

MATERIAL SAFETY DATA SHEET**1. Chemical Product And Company Information**

Chemical Name: Sodium Hypochlorite Solution
Synonyms/Trade Names: Hypo, Bleach, Liquid bleach
Chemical Family:
Formula: NaOCl
Molecular Weight: 74.44
CAS No.: 7681-52-9
Uses: Used as a disinfectant and sanitizer in swimming pools, bleach for textiles and wood pulp and in effluent treatment.

Manufacturer & Supplier:
ERCO Worldwide, a division of Superior Plus LP
Wanuskewin Rd. & 71st Street
Saskatoon, Saskatchewan S7K 3R3
(306) 931-7767

Transportation Emergency Telephone Numbers :
CANADA:
CANUTEC (613) 996-6666
USA:
CHEMTREC 1-800-424-9300

Canadian WHMIS Classification (s):**E - Corrosive****2. Composition / Information On Ingredients**

Name:	Conc. % By Weight	CAS No.
Sodium Hypochlorite	10 - 15	7681-52-9
Sodium Hydroxide	1 - 5	1310-73-2

3. Hazard Identification

Emergency Overview:

Clear light yellow to greenish-yellow liquid with a chlorine-like (bleach) odour. Does not burn. Decomposes when heated, during a fire or upon contact with acids releasing corrosive chlorine gas. During a fire, corrosive hydrogen chloride gas may also be generated. Reacts with primary and aromatic amines, ammonia and ammonium salts to form explosively unstable compounds. CORROSIVE to the eyes and skin. May cause blindness and permanent scarring.

Routes of Entry:**Inhalation:**

Sodium hypochlorite does not easily form a vapour, but solutions decompose slowly on contact with air releasing corrosive chlorine gas. Chlorine can cause severe irritation of the nose, throat and lungs, and even death, depending on the airborne concentration. Mists formed from solutions can probably cause mild to severe irritation of the nose and throat, depending mainly upon the airborne concentration and the strength of the solution.

Skin Contact:

Sodium hypochlorite solutions can cause corrosive injury depending on the duration of contact, the concentration and pH of the solution. Corrosive materials are capable of producing severe burns, blistering and permanent scarring.

Eye Contact:

Sodium hypochlorite solutions can cause corrosive injury, depending on the concentration and pH of the solution, and the duration of contact. Corrosive materials are capable of causing permanent eye damage, including blindness.

Ingestion:

Swallowing sodium hypochlorite solutions can cause irritation, pain and inflammation of the mouth, throat and stomach, as well as vomiting. In severe cases, serious effects including ulceration and perforation of the gastrointestinal tract and death can result.

Symptoms of Exposure:

See above.

4. First Aid Measures

Skin:

Avoid direct contact. Wear chemical protective clothing, if necessary. As quickly as possible, flush with lukewarm, gently flowing water for at least 20 minutes, or until the chemical is removed. If irritation persists, repeat flushing. Under running water, remove contaminated clothing, shoes and leather goods (e.g., watchbands, belts). Completely decontaminate clothing, shoes and leather goods before reuse, or discard. Obtain medical advice immediately.

Eyes:

Avoid direct contact. Wear chemical protective gloves, if necessary. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, by the clock, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. If irritation persists, repeat flushing. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Quickly transport victim to an emergency care facility.

Inhalation:

Sodium Hypochlorite can release corrosive chlorine gas. Take proper precautions to ensure your own safety before attempting rescue; (e.g. wear appropriate protective equipment, use the "buddy" system.)

Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. Avoid mouth-to-mouth contact by using mouth guards or shields. Immediately transport victim to an emergency care facility

Ingestion:

NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 mL (8 to 10 oz) of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Rinse mouth and repeat administration of water. Quickly transport victim to an emergency care facility.

5. Fire-Fighting Measures

Conditions Of Flammability:

Not combustible (will not burn)

Means To Extinguish:

Use water spray, fog or foam. Fire fighting agent should be chosen to deal with other materials present. Do not get water inside the containers. Move containers from the area if this can be accomplished without risk. Cool containers with water from maximum distance until well after the fire is out.

