



CCM CHEMICALS SDN BHD
PASIR GUDANG WORKS

SAFETY DATA SHEET

1. IDENTIFICATION OF THE HAZARDOUS CHEMICALS AND OF THE SUPPLIER

PRODUCT NAME : HYDROCHLORIC ACID, CONCENTRATED

Recommended use of the chemical and restrictions on use Used as an etchant in electronic PCB manufacturing, pickling of steel and pH correction in industrial waste water treatment.

Details of supplier
CCM Chemicals Sdn Bhd
Pasir Gudang Works
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Kawasan Perindustrian Pasir Gudang
81700 Pasir Gudang
Johor

Phone No. 07-2510562 / 2671333
Fax No. 07-2510560
Emergency Phone No. IN AN EMERGENCY DIAL 999
For specialist advice in an emergency, telephone 1-800-88-8565

2. HAZARD IDENTIFICATION

Physical Hazard Classes

Corrosive to metal : Category 1

Health Hazard Classes

Skin corrosion / Irritation : Category 1

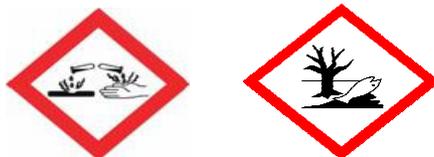
Serious Eye Damage : Category 1

Environmental Hazards

Hazardous to aquatic environment-Acute Toxicity : Category 1

Label Elements

Pictogram and Symbol



Signal word : **Danger**

Hazard Statement

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

H400 Very toxic to aquatic life

Precautionary Statement(s):**Prevention:**

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

Response:

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/shower.
P363 Wash contaminated clothing before re-use.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P321 Specific treatment (see First Aid Measures on SafetyData Sheet).
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P390 Absorb spillage to prevent material damage.

Storage:

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

Disposal:

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION AND INFORMATION OF THE INGREDIENTS OF THE HAZARDOUS CHEMICAL**PRODUCT DESCRIPTION**

Alternatives names : Aqueous hydrogen chloride, Muriatic acid

EEC No. : 231-595-7
EC Index No. : 017-002-01-X

HAZARDOUS INGREDIENTS (S)	CAS No.:	% (w/w)	Symbol	H Codes
Hydrochloric Acid	7647-01-0	Min 33	C	H314, H335
Water	7732-18-5	Max 77	-	-

4. FIRST AID MEASURES

4.1 DESCRIPTIONS OF FIRST AID MEASURES

General : Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential. **SPEED IS ESSENTIAL. OBTAIN IMMEDIATE MEDICAL ATTENTION.**

Inhalation : Remove victim from exposure. Administer artificial respiration only if breathing has ceased or shows sign of failing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance. During resuscitation, care must be taken to avoid contamination by the substance from patient. Give Cardiopulmonary Resuscitation (CPR) if there is no pulse AND no breathing. Obtain medical attention **IMMEDIATELY**. Symptoms may appear up to 48 hrs after exposure.

Skin Contact : Immediately drench skin with running water for a minimum of 15 minutes. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. Obtain medical attention **IMMEDIATELY**. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport. While the patient is being transported to a medical facility, apply compresses of iced water. If medical treatment must be delayed, immerse the affected area in iced water. If immersion is not practical, compresses of iced water can be applied. Avoid freezing tissues. Discard heavily contaminated clothing and shoes in a manner, which limits further exposure. Otherwise, wash clothing separately before reuse.

Eye Contact : **SPEED IS ESSENTIAL.** Immediately irrigate eyes with running water, eyewash solution or clean water for a minimum of 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention **IMMEDIATELY**. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Ingestion : **DO NOT INDUCE VOMITING.** If victim is alert and not convulsing, rinse mouth and give 200 to 300 mL of water to dilute substance. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. **IMMEDIATELY** transport victim to an emergency facility. Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing.

4.2 MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED

Contact with this material will cause burns to the skin, eyes and mucous membranes and risk of pulmonary oedema

4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY.

