



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

Title SDS – Sodium Hypochlorite Solution <i>Supersedes Revision J dated 19 Feb 2020</i>	Doc. No.	TDC-SDS-Lab S007
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SAFETY DATA SHEET (SDS)

SODIUM HYPOCHLORITE SOLUTION

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	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 thoroughly 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	≤ 16 %
					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 5. Clean up affected area.

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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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) : 1.18 – 1.22

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

Vapor density : Not available

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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	Packing Group
<u>Land</u> [The Environmental Pollution Control (Hazardous substances) Regulations]	1791	8	II
<u>Sea</u> (PSA ⁵ /IMDG ⁶ / IMO ⁷)	1791	8	II
<u>Air</u> (ICAO ⁸ /IATA ⁹)	1791	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 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
L	13 October 2022	Amended the information of Packing Group under Section 14
K	19 February 2020	Overall reviewed
J	13 November 2018	Add H401:Harmful to aquatic life pictogram
I	15 July 2016	Amendment of personal protection. To only wear the approved half-face filter respirator only if the risk assessment requires it.
H	25 September 2015	Amendment of GHS label element pictogram
G	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