Infosafe No™ 1CHLD	Issue Date :September 2022	RE-ISSUED by ACR

Product Name **HYDROCHLORIC ACID 4N**

Classified as hazardous

Section 1 - Identification

Product Identifier HYDROCHLORIC ACID 4N

Company Product Codes / Numbers / Unique Identifiers 1047

Company Name AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)

Address 38 - 50 Bedford Street Gillman
S.A. 5013 Australia

Telephone/Fax Number Tel: (08) 8440 2000
Fax: (08) 8440 2001

Emergency Phone Number CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

Recommended use of the chemical and restrictions on use Acidising (activation) of petroleum wells, boiler scale removal, chemical intermediate, ore reduction, food processing (corn syrup, sodium glutamate), pickling and metal cleaning, industrial acidising, general cleaning, alcohol denaturant and laboratory reagent.

Other Names

Name	Product Code
HYDROCHLORIC ACID 10 - 24.9%	
HYDROCHLORIC ACID 10% w/v	0472
HYDROCHLORIC ACID 10% w/w	1070
HYDROCHLORIC ACID 17.5% w/v	5614
HYDROCHLORIC ACID 3N	2959
HYDROCHLORIC ACID 5N	0018
HYDROCHLORIC ACID 6.34N	1791
HYDROCHLORIC ACID 6N	1054
HYDROCHLORIC ACID 60% v/v	4816

Other Information EMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

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Section 2 - Hazard(s) Identification

GHS Classification of the Substance/Mixture Eye Damage/Irritation: Category 1
Skin Corrosion/Irritation: Category 1B
Specific Target Organ Toxicity - Single Exposure Category 3 (respiratory tract irritation)
Corrosive to Metals: Category 1

Signal Word DANGER

Hazard Statement (s) H290 May be corrosive to metals.
H314 Causes sever skin burns and eye damage
H335 May cause respiratory irritation.

Pictogram (s) Corrosion, Exclamation mark

Classified as hazardous





Precautionary Statement – Prevention

P234 Keep only in original container.
P260 Do not breathe dusts or mists.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement – Response

P310 Immediately call a POISON CENTER/Doctor/Physician
Swallowed
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
Skin
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P363 Wash contaminated clothing before reuse.
Inhaled
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
Eyes
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P390 Absorb spillage to prevent material damage.

Precautionary Statement – Storage

P406 Store in corrosive resistant container with a resistant inner liner.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Precautionary Statement – Disposal

P501 Dispose of contents/container according to local, state and federal regulations.

Section 3 - Composition and Information on Ingredients

Ingredients

Name	CAS	Proportion
Water	7732-18-5	>=75-90 %
Hydrochloric acid	7647-01-0	>=10-24.9 %

Information on Composition

Aqueous solution of the gas hydrogen chloride.

Section 4 - First Aid Measures

Inhalation

Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen.
Seek medical attention.

Ingestion

Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.

Skin

If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Remove contaminated clothing and wash before re-use. Seek urgent medical assistance.
Treat skin and clothing with 1% sodium bicarbonate solution to neutralize acid residues.

Eye

If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Seek immediate medical assistance.

First Aid Facilities

Maintain eyewash fountain and drench facilities in work area.

Advice to Doctor

Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Treat symptomatically as for strong acids.

Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

Section 5 - Firefighting Measures

Suitable Extinguishing Media	Use appropriate fire extinguisher for surrounding environment. Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Hazards from Combustion Products	Irritating and highly toxic fumes of hydrogen chloride. Can react with metals generating flammable hydrogen gas.
Specific Methods	When material is not involved in fire: Do not use water on material itself.
Hazchem Code	2R
Decomposition Temperature	>1500 °C (decomposition of hydrogen chloride to hydrogen and chlorine).
Precautions in connection with Fire	Wear SCBA and acid-resistant chemical splash suit.

