

Infosafe No™	1CHLD	Issue Date : September 2017	RE-ISSUED by ACR
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Product Name : **HYDROCHLORIC ACID 10 - 24.9%**

Classified as hazardous

## 1. Identification

<b>GHS Product Identifier</b>	HYDROCHLORIC ACID 10 - 24.9%	
<b>Company Name</b>	AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)	
<b>Address</b>	38 - 50 Bedford Street Gillman S.A. 5013 Australia	
<b>Telephone/Fax Number</b>	Tel: (08) 8440 2000 Fax: (08) 8440 2001	
<b>Recommended use of the chemical and restrictions on use</b>	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.	
<b>Other Names</b>	<b>Name</b>	<b>Product Code</b>
	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 4N	1047
	HYDROCHLORIC ACID 5N	0018
	HYDROCHLORIC ACID 6.34N	1791
	HYDROCHLORIC ACID 6N	1054
<b>Other Information</b>	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday.	

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## 2. Hazard Identification

<b>GHS classification of the substance/mixture</b>	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
<b>Signal Word (s)</b>	WARNING
<b>Hazard Statement (s)</b>	H290 May be corrosive to metals. H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation.
<b>Pictogram (s)</b>	Corrosion, Exclamation mark



<b>Precautionary statement – Prevention</b>	P234 Keep only in original container. P261 Avoid breathing fumes or vapours. 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.
<b>Precautionary statement – Response</b>	Skin P302+P352 IF ON SKIN: Wash with plenty of soap and water. P332+P313 If skin irritation occurs: Get medical advice/attention.

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<b>Precautionary statement – Storage</b>	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.
<b>Precautionary statement – Disposal</b>	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. 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. P501 Dispose of contents/container according to local, state and federal regulations.

### 3. Composition/information on ingredients

<b>Chemical Characterization Information on Composition</b>	Liquid															
<b>Ingredients</b>	Aqueous solution of the gas hydrogen chloride.															
	<table border="1"> <thead> <tr> <th><u>Name</u></th> <th><u>CAS</u></th> <th><u>Proportion</u></th> <th><u>Hazard Symbol</u></th> <th><u>Risk Phrase</u></th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>7732-18-5</td> <td>&gt;=75-90 %</td> <td></td> <td></td> </tr> <tr> <td>Hydrochloric acid</td> <td>7647-01-0</td> <td>&gt;=10-24.9 %</td> <td></td> <td></td> </tr> </tbody> </table>	<u>Name</u>	<u>CAS</u>	<u>Proportion</u>	<u>Hazard Symbol</u>	<u>Risk Phrase</u>	Water	7732-18-5	>=75-90 %			Hydrochloric acid	7647-01-0	>=10-24.9 %		
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Water	7732-18-5	>=75-90 %														
Hydrochloric acid	7647-01-0	>=10-24.9 %														

### 4. First-aid measures

<b>Inhalation</b>	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
<b>Ingestion</b>	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
<b>Skin</b>	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.
<b>Eye contact</b>	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.
<b>First Aid Facilities</b>	Maintain eyewash fountain and drench facilities in work area.
<b>Advice to Doctor</b>	Treat symptomatically based on judgement of doctor and individual reactions of the patient. Treat symptomatically as for strong acids.
<b>Other Information</b>	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

### 5. Fire-fighting measures

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

### 6. Accidental release measures

<b>Spills &amp; Disposal</b>	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,
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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.  
Avoid contact with substance, do not breathe vapours.

**Personal**

**Precautions**

**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 system. Prevent further leaking if safe to do so. If product contaminates rivers and lakes or drains inform respective authorities.

## 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).

## 8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	Hydrochloric acid			7.5	5	Hydrogen chloride Peak Limitation
<b>Other Exposure Information</b>	A time weighted average (TWA) has been established for Hydrogen chloride (Worksafe Aust) of 7.5 mg/m <sup>3</sup> (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.					
<b>Appropriate engineering controls</b>	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.					
<b>Respiratory Protection</b>	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.					
<b>Eye Protection</b>	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate.					
<b>Hand Protection</b>	Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336. Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl. Good: Nitrile rubber gloves Fair:					

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<b>Footwear</b>	Neoprene gloves Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
<b>Body Protection</b>	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
<b>Hygiene Measures</b>	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