Hazardous Combustion Products:

Chlorine and possibly Hydrogen Chloride

Flash Point & Method: Not combustible (does not burn)

Upper Flammability Limit: Not applicable

Lower Flammability Limit: Not applicable

Auto-Ignition Temperature: Not applicable

Mechanical Impact Sensitivity: Not sensitive

Static Discharge Sensitivity: Not sensitive

6. Accidental Release Measures

Leak Or Spill Procedures:

Restrict access to area. Provide adequate protective equipment and ventilation. Extinguish or remove all ignition sources. Contain spill or leak. Do not allow material to enter sewers or waterways. Neutralize the final traces and flush area with water. Spilled solutions should be contained by diking with inert material, such as sand or earth. Never use combustibles such as sawdust to absorb.

Waste Control Procedures:

Consult appropriate Federal, State/Provincial and local regulatory authorities to ascertain disposal procedures. Care should be taken not to mix waste with incompatible material. After treatment with a reducing agent such as sodium sulphite (ensure there is no chlorine residual), neutralize the caustic solution with hydrochloric acid or sulphuric acid. Waste treatment should be done under controlled conditions of pH and temperature.

7. Handling Storage

Handling Procedures And Equipment :

Handle in well ventilated areas. Have emergency equipment readily available to handle possible fire or spill. Label containers and keep containers closed when not in use.

Storage:

Store in cool, dry location away from direct sunlight, and combustible materials. Vented containers must be used. Keep storage temperatures below 29°C (85°F). Long storage is impossible, because the shelf life of sodium hypochlorite is limited.

8. Exposures Controls / Personal Protection

Protective Equipment:

Use NIOSH approved respirators suitable for chlorine.

Use tight-fitting chemical safety goggles.

Gloves, boots and apron should be used depending on exposure. Safety showers and eye wash fountains should be installed in storage and handling areas.

Use only rubber or polyvinyl chloride materials.

Engineering Controls:

Although good ventilation is suggested, no special ventilation is required unless sodium hypochlorite is exposed to decomposition condition such as spills, or acidic conditions.

9. Physical And Chemical Properties

State: Liquid (solution)

Odour: Strong chlorine odour

Odour Threshold: Not available

Boiling Point: Decomposes above 40°C

Melting Point: not applicable

Freezing Point: -25°C (12% Solution)

pH: 11.5 - 13

Coefficient Of Water/Oil Distribution: Not applicable

Appearance: Clear, greenish-yellow, aqueous solution

Specific Gravity: Approx. 1.15 - 1.2 @ 15°C

Vapour Pressure: Does not form a vapour. (Note: Since the material slowly decomposes giving off gases, all containers should be vented).

Vapour Density: Not applicable

Evaporation Rate: Not applicable

Solubility In Water: Soluble in all proportions

Bulk Density: Not applicable

10. Stability And Reactivity

Chemical Stability:

Sodium hypochlorite solutions decompose slowly at normal temperatures releasing low concentrations of corrosive chlorine gas. Decomposition is influenced by temperature, concentration, pH, ionic strength, exposure to light and the presence of metals, such as copper, nickel or cobalt, metal oxides, e.g. rust and other impurities, such as acids and amines.

Reactivity Conditions:

At ambient conditions, reacts vigorously with acids to liberate chlorine.
Heat, sunlight, acidic conditions, the presence of metals and other impurities accelerates decomposition.

Incompatible Substances :

Strong acids, ammonia, oxidizable materials, urea, nickel, copper, tin, manganese and iron.

Corrosivity to Metals :

Sodium hypochlorite solutions (20%) are corrosive to brass (aluminum, naval and silicon) bronze, carbon steel, cast iron, Hastelloy, Inconel, nickel, stainless steels (types 304/347, 316 and 400 series) and silicon copper. Concentrated sodium hypochlorite is corrosive to most metals, including aluminum, copper, brass, bronze, carbon steel, Hastelloy, Inconel, lead, Monel, nickel and stainless steel type 400 series. Sodium hypochlorite solutions are not corrosive to tantalum, titanium and zirconium. Dilute solutions are not corrosive to Hastelloy C/C-276 (10%), Incolloy (5%) and high silicon iron.