Section 6 - Accidental Release Measures

Spills & Disposal	Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. DO NOT GET WATER INSIDE CONTAINERS. Small Spill: Cover with DRY earth, sand or other non-combustible material followed by a plastic sheet to minimize spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.
Personal Precautions	Avoid contact with substance, do not breathe vapours.
Personal Protection	Use personal protective equipment listed in Section 8.
Clean-up Methods - Large Spillages	Seek expert advice on handling and disposal.
Environmental Precautions	Do not discharge to the environment or sewer ststem. Prevent further leaking if safe to do so. If product contaminates rivers and lakes or drains inform respective authorities.

Section 7 - Handling and Storage

Precautions for Safe Handling	Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture/water. Keep out of direct sunlight and away from heat and incompatible materials.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed containers, in a cool, dry, well-ventilated storage area with acid resistant floors and good drainage, away from incompatible substances. Store away from flammable or oxidizing substances (especially nitric acid or chlorates). Do not store in metal containers. There may be instances with the technical grade products where there may be contamination due to hydrofluoric acid. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.
Corrosiveness	Very corrosive to most metals. Rubber-lined steel, Haveg, Hastelby and tantalum, are the most commonly used corrosion-resistant materials of construction. Rubber, glass, plastic and ceramic ware are also resistant to corrosion.
Storage Regulations	Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.
Storage Temperatures	Store in a cool place (below 25 °C).

Section 8 - Exposure Controls and Personal Protection

Occupational Exposure Limit (OEL) Values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Hydrochloric acid			7.5	5	Hydrogen chloride Peak Limitation

Other Exposure Information
A time weighted average (TWA) has been established for Hydrogen chloride (Worksafe Aust) of 7.5 mg/m³ (Peak limitation), (5 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.

Engineering Controls
Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.

Respiratory Protection
Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.

Eye and Face Protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Hand Protection
Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl. Good: Nitrile rubber gloves Fair: Neoprene gloves

Footwear
Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection
Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals. Recommendation: PVC apron. Natural rubber apron

Hygiene Measures
Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Section 9 - Physical and Chemical Properties

Form Liquid

Appearance Clear, colourless to slight yellow liquid.

Odour Slight, characteristic, irritating odour of hydrogen chloride.

Melting Point -18 °C (10%); -17.4 °C (10.81%); -59 °C (20%); -62.25 °C (20.69%).

Boiling Point 103 °C (10%); 108.6 °C (forms constant boiling mixture at 20%).

Decomposition Temperature >1500 °C (decomposition of hydrogen chloride to hydrogen and chlorine).

Solubility in Water Soluble in all proportions, with slight evolution of heat.

Solubility in Organic Solvents Very soluble in alcohols; soluble in diethyl ether and benzene; insoluble in hydrocarbons.

Specific Gravity 1.048 (10%); 1.05 @ 15 °C/4 °C (10.17%); 1.098 @ 20 °C/4 °C (20%); 1.12 (24%).

pH	-0.5 (10%); -0.8 (20%) (strongly acidic).
Vapour Pressure	0.527 Pa (10%); 27.3 Pa (20%).
Relative Vapour Density (Air=1)	>1
Odour Threshold	1-5 ppm (detectable); 10 ppm (irritating); 35 ppm (irritating) (~35%).
Volatile Component	Hydrogen Chloride Gas
Partition Coefficient: n-octanol/water (log value)	log Pow: 0.25 (concentrated).
Flammability	Non combustible material.
Molecular Weight	36.46
Dynamic Viscosity	1.16 mPa·s (10%); 1.37 mPa·s (20%).
Other Information	Index of refraction: 1.34168 @ 18 °C/D (1.0 N solution). Critical Temperature 51.5 °C (36-38%). Conc. (Baumé): 6.6 (10%); 13 (20%). Molarity: 2.87 M (10%); 6.02 M (20%). Taste: Taste threshold: 1.60 x 10-4 moles/l (recognition in water, chemically pure); 1.30 x 10-4 M/l (recognition in water, chemically pure); 1.10 x 10-4 M/l (recognition in water, chemically pure).

