CHEMICAL INDUSTRIES (FAR EAST) LIMITED.
化学工业(远东)有限公司

Title	Doc. No.	TDC-SDS-Lab-H002
SDS – Hydrochloric Acid	Revision	M
	Date of issue	13 October 2022
Supersedes Revision L dated 08 Oct 2020	Page	1 of 7

SAFETY DATA SHEET (SDS)

HYDROCHLORIC ACID

Preface

Hydrochloric acid, aqueous, is a colorless to pale yellow fuming and corrosive liquid.

HCl and its fume are strong irritants of the eye, mucous membranes and skin. It can cause burns on any part of the body it comes in contact with. The mucous membranes of the eye and upper respiratory tract are particularly susceptible to irritation by hydrogen chloride fume coming from the material.

1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Product name	:	Hydrochloric acid
Chemical name	:	Hydrochloric acid
Chemical formula	:	HCl
Other names	:	Hydrochloric acid, aqueous / Muriatic acid
Company's name & address	:	Chemical industries (Far East) Limited
(head office)	:	3, Jalan Samulun, Jurong Town, Singapore 629127
		Tel: 6265 0411 Fax: 6265 6690 Email: chemical.ind@cil.sg
(manufacturing plant)	:	91, Sakra Avenue, Jurong Island, Singapore 627882
		Tel: 6867 6977 Fax: 6867 6972 Email: sakraplant@cil.sg
Emergency telephone number	:	6265 0411 or 6867 7433 (Manufacturing plant's control room)

2 HAZARD IDENTIFICATION

GHS CLASSIFICATION:

Corrosive to metals	:	Category 1
Acute Toxicity:		
Oral	:	Category 4
Dermal	:	Category 4
Inhalation	:	Category 4
Skin corrosion/irritation:	:	Category 1B
Serious eye damage/irritation:	:	Category 1
Skin sensitization:	:	Category 1
Carcinogenicity	:	Not classified
Reproductive toxicity:	:	Not classified
Specific target organ toxicity (single exposure):		Category 3
Specific target organ toxicity (repeated exposure):		Not classified

GHS label elements

Pictograms:

Signal word: Danger

Hazard Statement(s):

H290: May be corrosive to metals.

H302 + H312 + H332: Harmful if swallowed, in contact with skin or if inhaled

H314: Causes severe skin burns and eye damage

H318: Causes serious eye damage

H317: May cause allergic skin reaction

H335: May cause respiratory irritation

Precautionary Statement(s):

Prevention:

P233: Keep container tightly closed.

P234: Keep only in original packaging.

P260: Do not breathe fume/gas/mist/vapours/spray.

P264: Wash thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective glove, clothing, eye protection and face protection.

Response:

P301 + P317 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical help.

P302 + P354 + P317: IF ON SKIN: Immediately rinse with water for several minutes. Get medical help.

P361 + P364: Take off immediately all contaminated clothing and wash before reuse.

P333 + P317: IF SKIN irritation or rash occurs: Get medical help.

P304 + P340 + P317: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help.

P305 + P317 + P338 + P354: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical help.

P390: Absorb spillage to prevent material damage.

Storage and disposal:

P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

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

3 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients		CAS No.[1]	EC-No.[2]	EC-Index-No.[3]	Symbol / R-phrase	Content
Hydrochloric acid (HCl)	:	7647-01-0	231-595-7	017-002-01-X	C, R34 Xi, R37	≤ 38 %

C = Corrosive
R 34 = Causes burns
Xi = irritant
R 37 = irritating to respiratory system

4 FIRST-AID MEASURES

Types of contact…	First aid measures
Eye contact	Wash eyes thoroughly with water for at least 15 minutes with eyelids held widely open. Continue to wash with large amounts of water. Immediately summon for eye doctor / specialist.
Skin contact	Immediately wash off with plenty of water. Any clothing contaminated with HCl should be removed immediately and washed before re-use. Summon medical attention for serious exposure.
Inhalation	Remove victim from area of exposure to an area of fresh air and give oxygen if necessary. Allow victim to assume most comfortable position and keep warm. Summon medical attention.
Ingestion	If swallowed, DO NOT induce vomiting. If victim is conscious give plenty of water. Spontaneous vomiting may occur. Never give anything to an unconscious victim. Immediately summon medical attention.

Note: Speed in removing victim from contaminated area and removing HCl from eyes / skin are of primary importance.

5 FIRE-FIGHTING MEASURES

Fire-fighting media : Not combustible. However, if material is involved in a fire, use fine water spray and normal foam.

Protective equipment for fire-fighting : Fire fighters should use full protective clothing and full-face positive pressure self-contained breathing apparatus.

