



Company Details:

Waterwell Projects (PTY) LTD
Reg No. 2001/018862/07

Waterwell Projects (PTY) LTD
Unit 4/5 Megazone Park
Hertford Junction R512
Lanseria 1748

Tel: 011 300 9917/8 or 073 077 0973
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Poison Centre: +27 21 689 5227

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

a) Identification of the substance or preparation :

- | | |
|-------------------------------|---|
| 1.1. Trade / Commercial Name: | Waterwell pH Reducer Liquid (packed 5L, 25L) |
| 1.2. Chemical Name: | Hydrochloric Acid <33% |
| 1.3. Formula: | HCl |
| 1.4. Synonyms: | Aqueous Hydrogen Acid, Hydrogen chloride, Muriatic Acid, Spirits of Salt, Pool Acid |
| 1.5. Un No. | 1789 |
| 1.6. CAS No. | 7647-01-0 |
| 1.7. Hazchem code: | 2R |

b) Information of Distributor :

Waterwell Projects (PTY) LTD
Unit 4 Megazone Park
Hertford Junction R512
Lanseria 1748
Tel: 011 300 9917/8 or 073 077 0973
Fax: 086 605 9360

Alternate suppliers:

Marlyn Environmental (Pty) Ltd
P O Box 39428
Booyens 2016
64 Nasmith Avenue
Jupiter Ext. 5
Heriotdale
Tel: 011 873 2117 / 8 / 9
Fax: 011 873 2176

2. COMPOSITION / INFORMATION ON INGREDIENTS

Material / Component	%	CAS No	Risk phrases
Hydrochloric Acid	30-33%	7647-01-0	R40/20/22; R41; R52

3. HAZARDS IDENTIFICATION

3.1 Emergency Overview:

This is a non-flammable but corrosive liquid.
A corrosive irritant to skin, eyes and respiratory system.
Causes severe burns to skin on contact which could result in deep ulceration.

Eye contact may cause eye corrosion with corneal and conjunctival ulceration. Ingestion of this substance can cause severe internal burns and damage.

Gross overexposure may cause death.

Hydrochloric acid is corrosive to most metals with the evolution of hydrogen gas, which may form explosive mixtures with air.

3.2 Health effects:

Eyes

Low concentrations of vapour or mist (10-35 ppm) can be immediately irritating, causing redness. (2) Concentrated vapour, mist or splashed liquid can cause severe irritation, burns and permanent blindness. (4).

Skin

Hydrochloric acid liquid can cause skin burns, and may produce keloid and retractile scarring (29*). Facial burns may result in serious and disfiguring scars. Frequent contact with the dilute acid may cause dermatitis (14*) and photosensitisation may result from industrial contact.

Ingestion

Hydrochloric acid solutions can cause corrosive burns to mouth, throat, oesophagus and stomach. Symptoms may include difficulty in swallowing, intense thirst, nausea, vomiting, diarrhoea and in severe cases, collapse and death. Small amounts of acid which enter the lungs during ingestion or vomiting (aspiration) can cause serious lung injury and death.

Inhalation

The major effects of acute exposure to hydrogen chloride are usually limited to the upper respiratory tract and are severe enough to lead to prompt withdrawal (13*). Exposure to the gas causes cough, burning of the throat and choking feeling, inflammation and ulceration of the nose, throat and larynx (914*). Exposure to higher concentrations, as may occur if a worker is prevented from escaping, may cause laryngeal spasm, and oedema of the lungs and vocal cords (15*).

Prolonged or repeated exposure may cause dental discolouration and erosion (15* - 17*). Pulmonary function changes in naïve but not chronically exposed workers suggests acclimatisation occurs (18*). Gastritis and chronic bronchitis have also been reported in exposed workers (19*).

In humans, exposure to 50 – 100 ppm for 1 hour is barely tolerable, 35 ppm for a short while causes throat irritation, and 10 ppm was tolerable (20*), although immediate irritation has been reported at concentrations over 5 ppm (21*). Bleeding nose and gums, ulceration of nasal and oral mucosa, and painful shaving due to tender facial skin was reported in workers exposed to mists from heated metal pickling solutions (22*).

In animal studies reported effects of exposure to high concentration of hydrogen chloride include damage to the lungs and blood vessels, lung collapse, and lesions of the liver and other organs (23*), coughing, wheezing, frothing, slowing of movement, increased respiratory rate, and death due to respiratory tract effects (94*). Repeated exposure to low concentrations of the gas (34 ppm) had no immediate toxic effects and produced no morphological changes (23*). Exposure to 100 ppm, 6 hours/day for 50 days caused slight unrest and irritation of the nose and eyes in several species (25*), while repeated exposure at higher concentrations caused weight loss (23*). Lesions in the nasal cavity of mice has also been reported (26*).