Treat symptomatically. Obtain medical assistance.

5. FIRE FIGHTING MEASURES

5.1 Suitable Extinguishing Media

Not combustible. Use extinguishing media suitable for surrounding fires. For large fires use extinguishing agents compatible with acid and appropriate for the burning material. All purpose type foam may be used according to foam manufacturer's recommended techniques. Use carbon dioxide or dry chemical media for

small fires. Do NOT use carbon dioxide, if cyanides are involved in fire. If only water is available, use it in the form of a fog.

5.2 Specific hazards arising from the chemical

Not combustible. During fire, gases hazardous to health may be formed (chlorine).

Fire and Explosion Hazards:

Reacts with many metals to liberate hydrogen gas, which can form explosive mixtures with air. Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any types of steel containers or tanks upon storage.

5.3 Special protective equipment and precautions for fire fighters

Fire Fighting Procedures:

As appropriate for surrounding materials/equipment. water spray should be used to cool containers. Water spray may be used to knock down escaping vapour.

Fire Fighting Protective Equipment:

Use self-contained breathing apparatus and special protective clothing.

Evacuation:

If tank, car or lorry is involved in a fire, ISOLATE for about 800 meters (1/2 mile) in all directions.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Keep people away from and upwind of spill/leak. Wear protective equipment to prevent skin and eye contact and breathing in vapours such as gloves, corrosion proof suit and respirator. In large scale spill or in enclosed space, wear gas-tight suit and self-contained breathing apparatus. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation.

6.2 Environmental precautions

Prevent discharge into drains, water courses or onto the ground.

6.3 Methods and materials for containment and cleaning up

● Small spills:

Cover with sand or other non-combustible material. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for disposal.

● Large spills:

Isolate spill or leak area immediately. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Prevent entry into sewers and confined areas. Absorb with inert material (absorbent pad, sand, earth, foamed polyurethane, lime stone, foamed concrete, etc.). If possible, neutralize contaminant at the spilled area with lime, limestone, sodium carbonate (soda ash), sodium bicarbonate, and dilute sodium hydroxide. Make sure all liquid has been thoroughly contacted and absorbed by the dry materials. Transfer absorbed spill material and any contaminated underlying soil to a suitable chemical waste container. Ensure adequate decontamination of tools and equipment following clean up. Washing down of spills with water is not recommended as this tends to spread the contamination and increases the likelihood of percolating the acid down through the soil and/or of uncontrolled flow of acid into sewers, streams, or other waters. Comply with national, state and local regulations.

7. HANDLING AND STORAGE

This material is regulated under Poison Act & Regulation 1952 and must be stored, maintained and used in accordance with the regulation.

7.1 Precautions for safe handling

Precautions for safe handling :Take all precautions to avoid personal contact. Prevent release of fumes into workplace atmosphere. Always ensure adequate ventilation in workplace areas. Safety shower and eyewash station should be close to chemical handling area. Always add acid to water during dilution.
CAUTION: When contact with metal, hydrogen which is a highly flammable gas, can accumulate to explosive concentrations. Keep away from common metals and oxidising agents.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing thoroughly before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, out of direct sunlight and away from heat sources. Restrict access to storage area. Do not store together with incompatible materials such as oxidizing materials, reducing materials and strong bases. Use corrosion-resistant structural materials.

Containers should be labelled and protected from damage. Containers must be equipped with ventilation and kept closed when not being used. Containers should have a safety relief valve. Care should be taken to release any internal pressure slowly.

Suitable container material:

Rubber-lined steel, PVC/FRP, FRP, are the most commonly used corrosion - resistant materials of construction at room temperature.

Small quantity can be stored in suitable plastic or glass containers. Use corrosion-resistant transfer equipment when dispensing.

Storage tanks should be above ground and surrounded with bund wall capable of holding 110% of contents.

