


Taiwan Chlorine Industries Ltd.
SAFETY DATA SHEET (SDS)

SDS-TCI- Rev.4

I. Identification

Product Name : Sodium Hypochlorite
Other Names: Sodium Hypochlorite/Aqueous Solution
Recommended use and restrictions on use : It can be used for disinfection and sterilization of tap water and swimming pool water. Do not mix with acids or it will emit harmful chlorine gas.
Names, addresses, and phone numbers of the manufacturer or supplier : Taiwan Chlorine Industries Ltd. 25 Chung Chih Street, Hsiao Kang District Kaohsiung Tel. (07) 8715171
Emergency contact phone numbers : Tel: 07-8716923 Fax: 07-8717289

II. Hazards identification

A. Product hazard class : Acute toxicity: oral (category 5), Corrosive to metals (category 1), Skin corrosion/irritation (category 1), Serious eye damage/eye irritation (category 1) Aquatic toxicity: Acute (category 1)
B. Label content : Hazard Symbol :  Signal Words : Danger Hazard Statements : May be harmful if swallowed May be corrosive to metals Cause severe skin burns and eye damage Toxic to aquatic life PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE : 1. Wear appropriate personal protective equipment when handling this product. 2. Avoid contacting with eyes or skin. Once it happens, rinse with clean water for at least 15 minute and sent to hospital for further treatment. 3. Prevent the chemical from heat, sunshine or mix with acids, or that will decompose, release chlorine and cause injury and pollution on environment. 4. Once a leakage happens, use a great amount of water to flush it into the wastewater treatment system. Do not neutralize bleach with an acid directly, or that will release chlorine and cause environmental pollution.
Other hazards : Symptoms : Stimulation of the flu, cough, skin irritation and inflammation, blisters, and the eyes burns. Special hazards : Similar to main symptoms of chlorine : Cough, difficult breathing, nausea, vomit , teeth discoloration and erosion.

III. Composition/information on ingredients

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Mixtures :

Chinese and English name : 次氯酸钠 / Sodium Hypochlorite			
Synonyms : Sodium Hypochlorite / Aqueous Solution Bleach			
Chemical Abstract Service No. (CAS No.) : --			
Chinese and English names of the hazardous ingredients	Concentration (ingredient percentage)	(CAS NO.)	Hazard class and Symbol
SODIUM HYPOCHLORITE	12% (available Cl ₂)	7681-52-9	8
SODIUM HYDROXIDE	1%	1310-73-2	8
Sodium Chloride	10%	7647-14-5	
Water	77%	7732-18-5	
Hazardous composition (ingredient percentage) : 12% available Cl ₂ ; 1% NaOH			

IV. First-aid measures

The first aid measures for different exposure routes :

A. INHALATION :

Remove the injured to fresh air place. If he/she can not breathe, give an artificial respiration right away. If the cardiac arrest, offer a CPR and rush to hospital immediately.

B. SKIN CONTACT :

1. Remove polluted clothes, shoes, leather materials and continue to flush the skin with clean water at least 15 minutes till the slippery caustic is gone.
2. Contact a physician right away as further treatment will be necessary.

C. EYE CONTACT :

1. If wear contact lenses, then remove them first.
2. Flush the affected eye with a gentle stream of warm water at least 15 minutes.
3. Be careful not to let the effluent flow into the unaffected eye.
4. Contact a physician right away as further treatment will be necessary.

D. INGESTION :

1. Never feed an unconscious or convulsing person anything via mouth.
2. Let the injured drink 240 ~ 300 cc. of water. Do not induce vomit.
3. If the injured can not breathe, offer an artificial respiration. If the cardiac arrest, do a CPR and rush to hospital immediately.

The most important symptoms and hazardous effects :

Its corrosion may cause severe burns and irreversible eye damage.

Chlorine itself may cause pulmonary edema.

The protection of first-aiders : Wear [C] class suit in the warm zone for emergency treatment.

Notes to physicians : 「Oxygen」 may be supplied if inhaled. Do Not induce vomit.

V. Fire-fighting measures

Suitable fire extinguishing media: Chemical powder, carbon dioxide, water spray, foam.
(Sodium hypochlorite itself is noncombustible.)

Specific hazards may be encountered during fire-fighting: Sodium hypochlorite may decompose and release chlorine.

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Special fire-fighting methods :

1. High temperature on the fire scene probably make the bleach release chlorine, so put out the fire at a safe and isolated area.
2. Remove storage containers out of the fire scene if possible.

Special equipment for the protection of firefighters: Fire-fighters must wear self-contained breathing apparatus and full protective clothing when fighting chemical fires.

VI. Accidental release measures

Personal precautions :

1. No one is allowed to access to the spilled area until it is cleaned.
2. Only the trained people are responsible for cleaning up.
3. Put on appropriate personal protective equipment.

Environmental precautions : --

Methods for cleaning up :

1. Use appropriate kits to stop leaking or minimize the leaking quantity.
2. Avoid flowing into sewers and ditches.
3. Cover the spilled caustic with sand, mud or other inert materials and re-loaded into proper containers for further treatment.