Inhalation of weak hydrochloric acid into the bronchi of rabbits caused inflammatory processes like those occurring in "flu or due to chemical weapons (27*). Differing responses to irritant gases such as hydrogen chloride between rodents and nonhuman primates suggest that the former may be an inadequate model for evaluating the toxicity of irritant gases to humans (28*).

3.3 ADDITIONAL MEDICAL INFORMATION

Carcinogenicity

No carcinogenic response was noted in inhalation experiments with rats (31*). Mortality rate from lung cancer was found to be significantly alleviated in workers exposed to sulphuric and hydrochloric acid mists during steel-pickling operations (32*).

Mutagenicity

No information is available concerning the mutagenicity of hydrochloric acid.

Teratogenicity and Embryotoxicity

No human information is available. Insufficient information is available to evaluate an animal report.

Reproductive Hazards

No information is available concerning the reproductive hazards of hydrochloric acid.

4. FIRST AID MEASURES

4.1 Eyes: Immediately flush the contaminated eye(s) with gently flowing water for at least 30 minutes, holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Take care not to rinse contaminated water into the non-affected eye. If irritation persists, repeat flushing. Transport victim to hospital as soon as possible.

4.2 Skin: Remove contaminated clothing immediately; drench the contaminated area with running water for at least 30 minutes. Do not interrupt flushing. If necessary, keep emergency vehicle waiting. Transport victim to hospital as soon as possible. Completely decontaminate clothing, shoes and leather goods before re-use or discard.

4.3 Inhalation: Take proper precautions to ensure your own safety before attempting rescue; e.g., wear appropriate protective equipment, use the "buddy" system. Remove source of contamination or move victim to fresh air. If unconscious, do not give anything to drink, give artificial ventilation and chest compression or place in the recovery position as necessary. If conscious make the casualty lie or sit down quietly, give medical oxygen if available. Lung congestion may occur – a conscious casualty with breathing difficulties should be placed in a sitting position. Immediately transport victim to an emergency medical facility. Symptoms may be delayed up to 48 hours after exposure.

4.4 Ingestion: Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 ml of water. If milk is available, it may be administered AFTER the water has been given. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Repeat administration of water. Transport victim to hospital as soon as possible.

4.5 First Aid Comments: Consult a physician and/or the nearest Poison Control Centre for all exposures except minor instances of inhalation or skin contact. All first aid procedures should be periodically reviewed by a physician familiar with the material and its conditions of use in the workplace.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media: Use an extinguishing media appropriate for the material that is burning. CO₂, dry chemical, fog or regular foam. In the absence of fog, a fine water spray may be used.

5.2 Special Firefighting: Although non-combustible, this strong acid can react with most metals, causing hydrogen gas generation, which may result in explosive mixtures. Explosive concentrations of hydrogen gas may accumulate in confined spaces. Thermal decomposition may release corrosive hydrochloric acid fumes.

5.3 Special precautions: Use water spray to cool fire exposed containers, until well after fire has been extinguished. Stay away from ends of tanks. Neutralise with lime or soda ash to prevent corrosion of metals and formation of hydrogen gas. Do not allow runoff from fire fighting to enter sewers, drains or natural watercourses.

5.4 Protection of fire fighters

An approved self-contained breathing apparatus must be worn. Although it will provide little or no thermal protection, chemical protective clothing must be worn when handling this substance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Ensure suitable personal protection during removal of spillage.
Cordon off the area and deny entry.
Evacuate to an area away from and upwind of the incident, if possible, to higher ground.
Always work upwind of any spill.
Do not touch or walk through spilled material.
Stop leaks if you can do so without risk.
Toxic hydrochloric acid fumes are heavier than air and will accumulate in excavations, natural depressions and other confined spaces.

Environmental precautions

Do not allow product/runoff from fire or spillage control to enter sewers, drains or watercourses. Spillage or uncontrolled discharges into watercourses must be alerted to the Department of Water Affairs and other appropriate regulatory bodies.

Small spillage

Absorb with sand or other non-combustible absorbent material and place into containers for disposal. Small spills can also be neutralised with soda ash or lime, or diluted with water before disposal.

Large spillage

Dyke far ahead of the spill area for later disposal.
Absorb residues with sand or other non-combustible absorbent material and place into container for disposal.