Other Precautions:

If stored indoors, building floors should be acid resistant with drains to a treatment system. Electrical equipment should be flameproof and protected against corrosive action.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Occupational Exposure Limits

OSHA (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000

HAZARDOUS INGREDIENTS	TLV 8hr TWA		TLV-C	
	ppm	mg/m ³	ppm	mg/m ³
Hydrogen Chloride	-	-	5	7.5

US. ACGIH Threshold Limit Values

HAZARDOUS INGREDIENTS	TLV 8hr TWA		STEL-C	
	ppm	mg/m ³	ppm	mg/m ³
Hydrogen Chloride	-	-	2	-

Engineering Controls:

Local exhaust ventilation should be installed to reduce the exposure limit. Because of the high potential hazard associated with this substance, stringent control measures such as enclosure or isolation are recommended when dealing with large quantities.

PERSONAL PROTECTIVE EQUIPMENT**Eye and face:**

Wear chemical goggles and full face shield. Eye wash fountain or eye wash solutions and safety shower facilities should be located near to work area. Wear full face respirator if needed.

Skin Protection:

Wear appropriate impervious protective clothing, including boots, gloves, lab coat, apron or full body suit to prevent skin contact.

Respiratory Protection:

If facing concentrations above the exposure limit or unknown concentration, wear chemical cartridge respirator; or gas mask with canister; or powered air-purifying respirator; or Supplied Air Respirator (SAR); or Self-contained breathing apparatus (SCBA).

Atmospheric levels should be controlled in compliance with the occupational exposure limit.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear colourless liquid
Odour	: Characteristically pungent
pH	: Strong Acid (<1)
Melting point/Freezing Point (Deg C)	: -71°F(-57.22°C) to -17°F(-27°C)
Boiling Point	: 85°C
Flash point	: Not applicable
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits:	No data available
Vapour pressure	: No data available
Vapour density	: No data available
Relative density	: 33% - 1.163
Solubility (ies)	: Completely soluble
Partition coefficient:n-octanol/water	: No data available
Auto:ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available

10. STABILITY AND REACTIVITY**Reactivity**

Decomposes on exposure to temperature rise: release of (highly) toxic gases/vapours (chlorine).

On exposure to air: release of corrosive mist.

Reacts violently with (some) bases. Reacts exothermically with many compounds.

Reacts with (strong) oxidizers: release of (highly) toxic gases/vapours (chlorine).

Reacts with (some) metals: release of highly flammable gases/vapours (hydrogen).

Chemical Stability

Material is stable under normal conditions.

Conditions to avoid

Avoid heat, flames, sparks, other sources of ignition and incompatible materials.

Incompatible Materials

Concentrated hydrochloric acid is incompatible with many substances such as strong mineral acid and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, sulfuric acid and formaldehyde. Contact with metals will produce hydrogen gas which can form explosive mixtures with air. Can react violently if in contact with oxidising agents, liberating chlorine.

Hazardous Polymerization: Stable product under condition of normal use and does not polymerise.

Hazardous Decomposition Products:

When heated to decomposition, emits toxic hydrogen chloride fumes.

11. TOXICOLOGICAL INFORMATION**Acute toxicity:**

Harmful if swallowed

Inhalation

LC₅₀ (rat) : 4.2 – 4.7 mg/L in 1 hr

LC₅₀ (mouse) : 1.7 mg/L in 1 hr

Oral

LD50 (rat) : 238 – 277 mg/kg

LD50 (rabbit) : 900 mg/kg

Skin corrosion/irritation:

Causes severe skin burns

Serious eye damage or irritation:

Causes severe burns. Risk of serious damage to eyes. May cause permanent impairment of vision.

Respiratory or skin sensitisation:

Not expected to cause respiratory or skin sensitization reactions.

Germ cell mutagenicity:

hydrogen chloride does not have any significant mutagenic potential.

Carcinogenicity:

IARC has designated hydrochloric acid as being not classifiable as to its carcinogenicity to humans. i.e. category 3.

