION 16. Other information

Other relevant information including information on preparation and revision of the SDS –

ISO 11014:2009 Safety Data Sheets for Chemical Products – content and order of sections
UN Recommendations for Transport of Dangerous Goods Model Regulations commonly known as **the UN "Orange Books"** 21th revision published June 2019.
UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS commonly known as **the UN "Purple Book" 8th** revision published June 2019.
IMDG – International Maritime Dangerous Goods Code, 2020 edition, amendment 40-20
IATA Technical Regulations 62nd edition, January 2021
ERG 2020 – Transport Canada and US Dept. Transport, PHMSA Emergency Response Guide

Persons handling and working with this product should be Trained in the hazards and safe handling as required in the Chapter 1.3 of the UN Model Regulations for Transport of Dangerous Goods before commencing work with chemicals.

Revision No.			**Compiled by**
0	Date of original MSDS	1993 - 07 - 23	DD Liebenberg
5	Date of Issue	2012 - 02 - 23	HH Maringa
6	Date of Issue	2017 - 02 - 13	P Govender
7	Date of Issue	2021 - 06 - 20	E Anderson

Approved as per Management of Change No. 28-06-2021-210

EXCLUSION OF LIABILITY

All information and instructions provided in this Safety Data Sheet (SDS) in respect of the substance is given in terms of the provisions of the Occupational Health and Safety Act No 85 of 1993 and its Regulations.

Information is based on best available scientific and technical knowledge as at the date of revision indicated on this SDS, and is presented in good faith, to be correct.

The information provided in this SDS apply only to the product in the supplied form, and not to any formulation or mix. It should only be used as directed, and any formulations or other use is at the responsibility of the user of the product as formulated and/or mixed, to establish any hazards or risks which may arise out of its use, wherever such user may be situated.

It is the legal responsibility of the person in receipt of this SDS, whether for transport, storage or use to ensure that the information provided is communicated to, and, understood by any person who may come into contact with, or handle the product in any place and in any manner whatsoever, and to ensure that a Risk Assessment and Emergency plan is done.

Where any recipient produces formulations or mixes using the product, then it is the recipient's sole responsibility to comply with the provisions of the Act, the Hazardous Chemical Agents Regulations, and any other prevailing regulations in respect of the provision of the necessary SDS, and/or to comply with any other applicable legislation.