

# Material Safety Data Sheet



## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

**Product name:** Hydrochloric acid - Concentrated

**Synonyms:** Muriatic acid, SPIRITS OF SALTS, Hydrogen chloride solution, Chlorohydric acid, HYDROCHLORIC ACID - 32%, HYDROCHLORIC ACID 33%

Hydrochloric acid - Concentrated

**CAS-No.:**

**Molecular Formula:**

**Supplier:** Orica Australia Pty Ltd

**ACN:** 004 117 828

**Street Address:** 1 Nicholson Street  
Melbourne 3000  
Australia

**Telephone:** + 61 3 9665 7111

**Facsimile:** + 61 3 9665 7937

**Emergency telephone number:** 1 800 033 111 (ALL HOURS)

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Recommended use:** Precursor for generation of chlorine dioxide gas used in water treatment.

**Appearance:** Clear colourless to slightly yellow fuming liquid with a pungent odour.

CHEMICAL ENTITY	CAS NO.	PROPORTION (% weight per weight)
Hydrochloric acid	7647-01-0	33
Water	7732-18-5	67
		100%

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 3. HAZARDS IDENTIFICATION

Hazardous according to criteria of Worksafe Australia.

**Hazard Category**

C Corrosive

**R-phrase(s)**

R35 Causes severe burns.

R37 Irritating to respiratory system.

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R41 Risk of serious damage to eyes.

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

**Class:** 8 Corrosive

**Poisons Schedule (Aust)/Toxic Substance (NZ):** S6

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

## 4. FIRST AID MEASURES

Poison Information Centres in each State capital city can provide additional assistance for scheduled poisons.

**Ingestion:** Immediately rinse mouth with water. Give water to drink. Do NOT induce vomiting. If vomiting occurs give further water. Seek immediate medical assistance.

**Eye contact:** Immediately irrigate with copious quantities of water for at least 15 minutes. Eyelids to be held open. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport to hospital or medical centre.

**Skin contact:** Immediately wash contaminated skin with plenty of water. Remove contaminated clothing and wash before re-use. If swelling, redness, blistering, or irritation occurs seek medical advice. For skin burns, immediately flood burnt area with plenty of water and cover with a clean, dry dressing. Seek medical assistance.

**Inhalation:** Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through a face mask. If breathing has stopped apply artificial respiration at once. In event of cardiac arrest, apply external cardiac massage. Seek medical advice.

**Notes to physician:** Treat symptomatically and as for exposure to corrosive acids. Patient should remain under observation for at least 48 hours as delayed pulmonary oedema may develop. Can cause corneal burns.

## 5. FIRE-FIGHTING MEASURES

**Specific hazards:** Non combustible material.

**Fire fighting further advice:** Non flammable but flammable and explosive hydrogen gas may be formed on contact with metals. If involved in a fire, highly toxic fumes will be evolved. If safe to do so, remove containers from path of fire. Fire fighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of decomposition.

## 6. ACCIDENTAL RELEASE MEASURES

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Increase ventilation. Wear protective equipment, including impervious footwear. Work up wind. Use water spray to disperse vapour. Contain using sand or soil - prevent run off into drains or waterways. If contamination of sewers or waterways has occurred advise the local emergency services. Dilute with water then carefully neutralise with soda ash or slaked lime. Wash to drain with excess water. For large spills notify Emergency Services.

## 7. HANDLING AND STORAGE

**Storage:** Store in a cool, well ventilated place, out of direct sunlight, and away from oxidising agents and foodstuffs. Keep containers closed at all times - check regularly for leaks.

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### National occupational exposure limits

No value assigned for this specific material by the National Occupational Health and Safety Commission (Worksafe Australia).

However, Exposure Standards for constituent:

	TWA		STEL	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Hydrogen chloride	5	7.5	Peak Limitation	

As published by the National Occupational Health and Safety Commission (Worksafe Australia).

Odour detectable at <5 ppm. Respiratory and mucous membrane irritant above 35 ppm. (4)

Odour threshold: 0.77 ppm (1)

Peak Limitation - a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.

TWA - the Time-Weighted Average airborne concentrations over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour work day. According to current knowledge these concentrations should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

**Engineering measures:** Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use with local exhaust ventilation or while wearing acid mist respirator. Keep containers closed when not in use.

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**Personal protection equipment:** Orica Personal Protection Guide No.1, 1998: D - OVERALLS, RUBBER BOOTS, FACE SHIELD, SAFETY SHOES, GLOVES (L), APRON.

Avoid all contact. Wear overalls, face shield, elbow-length impervious gloves, splash apron and rubber boots. Available information (5) suggests that gloves made from Neoprene or Solves Nitrile NBR should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, a final assessment should be made by the user. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Form / Colour / Odour:** Clear colourless to slightly yellow fuming liquid with a pungent odour.