Neutralise and then wash the spillage area with minimum quantities of water.

7. HANDLING AND STORAGE

7.1 HANDLING: Avoid contact with the skin and eyes.

Use in well-ventilated areas and keep container closed.

When using do not eat, drink or smoke.

Always wash hands before eating, drinking or smoking.

Always wear chemical protective clothing when working with this substance.

Avoid breathing vapours or mists.

7.2 STORAGE: Store on a corrosion resistant surface (e.g. acid resistant tiles).

Bulk quantities should be stored in rubber-lined steel or suitable plastic containers, in a dry, well-ventilated area.

Protect containers from damage.

Keep away from common metals, oxidising agents and alkalis.

Do not store or mix with cyanides, sulphides, or formaldehyde.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Engineering controls: Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit for HCl is not exceeded.

Mechanical ventilation (dilution and/or local exhaust) is recommended for all indoor situations.

Ensure eye wash fountains and quick drench showers are provided within the immediate work area for emergency use.

8.2 PERSONAL PROTECTIVE EQUIPMENT

8.2.1 EYES AND FACE: Goggles and a full-face shield must be worn.

Wear full-face respiratory protection if there is a possibility of hydrochloric acid fumes being emitted.

8.2.2 RESPIRATORY: Ventilation and other forms of engineering controls are the preferred means for controlling exposures.

In low concentrations a full face canister type mask must be available.

For higher concentrations self contained breathing apparatus must be worn.

Air supplied respirators are recommended.

In the uncontrollable event of hydrochloric acid fumes being evolved, a full-face self-contained breathing apparatus or airline mask must be worn.

8.2.3 PROTECTIVE CLOTHING: Chemical protective clothing must be worn – an acid resistant overall with a Teflon lining is recommended.

Overall must be buttoned to the neck and the sleeves worn over the gloves.

When handling a large spillage, a full PVC chemical suit must be worn over the acid resistant overall.

Wear suitable acid resistant impervious gloves – they must be of the long type which reach to the elbow and are worn underneath the sleeve when working with large amounts of this substance.

Closed, acid resistant shoes must be worn when working with small amounts of this substance.

Chemically resistant boots must be worn when handling larger amounts of this substance.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colourless to pale yellow liquid (fumes when exposed to air)
Odour	Pungent
Odour threshold	1 – 5 ppm
Flammability	Non-flammable
Freezing point	(@ 101.3kPa) -47 – -40°C (Range = 30 – 33 % HCl)
Boiling point	(@ 101.3kPa) ± 97°C (@ ± 31.5 %HCl)
Vapour density	(Air = 1) 1.27
Liquid density	(Water = 1) 1.16
Viscosity	(@26°C) 1.6 centipoise (@ ±31 % HCl)
Thermal energy	-57.32 kJ/mol
Miscibility	(Water @ 20°C) Miscible in all proportions
Molecular weight	36.46 g/mol
Chemical family	Mineral acid

10. STABILITY AND REACTIVITY

10.1 Stability

Hydrochloric acid is stable when kept in a tightly closed, impervious container. When exposed to air, white fumes may be evolved.

10.2 Hazardous reactions

Hydrochloric acid solutions are incompatible with most metals, giving hydrogen; with oxidising agents, giving chlorine; with cyanides, giving hydrogen cyanide; with sulphides, giving hydrogen sulphide; formaldehyde, giving bis-chloromethylether (a carcinogen) and with silica gel.

Hydrochloric acid reacts violently/vigorously with acetic anhydride, 2-amino ethanol, ammonium hydroxide, bases, chlorine + dinitroanilines (releasing hydrogen gas), chlorosulphonic acid, 1,1-difluoroethylene (exothermic decomposition), ethylene diamine, ethylene imine, mercuric sulphate @ 125°C, metal acetylides, oleum, oxidisers (strong), perchloric acid, beta-propiol acetone, propylene oxide, sodium, vinyl acetate Hydrochloric acid forms explosive reactions with alcoholic hydrogen cyanide, aluminium, potassium permanganate, sodium, sulphuric acid (release of toxic hydrogen chloride gas), and tetraselenium tetranitride (on contact).

Hydrochloric acid ignites on contact with calcium hypochlorite, caesium acetylide, fluorine, oxygen + platinum, and rubidium acetylide.

Hydrochloric acid burns to incandescence when mixed with aluminium titanium alloys (when heated), calcium carbide (reacts releases acetylene), and hexalithium disilicide.

Hydrochloric acid attacks or corrodes brass, bronze, and metals (forming flammable hydrogen gas).

Polymerisation has not been reported.