## 9. Physical and chemical properties

<b>Form</b>	Liquid
<b>Appearance</b>	Clear, colourless to slight yellow liquid.
<b>Odour</b>	Slight, characteristic, irritating odour of hydrogen chloride.
<b>Decomposition Temperature</b>	>1500 °C (decomposition of hydrogen chloride to hydrogen and chlorine).
<b>Melting Point</b>	-18 °C (10%); -17.4 °C (10.81%); -59 °C (20%); -62.25 °C (20.69%).
<b>Boiling Point</b>	103 °C (10%); 108.6 °C (forms constant boiling mixture at 20%).
<b>Solubility in Water</b>	Soluble in all proportions, with slight evolution of heat.
<b>Solubility in Organic Solvents</b>	Very soluble in alcohols; soluble in diethyl ether and benzene; insoluble in hydrocarbons.
<b>Specific Gravity</b>	1.048 (10%); 1.05 @ 15 °C/4 °C (10.17%); 1.098 @ 20 °C/4 °C (20%); 1.12 (24%).
<b>pH</b>	-0.5 (10%); -0.8 (20%) (strongly acidic).
<b>Vapour Pressure</b>	0.527 Pa (10%); 27.3 Pa (20%).
<b>Vapour Density (Air=1)</b>	>1
<b>Odour Threshold</b>	1-5 ppm (detectable); 10 ppm (irritating); 35 ppm (irritating) (~35%).
<b>Volatile Component</b>	Hydrogen Chloride Gas
<b>Partition Coefficient: n-octanol/water</b>	log Pow: 0.25 (concentrated).
<b>Flammability</b>	Non combustible material.
<b>Molecular Weight</b>	36.46
<b>Dynamic Viscosity</b>	1.16 mPa·s (10%); 1.37 mPa·s (20%).
<b>Other Information</b>	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 <sup>-4</sup> moles/l (recognition in water, chemically pure); 1.30 x 10 <sup>-4</sup> M/l (recognition in water, chemically pure); 1.10 x 10 <sup>-4</sup> M/l (recognition in water, chemically pure).

## 10. Stability and reactivity

<b>Chemical Stability</b>	Stable at normal temperatures, pressures and conditions of use or storage.
<b>Conditions to Avoid</b>	Metals, excess heat, exposure to moist air or water and incompatible materials.
<b>Incompatible Materials</b>	Metals, bases (e.g. sodium hydroxide, amines), aldehydes, epoxides, reducing agents, oxidizing agents, permanganates, explosives, acetylides, borides, carbides, silicides, cyanides, sulfides and phosphide.
<b>Hazardous Decomposition Products</b>	Hydrogen chloride gas. Hydrogen chloride is thermally stable up to temperatures of about 1500 °C.
<b>Possibility of hazardous reactions</b>	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.

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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 H<sub>2</sub>S).  
May react with phosphide to release toxic, flammable phosphine gas.

## 11. Toxicological Information

<b>Ingestion</b>	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.
<b>Inhalation</b>	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.
<b>Skin</b>	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.
<b>Eye</b>	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.
<b>Carcinogenicity</b>	Hydrochloric acid [7647-01-0] is evaluated in the IARC Monographs (Vol. 54; 1992) as Group 3: Not classifiable as to carcinogenicity to humans.
<b>Chronic Effects</b>	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).
<b>Mutagenicity</b>	No human information is available. Questionable positive results reported in some short-term tests. Negative results in some in-vitro mammalian cell tests.

## 12. Ecological information

<b>Ecotoxicity</b>	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.
<b>Environmental Protection</b>	Do not allow to enter waters, waste water, or soil!

## 13. Disposal considerations

<b>Disposal Considerations</b>	Dispose of according to relevant local, state and federal government regulations.
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## 14. Transport information

<b>Transport Information</b>	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.
<b>U.N. Number</b>	1789
<b>UN proper shipping name</b>	HYDROCHLORIC ACID
<b>Transport hazard class(es)</b>	8
<b>Hazchem Code</b>	2R
<b>Packaging Method</b>	3.8.8RT8
<b>Packing Group</b>	II
<b>EPG Number</b>	8A1
<b>IERG Number</b>	40

## 15. Regulatory information

<b>Poisons Schedule</b>	S6
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## 16. Other Information

<b>Literature References</b>	'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.
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**Contact  
Person/Point**

National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.  
 Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.  
 Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.  
 Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.  
 Safe Work Australia, 'Hazardous Substances Information System, 2005'.  
 Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.  
 Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.  
 Paul McCarthy Ph. (08) 8440 2000

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**Empirical Formula &  
Structural Formula**

Cl-H; HCl·H<sub>2</sub>O; HCl·3H<sub>2</sub>O; HCl·6H<sub>2</sub>O. (There are four constant-crystallization eutectic points for hydrochloric acid, between the crystal form of HCl·H<sub>2</sub>O (68% HCl), HCl·2H<sub>2</sub>O (51% HCl), HCl·3H<sub>2</sub>O (41% HCl), HCl·6H<sub>2</sub>O (25% HCl), and ice (0% HCl). There is also a metastable eutectic point at 24.8% between ice and the HCl·3H<sub>2</sub>O crystallization.)

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