Special risks : Non-combustible but flammable hydrogen gas may form upon contact with metals (danger of explosion). Heating can cause expansion or decomposition of the material,

[1] CAS – Chemical Abstract Service
[2] EC No. – No. given by EC Commission
[3] EC Index No. – as per appendix 1 of the regulation 67/548/EC

which can lead to the containers exploding.
Contain escaping HCl fume with water spray. Prevent fire-fighting water contaminated with the substance to enter drains or sewerage systems.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions and protective equipment : Avoid contact with skin / eye. Do not inhale vapor / fume. Ensure supply of fresh air in enclosed room.
Use full protective clothing, rubber gloves, rubber boots, and eye goggles.

Procedure to stop / minimize :
1. Prevent further leakage if it is safe to do so.
2. For minor spill / leak, contain spills and soak up with suitable absorbent and forward to licensed waste disposal contractors for disposal.
3. For the contained spill / leak, render harmless by careful neutralization with dilute sodium hydroxide solution, or by throwing on slaked lime / soda ash / limestone. Assistance can be obtained from licensed waste disposal contractors / supplier.
4. If major spill / leak is not under control, inform SCDF / fire brigade / police./ supplier
5. Stay upwind, and evacuate if required.
6. Clean up affected area.

Method to clean up : Collect or flush with water to holding area for neutralization. Render harmless the recovered substance / water washing by careful neutralizing using dilute sodium hydroxide solution, or by throwing on slaked lime / soda ash / limestone.
Dispose in accordance to current local disposal regulations.
(In Singapore, The Environmental Public Health (Toxic industrial waste) Regulations.)

Environmental precautions : Prevent liquid from entering sewer, surface water, ground water and soil. Advise authorities if substance has entered a watercourse / drain / soil.

7 HANDLING & STORAGE

Usual shipping containers : Hard rubber lined steel tankers, polyethylene drums / carboys.

Handling : Keep containers closed. Handle containers with care. Container remains hazardous when empty. Do not wash out containers and use it for other purpose. Continue to observe all precautions until it had been properly washed.
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.

Storage : Do not use metal containers. Store at ambient temperature and in a well-ventilated area away from incompatible materials (see also section 10). Keep away from source of heat / ignition. Protect from direct sunlight.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls : Provide adequate general and/or local ventilation in areas of storage and use where HCl fume is present to meet PEL (personal exposure limit) requirements.
Provide water supply / emergency eyewash / shower near area of handling.

Safe work practices / industrial hygiene : Wash hands and face after working with the substance, and before eating / drinking. Immediately remove contaminated clothing. Wash before re-using.

Personal protection

1. Eye protection : Use safety goggle / face shield.
2. Skin protection : Use rubber gloves, acid-resistant protective clothing and rubber boots. Chemical resistance of materials should be ascertained with the vendor.
3. Respiratory protection : Use approved half-face filter respirator suitable for the substance to be worn when vapor / fume of the material is present.
4. Other protective equipment : Uniform, apron, long-sleeved lab coat

Occupational exposure standards : TWA 8 hours = data not available

STEL = 5 ppm (Singapore permissible exposure limit)

(TWA – time weighted average, STEL – Short term exposure limit)

9 PHYSICAL & CHEMICAL PROPERTIES

Appearance		:	Clear, colorless to pale yellow liquid Fuming when conc. above 20% HCl.
Boiling point (at 1013 hPa)		:	About 50°C (for 37% HCl) about 84°C (for 32% HCl)
Melting point		:	Not available
Vapor pressure (at 20°C)		:	190 hPa (for 37% HCl) 21 hPa (for 32% HCl)
Specific gravity (at 20°C)		:	< 1.19
Solubility in water (at 20°C)		:	Completely soluble
Corrosiveness		:	Material is highly corrosive to most metals with the release of hydrogen gas, which is highly flammable when mixed with air.
Viscosity (dynamic, at 20°C)		:	2.3 mPa*s
Evaporation rate		:	Not available
Vapor density		:	Not available
Odor		:	Pungent, sharp & irritating
pH (at 100 g/l, 20°C)		:	< 1
Flash point		:	Not applicable
Explosive limits	lower	:	Not applicable
	upper	:	Not applicable
Auto-ignition temperature		:	Not applicable
Molecular weight		:	36.5

10 STABILITY & REACTIVITY

Stability	:	Stable under ambient conditions
Conditions to avoid instability	:	Heat
Hazardous decomposition products	:	HCl fume due to vaporization. Hydrogen gas when reacted with metals (See section 5)
Conditions to avoid polymerization	:	No information available
Materials & conditions to avoid (incompatibility)	:	Metals / alkali metals / metal oxides / metal hydroxides / amines / carbides / hydrides / carbonates / fluorine / strong alkalis, conc. Sulfuric acid / conc. Nitric acid
Further information	:	Avoid metals / alloy metals in working materials.