10.3 Hazardous decomposition products

Thermal decomposition can result in the release of corrosive hydrogen chloride gas.

11. TOXICOLOGICAL INFORMATION

Inhalation

Causes nose and throat irritation.

The effects include irritation of the upper respiratory passages with coughing wheezing and extreme shortness of breath.

Higher inhalation exposures may lead to corrosion of mucous surfaces with temporary lung irritation with cough, difficulty in breathing or shortness of breath.

Individuals with pre-existing diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

High or prolonged inhalation exposure may cause possible life threatening accumulation of fluid in the lungs (pulmonary oedema).

Fatality may occur from gross overexposure.

Skin contact

Overexposure by skin contact include skin burns or ulceration.

Eye contact

Eye contact may cause eye corrosion with corneal or conjunctival ulceration – corneal damage and vision tests are needed.

May cause permanent impairment of vision.

Ingestion

Ingestion causes severe acid burns of the mouth, throat, oesophagus, and stomach with burning pain of the mouth, throat, chest, and abdomen.

Vomiting and diarrhoea of dark blood may occur with penetration of the oesophagus or stomach – if severe burns occur in the mouth, then oesophageal burns may exist.

Toxicological information

Repeated or prolonged exposure to low levels may produce erosion of the teeth and ulceration of the nasal septum and gums.

Human poison by unspecified route and mildly toxic by inhalation. Mutation data has been reported.

Hydrochloric acid is not classifiable as a human carcinogen.

12. ECOLOGICAL INFORMATION

Environmental fate

Runoff from fire-control water or dilution water can cause pollution. Liquid has high volatility.

Liquid has high mobility in soil.

Toxicity and biodegradability

This substance is fatal to aquatic organisms and fish as large discharges contribute to the acidification of water.

Can cause severe damage to aquatic plants.

Persistence and degradation

The product degrades readily and will not persist in the environment.

The product does not bio-accumulate.

Effect on effluent treatment

Large discharges may contribute to the acidification of effluent treatment systems and injure sewage treatment organisms.

Inform the management authorities on sewage works if this product enters the sewers.

13. DISPOSAL CONSIDERATIONS

Disposal should be in accordance with local, regional or national legislation.

Contaminated absorbent must be removed and disposed via an authorised waste contractor.

Chemical additions, processing or otherwise altering this material may make the waste management information in this material safety data sheet incomplete, inaccurate or otherwise inappropriate.

14. TRANSPORT INFORMATION

Emergency response guide :	157
UN N° :	1789

UN Packing group air

ICAO/IATA Class – primary : 8 (Corrosives)
UN Packing group : 8 (Corrosives)
Danger group : II (Substance presents a serious risk)

UN Packing group sea

IMDG Class - primary : 8 (Corrosive)
UN Packing group : 8 (Corrosive)
Danger Group : II (Substance presents a serious risk)
Proper shipping name : Hydrochloric acid solution
Packaging method : 13.8.3 (Liquid Corrosives)

Road/rail

ADR/RID Class : 8 (Corrosive)
UN Packing group : 8 (Corrosive)
Danger group : II (Substance presents a serious risk)
Packaging method : 13.8.3 (Liquid corrosives)

15. REGULATORY INFORMATION

Users should ensure that they comply with any relevant local, regional or national legislation.

SABS Classification : Corrosive
Risk phrases R34 : Causes burns
R40/20/22 : Harmful: Possible risk of irreversible effects
through inhalation and if swallowed
R41 : Risk of serious damage to eyes
R52 : Harmful to aquatic organisms
Safety phrases S1/2/13 : Keep locked up and out of reach of children,
away from food, drink and animal feeding stuffs
S7/9/14 : Keep container tightly closed and in a well-
ventilated place, away from bases, metals and oxidising materials
S23/24/25 : Do not breathe fumes emitted and avoid contact
with skin and eyes
S27/28 : Take off immediately all contaminated clothing
and wash skin immediately with plenty of water
S36/37/38 : Wear suitable chemical protective clothing, gloves
and eye / face protection and in case of insufficient ventilation, wear
suitable respiratory equipment
S45 : In case of an incident or if you do not feel well,
seek medical advice immediately

16.FURTHER INFORMATION

No further information available.

The information herein is given in good faith and to the best of our knowledge at the current date. The accomplishment of the instructions herein does not exempt the user from following the legal and administrative regulations relative to product, environmental safety and hygiene, which are user's own responsibility. In case of mixture with other substances, ensure that other risks are not generated.

Date of Revision: 21 September 2014 (general revision)