**Solubility:** Fully miscible with water.

Specific Gravity (20 C)	: 1.14-1.18	Freezing Temp (C)	: -63 - -27
Rel Vapour Density (air=1)	: 1.26	Boiling Point (C)	: 91-98
Vapour Pressure (mm Hg)	: 11-115	Decomp. Point (C)	: N Av
Flash Point (C)	: N App	Sublimation Point	: N App
Flammability Limits (%)	: N App	pH	: <1
Autoignition Temp (C)	: N App	Viscosity	: N Av
% Volatile by volume	: N Av	Evaporation Rate	: N Av
Solubility in water (g/L)	: Soluble	(n-Butyl acetate=1)	
(Typical values only - consult specification sheet)			
N Av = Not available		N App = Not applicable	

## 10. STABILITY AND REACTIVITY

**Stability:** Highly corrosive to most common metals with evolution of flammable gas. Reacts violently with alkali. Reacts with sodium hypochlorite and oxidising agents liberating chlorine.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled and overexposure occurs are:

### Acute Effects

**Ingestion:** Swallowing can result in corrosion of gastrointestinal tract, vomiting, diarrhoea, and abdominal pain.

**Eye contact:** Corrosive to eyes; contact can cause corneal burns. Contamination of the eyes can result in permanent injury.

**Skin contact:** Corrosive to skin - may cause skin burns.

**Inhalation:** Vapour is irritant to mucous membranes and respiratory tract above 35 ppm. (1) May cause coughing, choking, and inflammation and ulceration of the respiratory tract. Exposure to high vapour

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concentrations or the acid as a mist may lead to lung damage including pulmonary oedema. Effects may be delayed.

## Long Term Effects:

Repeated exposure to low levels may produce erosion of the teeth and ulceration of the nose and gums. (1)

## Acute toxicity / Chronic toxicity

Based on knowledge of hydrochloric acid:

Oral LD50 (rabbit): 900 mg/kg (1)

Inhalation LC50 (rat) : 3124 ppm (1 hour) (1)

Inhalation Lowest Lethal Concentration (human): 1300 ppm/30 min (3)

Inhalation Lowest Lethal Concentration (human): 3000 ppm/5 min (3)

Mist or vapour concentrations of 50-100ppm are barely tolerated for up to one hour. (2)

Chronic exposure may result in dental discolouration and erosion and ulceration of the nose and mouth. (1)

A report on hydrogen chloride exposure in humans found exposure at 50 - 100 ppm for 1 hour was barely tolerable, 35 ppm caused irritation of the throat on short exposure and 10 ppm was the maximum concentration allowable for prolonged exposure. (1)

This material has been classified by the International Agency for Research on Cancer (IARC) as a Group 3 agent. (1)

Group 3 - The agent is not classifiable as to its carcinogenicity to humans.

## 12. ECOLOGICAL INFORMATION

Environmental Fate and Distribution: (2)

High tonnage material used in partially contained systems. Liquid with high volatility. The product does not bioaccumulate. The product is predicted to have high mobility in soil.

Toxicity: (2)

Large discharges may contribute to the acidification of water and be fatal to fish and other aquatic life. Can cause damage to vegetation. Can cause severe damage to aquatic plants.

Effect on Effluent Treatment: (2)

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

## 13. DISPOSAL CONSIDERATIONS

Refer to State/Territory Land Waste Management Authority. After dilution and careful neutralisation, approved liquid waste land fill site should be suitable.

## 14. TRANSPORT INFORMATION

### Road and Rail Transport

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for

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transport by road or rail.

**UN-No:** 1789  
**Class:** 8 Corrosive  
**Hazchem code:** Hazchem Code  
**EPG:** 8A1  
**Packing group:** Packing Group 2  
**Proper Shipping Name:** HYDROCHLORIC ACID SOLUTION

## Segregation Dangerous

### Goods:

Not to be loaded with explosives (Class 1), dangerous when wet substances (Class 4.3), oxidising agents (Class 5), cyanides (Class 6), radioactive substances (Class 7), or foodstuff and foodstuff empties. Exemptions may apply.

## 15. REGULATORY INFORMATION

Hazardous according to criteria of Worksafe Australia.

### Hazard Category

C Corrosive

### R-phrase(s)

R35 Causes severe burns.  
R37 Irritating to respiratory system.  
R41 Risk of serious damage to eyes.

### S-phrase(s)

S 7/9 Keep container tightly closed and in a well-ventilated place.  
S25 Avoid contact with the eyes.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

**Poisons Schedule (Aust)/Toxic Substance (NZ):** S6

## 16. OTHER INFORMATION

### Literary reference

- (1) Safety Data Sheet - Hydrochloric Acid Anhydrous; CDS# 10785  
Orica Australia Pty Ltd; 05/94
- (2) Safety Data Sheet - Hydrochloric acid; Ref# HS 1016D; Version: 2  
Orica Chlor-Chemicals UK; 08/93
- (3) On 'CC Info Disc No.96-1 (Canadian Centre for Occupational Health

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and Safety: Ontario 1996). RTECS; RTECS# MN4025000

(4) In 'Threshold Limit Values and Biological Exposure Indices 1995-1996' (Ed. ACGIH), p773-774, (ACGIH: Cincinnati 1996).

(5) Ansell Edmont Chemical Resistant Guide, 5th Ed.

Ansell Edmont Industrial Inc., 1990

This Material Safety Data Sheet has been prepared by SHE Pacific Pty Ltd on behalf of its clients.

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Reason(s) For Issue: Change in Hazard Category.

Change in Disposal Requirements.

Minor Text Changes.

Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

This MSDS summarises at the date of issue our best knowledge of the health and safety hazard information of the product, and in particular how to safely handle and use the product in the workplace. Since Orica Limited and its subsidiaries cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this MSDS in the context of how the user intends to handle and use the product in the workplace.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

Our responsibility for product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request.