



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

Title SDS – Sodium Hydroxide Solution	Doc. No.	TDC-SDS-Lab-S006
	Revision	L
	Date of issue	22 April 2024
Superseded Revision K dated 13 October 2022	Page	1 of 7

SAFETY DATA SHEET (SDS)

SODIUM HYDROXIDE SOLUTION

Preface

Sodium hydroxide solution (liquid caustic soda) is classified as a corrosive liquid and can cause severe burns. It is manufactured from the electrolysis of sodium chloride solution.

Whether in liquid or solid form, it causes burns on contact with body tissues, frequently with deep ulceration and ultimately scarring. Multiple small burns can result from exposure to its dust / mist, and contact with the eyes very rapidly causes severe damage. Ingestion results in severe damage to the mucous membranes or deeper tissues and death may result.

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1	CHEMICAL PRODUCT & COMPANY IDENTIFICATION
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Product name : Sodium hydroxide solution

Chemical name : Sodium hydroxide

Chemical formula : NaOH

Other names : Liquid caustic soda, Caustic Soda Solution, Soda lye solution

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
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GHS CLASSIFICATION :

Corrosive to metals : Category 1

Skin corrosion : Category 1A

Acute Toxicity:

Oral : Category 4

Dermal: Category 4

Inhalation : Not classified

Skin corrosion/irritation: Category 1A

Serious eye damage/irritation : Category 1

Skin sensitization: Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

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: Harmful if swallowed.

H314: Causes severe skin burns and eye damage

Precautionary Statement(s):

Prevention:

P234: Keep only in original container.

P260: Do not breathe in dust, fume, gas, mist, vapors or spray

P264: Wash face, hands and any exposed skin thoroughly after handling.

P273: Avoid release to the environment.

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

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Response:

P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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 CENTRE or doctor/physician.

P390: Absorb spill to prevent material damage.

Storage and disposal:

P403: Store in a well-ventilated place.

P405: Store locked up.

P501: Dispose of contents/container to comply with local, state and federal regulations

3	COMPOSITION / INFORMATION ON INGREDIENTS
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Ingredients	CAS No. ¹	EC-No. ²	EC-Index-No. ³	Symbol / R-phrase	Content
Sodium hydroxide (NaOH)	: 1310-73-2	215-185-5	011-002-00-6	C, R35 C = Corrosive R 35 = Causes severe burns	≤ 50 %

4	FIRST-AID MEASURES
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Types of contact...	First aid measures
Eye contact	Wash eyes thoroughly with water for at least 15 minutes with eyelids held widely open. Immediately summon for eye doctor / specialist.
Skin contact	Immediately wash off with plenty of water while removing all contaminated clothes and shoes. Summon medical attention for serious exposure.
Inhalation	Remove the victim into fresh air. If breathing is difficult, give oxygen. Allow victim to assume most comfortable position and keep warm. Summon medical attention.
Ingestion	Immediately rinse mouth with water. If swallowed, do NOT induce vomiting. If conscious, give plenty of water. Immediately summon medical attention.

Note: Speed in removing NaOH is of primary importance. Signs and symptoms of irritation are not evident immediately after contact with NaOH. Injury may result before one realizes that the chemical has contacted the body.

5	FIRE-FIGHTING MEASURES
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Fire-fighting media : Substance is non flammable; use agent most appropriate to extinguish surrounding fire.

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. Substance itself does not burn but may decompose upon heating or involved in fire to produce corrosive and/or toxic fumes. Violent exothermic reaction with (some) acids. Contacts with metals may release highly flammable gases/vapours (hydrogen). Prevent fire-fighting water contaminated with the substance to enter drains or sewerage systems.

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

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6	ACCIDENTAL RELEASE MEASURES
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- Personal protective equipment : Avoid contact with skin, eyes and clothing. 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, neutralize with acid solution. 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. Clean up affected area with plenty of water.
- Method to clean up : Soak up with inert absorbent material, eg. Dry sand or powdered limestone. For small quantities of liquid spill: neutralize with dilute acid solution and wash away neutralized product with plenty of water.
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
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- Usual shipping containers : Steel (stainless steel / carbon steel) tankers, polyethylene drums / carboys.
- Handling : Keep containers closed. Handle containers with care. Container remains hazardous when empty. Continue to observe all precautions until it had been properly washed.
- Storage : Store at ambient temperature, out of direct sunlight and in a well-ventilated area away from incompatible materials (see also section 10). Keep away from source of heat / ignition.