Section 10 - Stability and Reactivity

Chemical Stability	Stable at normal temperatures, pressures and conditions of use or storage.
Possibility of Hazardous Reactions	Large amounts of heat can be released when concentrated HCl is mixed with water or with organic solvents. Can react with most metals, generating flammable hydrogen gas. Reacts violently with bases (e.g. sodium hydroxide, amines), generating heat and pressure. Reaction with aldehydes, or epoxides may cause violent polymerization, generating heat and pressure. Reaction with reducing agents may produce heat, fire and flammable hydrogen gas. May react with oxidizing agents, generating heat and toxic or corrosive chloride gases. Contact with explosives may generate heat which could cause detonation. May react with acetylides, borides, carbides, silicides, producing flammable gas (e.g., acetylene). May react with cyanides, or sulfides to release toxic gas (HCN or H2S). May react with phosphide to release toxic, flammable phosphine gas.
Conditions to Avoid	Metals, excess heat, exposure to moist air or water and incompatible materials.
Incompatible Materials	Metals, bases (e.g. sodium hydroxide, amines), aldehydes, epoxides, reducing agents, oxidizing agents, permanganates, explosives, acetylides, borides, carbides, silicides, cyanides, sulfides and phosphide.
Hazardous Decomposition Products	Hydrogen chloride gas. Hydrogen chloride is thermally stable up to temperatures of about 1500 °C.

Section 11 - Toxicological Information

Ingestion	May be harmful if swallowed. Causes severe irritation and possible chemical burns to the mouth, oesophagus, stomach and gastrointestinal tract. May cause severe digestive tract burns with abdominal pain, vomiting, and possible circulatory system failure and death.
Inhalation	Vapour causes irritation (may be severe) of the mucous membranes of the respiratory tract, with sore throat, coughing, shortness of breath and delayed lung oedema. Causes corrosive effects to the mucous membranes of the respiratory tract. Exposure to the mist and vapour may erode exposed teeth.
Skin	Contact with liquid is corrosive and causes severe burns and ulceration (>15 % solution, based on animal data). Irritating to extremely irritating to skin -

	may cause skin burns (<15 % solution, based on animal data). May be absorbed through the skin in harmful amounts.
Eye	Vapour or mist may cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns. May cause irreversible eye damage. May cause painful sensitization to light.
Carcinogenicity	Hydrochloric acid [7647-01-0] is evaluated in the IARC Monographs (Vol. 54; 1992) as Group 3: Not classifiable as to carcinogenicity to humans.
Mutagenicity	No human information is available. Questionable positive results reported in some short-term tests. Negative results in some in-vitro mammalian cell tests.
Chronic Effects	Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to bronchitis, pneumonia and pulmonary oedema. Repeated exposure may cause erosion of teeth. Repeated or prolonged contact with spray mist may produce chronic eye effects (irritation, conjunctivitis, photosensitization, and possible blindness) and severe skin irritation (dermatitis).

Section 12 - Ecological Information

Ecotoxicity	Preparation contains: hydrochloric acid. Toxic for aquatic organisms. Harmful effect due to pH shift. The following applies to HCl in general: Harmful effect on aquatic organisms. Harmful effect due to pH shift. Does not cause biological oxygen deficit.
Environmental Protection	Do not allow to enter waters, waste water, or soil!

Section 13 - Disposal Considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.

Section 14 - Transport Information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
ADG UN Number	1789
ADG Proper Shipping Name	HYDROCHLORIC ACID
ADG Transport Hazard Class	8
ADG Packing Group	II
Hazchem Code	2R
EPG Number	8A1
IERG Number	40
Environmental Hazards	Toxic for aquatic organisms. Harmful effect due to pH shift. Does not cause biological oxygen deficit.

Section 15 - Regulatory Information

Poisons Schedule	S6

Section 16 - Any Other Relevant Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'.

	Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Australian Chemical Reagents (ACR) accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	Cl-H; HCl·H2O; HCl·3H2O; HCl·6H2O. (There are four constant-crystallization eutectic points for hydrochloric acid, between the crystal form of HCl·H2O (68% HCl), HCl·2H2O (51% HCl), HCl·3H2O (41% HCl), HCl·6H2O (25% HCl), and ice (0% HCl). There is also a metastable eutectic point at 24.8% between ice and the HCl·3H2O crystallization.)

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