



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

Title SDS –Sodium Hypochlorite Solution <i>Superseded Revision A dated 19 June 2017</i>	Doc. No.	TDC-SDS-Lab-S025
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SAFETY DATA SHEET (SDS)

SODIUM HYPOCHLORITE SOLUTION (5-6.5%)

Preface

Sodium hypochlorite is unstable in air unless mixed with sodium hydroxide. It is a strong oxidizing agent, and is usually stored and used in solution. It has a greenish yellow color and an unpleasant, disagreeing odor. Although soluble in cold water, it decomposes when heated.

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

Chemical name : Sodium hypochlorite

Chemical formula : NaOCl

Other names : Soda bleaching lye, liquid bleach

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, H 290

Acute Toxicity :

Oral : Category 1

Dermal: Category 1A

Inhalation : Category 3

Skin corrosion/irritation: Category 1A

Serious eye damage/irritation : Category 1A

Skin sensitization: Category 1

Carcinogenicity : Not classified

Specific target organ toxicity (single exposure) : Category 3

Acute aquatic toxicity : Category 1

GHS label elements Pictograms:



Signal word:

Danger

Hazard statement	Precautionary statements		
	Prevention	Response	Storage and disposal
H290: Corrosive to metals.	P233:Keep container tightly close. P202:Do not handle until all safety precaution have been read and understood.		P403:Store in a well ventilated place. P233:Keep container closed.
H314:Causes severe skin burns and eye damage. H318:Serious eye damage H 335 : May cause respiratory irritation.	P262:Do not get in eye,on skin or on clothing. P280:wear protective gloves,clothings,eye protection/face protection. P264:wash throughly after handling. P260 : Do not breathe vapour/spray.	P303+P361+P353+P363:If on skin(see section 4,First aid measure). P305+P351+P338:In eye:Rinse cautiously (see section 4.).	P501:Dispose of contents/container in accordance with Singapore regulations.
H302:harmful if swallow.	P270:Do not eat,drink or smoke when using this products.	P301+P330+P331: If swallow:(see section 4,First aid measure).	
H401: Harmful to aquatic life.	P273: Avoid release to environments.	P390:Absorb spill to prevent material damage.	

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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 hypochlorite (NaOCl)	: 7681-52-9	231-668-3	017-011-00-1	C, R31, R34	5-6.5 %
Water	: 7732-18-5	231-791-2	-	-	Balance

C = Corrosive R 34 = Causes burns
R 31 = Contact with acids liberates toxic gas

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. Any clothing contaminated with sodium hypochlorite should be removed immediately and washed before re-use. Summon medical attention for serious exposure.
Inhalation	Remove to fresh air and give oxygen if necessary. Summon medical attention.
Ingestion	Don't induce vomiting. If victim is conscious give plenty of water. Avoid spontaneous vomiting, which may occur. Never give anything to an unconscious victim. Immediately summon medical attention.

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

5	FIRE-FIGHTING MEASURES
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Fire-fighting media	: Suitable fire-fighting media for surrounding fire should be provided as there is no fire or explosion hazards exist directly from sodium hypochlorite.
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 surrounding fire may liberate hazardous vapors. In the event of fire, chlorine / hydrochloric acid may develop.
Other information	: Prevent fire-fighting water from entering surface water or groundwater. Cool container with spray water from a safe distance. Contain escaping vapors with water.

6	ACCIDENTAL RELEASE MEASURES
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Personal protective equipment	: Avoid contact with skin / eye. Do not inhale vapour / aerosols. 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 addition of a suitable reducing agent, such as sodium thiosulfate 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

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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5. Clean up affected area.

- Method to clean up : Collect or flush with water to holding area. Render harmless the recovered substance / water washing by careful addition of a suitable reducing agent, such as sodium thiosulfate solution. 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 : FRP (fiber-reinforced plastic) / polyethylene tankers; polyethylene drums / carboys.
- Handling : Containers may be under pressure. Sensitive to light. Has limited shelf life. Keep containers closed. Handle containers with care. Container remains hazardous when empty. Continue to observe all precautions until it had been properly washed.
- 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 light and source of heat / ignition.
May decompose forming oxygen gas when stored over long period. Closed containers may be under pressure. Open with care / use container caps with vent, if available.