VII. Handling and storage

Handling :

1. Avoid inhaling and contacting with eyes and skin or clothes.
2. Put on appropriate personal protective equipment.
3. In order to avoid severe reaction, the substance must be added to the water and water don't be added to the substance.

Storage :

1. Store in non-metallic containers and keep them in a cool and dry place. Storage Containers should be labeled the following regulations.
2. Containers are required to be inspected regularly and keep in a well-ventilated place.
3. Avoid coexisting with other incompatible materials.

VIII. Exposure controls/personal protection

Engineering controls :

Use positive-pressure and air supplied respirator when operating in a poor-ventilated place.

Control parameters :

1. 8-hour Time-Weighted Average TWA : --
2. Short-Term Exposure Limit STEL : --
3. Maximum exposure limits (CEILING) : --
4. Biological indicators BEIs : --

PERSONAL PROTECTIVE EQUIPMENT :

RESPIRATORY PROTECTION : Positive-pressure, air-supplied respirator.

HAND PROTECTION : Impermeable gloves.

EYE PROTECTION : Goggles, face shield.

SKIN AND BODY PROTECTION : Chemical suits, boots, aprons, sprinkler.

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Hygiene measures :
1. Smoking and eating is prohibited in workplace. Be sure to wash hands thoroughly after finished handling this chemical.
2. Polluted clothes is discarded or well cleaned before re-put on, and make sure the laundry people are well informed of the dangers of pollutants.
3. Maintain the workplace clean.

IX. Physical and chemical properties

Appearance : Clear, pale yellow or greenish yellow	Odor: Chlorine, Bleach-like odor.
Odor threshold : --	Melting point : --
PH value : Approx. 13	Boiling pt./Boiling point range : 96~120°C
Flammability (solid / gas) : --	Flashing point : --
Decomposition temperature : 40 °C	Test method : <input type="checkbox"/> open cup <input type="checkbox"/> closed Cup
Auto-ignition temperature : --	Explosive limits : --
Vapor pressure : 17.5 mmHG @ 20°C	Vapor density(air=1) : --
Specific Gravity (Water=1): 1.21 @ 20°C	Solubility : Infinite
Partition coefficient :n-Octanol / water : (log/Kow) --	Evaporation rate : --

X. Stability and reactivity

Stability: Stable in normal condition.
Possible hazardous reactions under specific conditions : Avoid mixing with acids (liberates chlorine).
Conditions to avoid: The storage place with temperature over 40°C, direct sunlight exposure and mixing with acids.
Materials to avoid: Organic materials, acids, urea, ammonia, metals like magnesium, galvanized zinc, brass and bronze, nickel and iron.
Hazardous decomposition products : Chlorine.

XI. Toxicological information

Routes of exposure: INHALATION, INGESTION, SKIN CONTACT, EYE CONTACT.
Symptoms: Cough, difficult breathing, nausea, dental discoloration and erosion.
Acute Toxicity : Skin: Bleach droplet or solution will stimulate the skin and cause severe burns or eczema. Inhalation: The chlorine released from the mixing with acid will stimulate nose and throat, or even make lung injured if its concentration is high. Ingestion: May destroy mucous membrane and cause swelling of the throat. Eyes: Bleach droplet or solution will stimulate the skin and cause severe burns or eczema. LD50(Test animals, absorption means) : 8.91 gr/kg (Rat, oral) LC50(Test animals, absorption means) : --
Chronic toxicity or long term toxicity: Lead to dermatitis or may affect the respiratory system.

XII. Ecological information

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ECOTOXICOLOGICAL : LC50 (fish) : 94.0 µg/L/ 96H (Oncorhynchus clarki) EC50(Aquatic invertebrates) : -- Bioconcentration factor(BCF) : --
Persistence and degradability : Half-life (air) : -- Half-life (water surface) : -- Half-life (groundwater) : -- Half-life (soil) :
Bioaccumulative potential : --
The mobility in soil: --
Other adverse effects : --

XIII. Disposal considerations

Methods of waste disposal : Waste material must be disposed of in accordance with the government environmental control regulations.
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XIV. Transport information

UN Number : 1791
UN Proper Shipping Name : Hypochlorite Solutions
Transport Hazard Class : 8 (Corrosive)
Packing Group : III
Marine Pollutant (Y/N) : N
Specific transportation measures and precautionary conditions : Transportation safety rule item 84.

XV. Regulatory information

Applicable Regulations :	
1. Rules of labor EHS facilities	3. Transportation safety rule
2. Rules of DG and hazardous material labeling and identification	4. Storage and disposal regulations for industrial wastes

XVI. Other Information

Literature reference	1. RTECS database (2008) 2. ChemWatch database (2008-1) 3. OHS MSDS database (2008) 4. HSDB database (2008)	
Organization that prepared the SDS	Company : Taiwan Chlorine Industries Ltd. Address / Tel. : 25 Chung Chih Street, Hsiao Kang District Kaohsiung / (07) 8715171	
Person	Title : QA and Logistic Manager	Name : M.S. Liu
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Remarks	The above-mentioned symbol "--" means "The information is not available."
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This SDS comes from Taiwan Chlorine Industries Ltd. and refers to the proper information and documents. It is for reference only.