8	EXPOSURE CONTROLS / PERSONAL PROTECTION
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- Engineering controls : Provide adequate general and/or local ventilation in areas of storage and use where caustic soda dust/mist 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 : Wear safety goggle / face shield.
 2. Skin protection : Wear rubber gloves, 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 dust / mist is present above permissible limits.
 4. Other protective equipment : Uniform, apron, long-sleeved lab coat
- Occupational exposure standards :
 TWA 8 hours = Data not available
 STEL = 2 ppm (Singapore permissible exposure limit)
 (TWA – time weighted average, STEL – Short term exposure limit)

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9	PHYSICAL & CHEMICAL PROPERTIES
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Appearance : Clear, colorless liquid
 Boiling point : About 143 °C (at 1013 hPa)
 Melting point : 12°C
 Vapor pressure (at 20°C) : 2 hPa
 Specific gravity (at 20°C) : < 1.53
 Solubility in water (at 20°C) : Completely soluble
 Viscosity (dynamic, at 20°C) : 79 mPa*s
 Evaporation rate : No data available
 Vapor density : No data available

Odor : Odorless
 pH (at 100 g/l, 20°C) : > 14
 Flash point : Not applicable
 Explosive limits lower : Not applicable
 upper : Not applicable
 Auto-ignition temperature : Not applicable
 Flammability : Not applicable
 Molecular weight : 40.0

10	STABILITY & REACTIVITY
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Reactivity : No information available
 Stability : Stable under recommended storage conditions
 Possibility of hazardous reactions : No information available
 Conditions to avoid instability : Incompatible products. Excess heat. Exposure to air. Exposure to moist air or water. Direct sunlight.
 Incompatible materials : Metals / light metals (formation of hydrogen gas, risk of explosion) e.g. Aluminium, Zinc
 Ammonium compounds (formation of ammonia)
 Acids (violent reaction with heat generation)
 Many organic chemicals especially nitrocarbons & halogenated hydrocarbons.
 Hazardous decomposition products : No information available

11	TOXICOLOGICAL INFORMATION
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Acute oral toxicity
 Symptoms : If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.
 Specific symptoms in animal studies : Eye irritation test (rabbit) – burns
 Skin irritation test (rabbit) – burns. Dermal (LD50):1350mg/kg [Rabbit]
 Further data : Further hazardous properties cannot be excluded. Handle with usual care when dealing with chemicals. See also section 2 on effects on health.

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12	ECOLOGICAL INFORMATION
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Ecotoxicity : Toxic effect on fish & plankton. Harmful effect due to pH shift. Possible death to fish. Does not cause biological oxygen deficit. Avoid contaminating waterways.

Fish toxicity : No data available.

13	DISPOSAL CONSIDERATIONS
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Considerations : Do not dispose substance directly to sewerage, ground-water and surface-water system. 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
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Proper shipping name (for land / sea / air) : SODIUM HYDROXIDE SOLUTION

	UN No. ⁴	Hazard class	Packing Group
<u>Land</u> [The Environmental Pollution Control (Hazardous substances) Regulations]	1824	8	II
<u>Sea</u> (PSA ⁵ /IMDG ⁶ / IMO ⁷)	1824	8	II
<u>Air</u> (ICAO ⁸ /IATA ⁹)	1824	8	II

15	REGULATORY INFORMATION
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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 35 Causes severe burns

S-phases : 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 the label where possible)

	Hazard type	Hazard class.	UN No.	Hazchem code
Sodium hydroxide (NaOH)	Corrosive	8	1824	2R

NFPA rating ¹⁰	Health	Reactivity	Flammability	Other
	3	1	0	ALK
				ALK = alkali

⁴ UN No. – No. Issued by United Nations Subcommittee of 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

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16	OTHER INFORMATION
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Revision No.	Date of issue	Description of changes
L	22 April 2024	Overall Review
K	13 October 2022	Amended the information of Packing Group under Section 14
J	19 February 2020	Overall Review
I	22 May 2018	Overall Review
H	08 October 2015	Amend company contact information
G	03 July 2014	Revised and amend section 2 and 11
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, Changed Section No.2 & 3, 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	8 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