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 sodium hypochlorite vapor 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
- Eye protection : Use safety goggle / face shield.
- Skin protection : Use rubber gloves, protective clothing and rubber boots. Chemical resistance of materials should be ascertained with the vendor.
- Other protective equipment : Uniform, apron, long-sleeved lab coat
- If determined by a risk assessment that an inhalation risk exist or where sodium hypochlorite vapor is present, use approved half-face filter respirator or an air supplied respirator.
- Occupational exposure standards : TWA 8 hours = data not available (TWA – time weighted average)
STEL = data not available (STEL – Short term exposure limit)

9	PHYSICAL & CHEMICAL PROPERTIES
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- Appearance : Clear, greenish-yellow liquid
- Boiling point (at 1013 hPa) : 96 –99°C
- Melting point : - 16°C
- Vapor pressure (at 20°C) : About 25 hPa
- Specific gravity (at 20°C) : 1.07 – 1.11
- Solubility in water (at 20°C) : Completely soluble
- Corrosiveness : Material is a strong oxidizing agent. Will react with acids violently to release chlorine gas.
- Viscosity (dynamic, at 20°C) : 2.6 mPa*s
- Evaporation rate : Not available

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Vapor density	:	Not available
Odor	:	Disagreeing odor (like chlorine)
pH (at 120 g/l, 20°C)	:	About 12
Flash point	:	Not applicable
Explosive limits	lower	: Not applicable
	upper	: Not applicable
Auto-ignition temperature	:	Not applicable
Molecular weight	:	74.44

10	STABILITY & REACTIVITY
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Stability	:	Unstable (when warmed)
Conditions to avoid instability	:	Heat, light, low pH
Hazardous decomposition products	:	Chlorine gas (when mixed with acids) Oxygen gas (over prolonged storage) Hazardous gases (when mixed with ammonium or ammonia containing compounds)
Conditions to avoid polymerization	:	Polymerization will not occur.
Materials & conditions to avoid (incompatibility)	:	Metals / acids / ammonium or ammonia containing compounds / organic compounds / reducing agents / hydrogen peroxides / permanganates.
Further information	:	Material is light sensitive. Avoid metals in working materials.

11	TOXICOLOGICAL INFORMATION
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Acute toxicity	:	LC ₅₀ (oral, rat) – 8200 mg/kg (calculated on pure substance) Eye irritation test (rabbit) – burns Skin irritation test (rabbit) – burns No sensitization effect in man. Non-carcinogenic in animal experiments.
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
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Ecotoxicity	:	Harmful effect on aquatic organisms due to pH shift. Corrosive even when diluted.
Fish toxicity	:	Onchorhynchus mykiss LC ₅₀ : 0.07 mg/l / 48 h (calculated on pure substance)
Daphnia toxicity	:	Daphnia magna EC ₅₀ : 0.07 – 0.7 mg/l / 24 h (calculated on pure substance)
Bacterial toxicity	:	Photobacterium phosphoreum EC ₅₀ : 100 mg/l / 15 min (calculated on pure substance)
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
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Considerations	:	Do not dispose substance directly to sewerage, ground-water and surface-water system. Render harmless the recovered substance / water washing by careful addition of a suitable reducing agent, such as sodium thiosulfate solution. 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)

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14	TRANSPORT INFORMATION
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Proper shipping name : SODIUM HYPOCHLORITE SOLUTION
(for land / sea / air)

	UN No. ⁴	Hazard class	PSA Group ⁵
<u>Land</u> [The Environmental Pollution Control (Hazardous substances) Regulations]	1791	8	III
<u>Sea</u> (IMDG ⁶ / IMO ⁷)	1791	8	III
<u>Air</u> (ICAO ⁸ / IATA ⁹)	1791	8	III

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 31-34 Contact with acids liberates toxic gas. Causes burns.

S-phases : S 26-28-36/37/39-45-50 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. 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). Do not mix with acids.

	Hazard type	Hazard class.	UN No.	Hazchem code
Sodium hypochlorite (NaOCl)	Corrosive	8	1791	2R

NFPA rating ¹⁰	Health	Reactivity	Flammability	Other
	3	0	0	OXY
"OXY" = oxidizing agent				

⁴ UN No. – No. issued by United Nations Subcommittee Experts

⁵ PSA Group – 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
D	May 2023	Overall review
C	June 2021	Change Section 9 of physical & chemical properties to 1.07-1.11 (Specific Gravity at 20°C)
B	August 2017	Change Section 3 of the composition & information of ingredients to 5-6.5%
A	June 2017	Initial release