11 TOXICOLOGICAL INFORMATION

Oral Toxicity		LD_{50} (oral, rabbit) – 900 mg/kg
Dermal toxicity		LD_{50} (dermal, mouse) – 1449 mg/kg
Inhalation toxicity	:	LC_{50} (inhalation, rat) – 3124 ppm vol / 1 hour (calculated on pure substance)
Further data	:	Further hazardous properties cannot be excluded. Handle with usual care when dealing with chemicals. See also section 2 on effects on health.

12 ECOLOGICAL INFORMATION

Ecotoxicity	:	Harmful effect on aquatic organisms due to pH shift. Corrosive even when diluted. Toxic effect on fish (lethal when > 25 mg/l) & plankton. Does not cause biological oxygen deficit. Can damage plant growth (harmful when > 6 mg/l)
Further ecological data	:	Prevent liquid from entering sewer, surface water, ground water and soil. Advise authorities if substance has entered a watercourse / drain / soil.

13 DISPOSAL CONSIDERATIONS

Considerations : Do not dispose substance directly to sewerage, ground-water and surface-water system. Render harmless the recovered substance / water washing by careful neutralizing using dilute sodium hydroxide solution, or by throwing on slaked lime / soda ash / limestone. Consult approved waste collectors for disposal.

Singapore regulations : Dispose in accordance to current local disposal regulations.
(In Singapore, The Environmental Public Health (Toxic industrial waste) Regulations)

14 TRANSPORT INFORMATION

Proper shipping name (for land / sea / air) : HYDROCHLORIC ACID

	UN No.[4]	Hazard class	Packing Group
Land [The Environmental Pollution Control (Hazardous substances) Regulations]	1789	8	II
Sea (PSA[5]/IMDG[6]/IMO[7])	1789	8	II
Air (ICAO[8] /IATA[9])	1789	8	II

15 REGULATORY INFORMATION

In Singapore:

Import & sale of hazardous substances	:	Environmental Protection and Management (Hazardous Substances) Regulations	
Disposal of obsolete / expired chemicals / waste	:	Environmental Public Health (Toxic Industrial Waste) Regulations	
Symbol	:	C	Corrosive
R-phases	:	R 34, 37	Causes burns. Irritating to respiratory system.
S-phases	:	S 26-36/37/39-45	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

	Hazard type	Hazard class.	UN No.	Hazchem code
Hydrochloric acid (HCl)	Corrosive	8	1789	2R

NFPA rating[10]	Health	Reactivity	Flammability	Other
	3	0	0	ACID

"ACID" = acid

[4] UN No. – No. issued by United Nations Subcommittee Experts
[5] PSA – Grouping of dangerous goods by Port Of Singapore Authority
[6] IMDG – International Maritime Dangerous Goods
[7] IMO – International Maritime Organisation
[8] ICAO – International Civil Aviation Organisation
[9] IATA – International Air Transport Association
[10] NFPA rating – rating according to National Fire Protection Agency

16	OTHER INFORMATION

Revision No.	Date of issue	Description of changes
M	13 October 2022	Amended the information of Packing Group under Section 14.
L	08 October 2020	Amended hazard statements and precautionary statements to align with GHS Revision 8. Amended 'Acute toxicity' to 'Inhalation toxicity' under Section 11.
K	17 September 2020	Amended hazard statements, precautionary statements, and pictograms
J	26 June 2020	Included pictogram for acute toxicity, revised acute toxicities of oral, dermal and inhalation, revised hazard statements and toxicological information
I	19 February 2020	Overall reviewed
H	22 October 2015	Amend company contact details. Addition of GHS Label
G	03 July 2014	Overall reviewed
F	January 2011	Add GHS Classification, GHS labels and overall reviewed and updated according to SS 586 : Part 3 : 2008
E	Aug 2008	Document Title change to Safety Data Sheet, Section No.2 to 3 and 3 to 2. Changed Section 15 "Environmental Pollution Control (Hazardous Substances) Regulations" to "Environmental Protection and Management (Hazardous Substances) Regulations. Reviewed on section 16 according to guideline on preparation.(S134/2006)
D	Sept 2005	Complete review and deleted ISO logo
C	Feb 2003	Complete review; re-format to guidelines in The Code Of Practice for preparation and use of MSDS; up-date of manufacturer & supplier's contacts; included NFPA ratings; MSDS revision identification changed from "number" to "alphabet" format.
B	July 1999	Up-dating of manufacturer & supplier's contacts
A	July 1997	Initial release