Corrosivity to Non-Metals:

Sodium hypochlorite solutions attack some plastics (such as nylon, Bisphenol A-fumarate and isophthalic polyesters), elastomers (such as soft rubber, neoprene and nitrile Buna-N) and coatings (such as coal tar epoxy, epoxy and vinyls). Sodium hypochlorite solutions do not attack acrylonitrile-butadiene-styrene (ABS), Butyl rubber, isoprene, hard rubber, natural rubber, polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), polyethylene, polypropylene, polystyrene, Teflon and Viton.

Hazardous Decomposition Products :

Chlorine (by reaction with acids), oxygen (by reaction with nickel, copper, tin, manganese, iron), sodium chlorate (with increased temperature).

11. Toxicological Information

Skin Contact: Causes severe skin irritation with blistering and ulceration.

Skin Absorption: Not available

Eye Contact: Causes severe irritation of the mucous membranes of the eyes. May cause severe eye damage.

Inhalation: Irritation of the nose and throat causing coughing, difficulty with breathing and pulmonary edema.

Ingestion: Burning in the mouth and throat, abdominal cramps, nausea, vomiting, diarrhea, shock. May lead to convulsions, coma, and death.

LD₅₀: 8910 mg/kg (100% Sodium Hypochlorite) (Rats, oral)

LC₅₀: Greater than 10,000 mg/m³ for 1 hour exposure (Inhalation, rat)

Exposure Limits: The Time-Weighted Average Limits have not been established. American Industrial Hygiene Association (2006) established short term limits of 2 mg/m³ (15 minutes)

Irritancy: Very dilute solutions (<1%) cause negligible irritancy, while more concentrated solutions (>10%) cause corrosive injury.

Sensitization: Not available.

Carcinogenicity: Not listed by IARC or ACGIH

Teratogenicity & Mutagenicity: Insufficient information to draw conclusions.

Reproductive Toxicology: Insufficient information to draw conclusions.

Toxicological Synergism: Not available

12. Ecological Information

Ecological Information:

Hypochlorite solutions will slowly decompose releasing chlorine which is a strong oxidizer and with the potential formation of chlorate. These decomposition products are harmful to plant life.

Biodegradability:

Not biodegradable

Aquatic Toxicity:

Harmful to aquatic life.

13. Disposal Considerations**Disposal Considerations:**

Consult appropriate Federal, State/Provincial and local regulatory authorities to ascertain disposal procedures. Care should be taken not to mix waste with incompatible material. After treatment with a reducing agent such as sodium sulphite (to ensure there is no chlorine residual), neutralize the caustic solution with hydrochloric acid or sulphuric acid. Waste treatment should be done under controlled conditions of pH and temperature.

14. Transportation Information

Shipping Name (TDGR)	UN Number	Hazard Class	Packing Group
Hypochlorite Solution	UN 1791	8	II

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR .

Safety:

CANADIAN FEDERAL REGULATIONS: (not a comprehensive list)

WHMIS CLASSIFICATION:

E - Corrosive material

UNITED STATES FEDERAL REGULATIONS: For Sodium Hypochlorite (not a comprehensive list)

OSHA: Not a Hazardous Substance under 29 CFR Section 1910, Subpart Z.

CERCLA: Hazardous Substance under 40 CFR Part 302, RQ = 100 lbs.

SARA 313: Not subject to the reporting requirements of 40 CFR Part 372

SARA 311/312 EPA HAZARD CATEGORIES: Immediate (Acute) Health, Reactive Hazard

SARA 302: Not subject to 40 CFR Part 355

Environmental:

All components of this product are either on the Canadian Domestic Substances List (DSL) or the Non-Domestic Substances List (NDSL) or exempt.

All components of this product are either on the U.S. Toxic Substances Control Act (TSCA) Inventory List or exempt.

European Union Concentration Limits:

CONCENTRATION GREATER THAN OR EQUAL TO 25%: Corrosive; Dangerous for the Environment. Contact with acids liberates toxic gas. Causes burns. Very toxic to aquatic organisms. [C;N;R:31-34-50]

Transportation:

Transportation in Canada is governed by Transport Canada. Refer to the Transportation of Dangerous Goods (TDG) Regulations for special shipping requirements.

Transport in the U.S. is governed by the Department of Transportation (DOT). Refer to DOT regulations (CFR 49) for special shipping requirements. (UN 1791)

16. Other Information

Prepared By:

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Summary of Changes Made in this Revision :

Corrosivity information was added

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