Reproductive toxicity:

No information is available

Specific Target Organ Toxicity (STOT)-single exposure:

May cause respiratory irritation

STOT-repeated exposure:

No data available

Aspiration hazard:

No data available

Inhalation:

Mist or vapour will cause irritation to the upper respiratory tract, coughing and choking sensation. Concentration of 50-100ppm is barely tolerated for up to 1 hour. Higher concentrations may cause corrosion of

the respiratory tract. Fluid build up on the lung (pulmonary oedema) may occur up to 48 hours after exposure and could prove fatal.

Ingestion:

Will immediately cause corrosion of and damage to the gastrointestinal tract.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result

11.3 Delayed and immediate effects and also chronic effects from short and long term exposure

Immediate effects

Corrosive to the eyes, skin and mucuous membrane. Acute inhalation may cause coughing, hoarseness, inflammation and ulceration of the respiratory tract, chest pain and pulmonary edema.

Delayed effects

Potential sequelae following ingestion include perforation, scarring of the oesophagus or stomach and stricture formation causing dysphagia or gastric outlet obstruction.

Chronic effects

Chronic occupational exposure has been reported to cause gastritis, chronic bronchitis, dermatitis and photosensitization.

Prolonged exposure to low concentration may cause dental discolouration and erosion.

12. ECOLOGICAL INFORMATION

Toxicity

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.

48hr EC₅₀ *Daphnia Magna* : pH 5.3 (0.492 mg/L)

96hr LC₅₀ *Gambusia affinis* : 282 mg/L

72h EC₅₀ *Pseudokirchneriella subcapitata* : pH 5.1(0.780 mg/L)

Persistence and Degradability

Hydrogen chloride in soil water dissociates almost completely, with the hydrogen ion captured by the water molecules to form the hydronium ion.

Bio accumulative potential

The product does not bio accumulate.

Mobility in soil

Liquid with high volatility. The product is soluble in water. The product is predicted to have high mobility in soil.

Effect of Effluent Treatment

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

13. DISPOSAL CONSIDERATIONS

Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals.

14. TRANSPORT INFORMATION

ROAD/RAIL

UN No.	:	1789
Proper shipping name	:	Hydrochloric Acid
ADR/RID Class	:	8
ADR/RID Item No.	:	5 (b)
Packing group	:	II

SEA (IMDG)

UN No.	:	1789
Proper shipping name	:	Hydrochloric Acid
IMDG Class	:	
- primary	:	8
UN Packing Group Sea	:	II
Packing group	:	II
Marine pollutant	:	Yes
EMS Code	:	F-A, S-B

AIR (IATA)

UN No.	:	1789
Proper shipping name	:	Hydrochloric Acid
ICAO/IATA Class	:	
- primary	:	8
UN Packing Group Air	:	II

SPECIAL PRECAUTIONS FOR USER

Before transportation, make sure that the containers are tightly sealed and that there are no liquid or gas leaks. When transporting containers, be sure that they are tightly fastened. An appropriate buffer material should be placed between them to prevent them from bumping each other and being damaged during transport.

15. REGULATORY INFORMATION

Malaysia Regulations:-

1. OSHA (CLASS Regulation 2013).
 2. OSHA (Use and Standard Exposure of Chemicals Hazardous to Health) Regulations 2000.
 3. Poison Act 1952
 4. Poison Regulations 1952
 5. Environmental Quality Act 1974
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16. OTHER INFORMATION

Information furnishes in this data sheet is accurate to the best of our knowledge, information at the time of printing. Information serve as guidance for the safe handling, usage, processing, storage, transportation, disposal and discharge and should not be assumed as guarantee or quality specification. Information are relevant to the mentioned substance and is not accurate if this substance is mix with other substances or into process unless stated above.

SDS Recent Revision Date : 15th May 2019
SDS Recent Revision : 7

This data sheet was prepared in accordance with OSH (CLASS) Regulations 2013

EEC No. : 215-185-5

Chemical Emergency Telephone Number : 1-800-88-8565

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