

Sodium Hypochlorite

Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Material Name: Sodium Hypochlorite

CAS Number: 7681-52-9

Chemical Formula: NaOCl

Structural Chemical Formula: NaOCl

EINECS Number: 231-668-3

ACX Number: X1000119-5

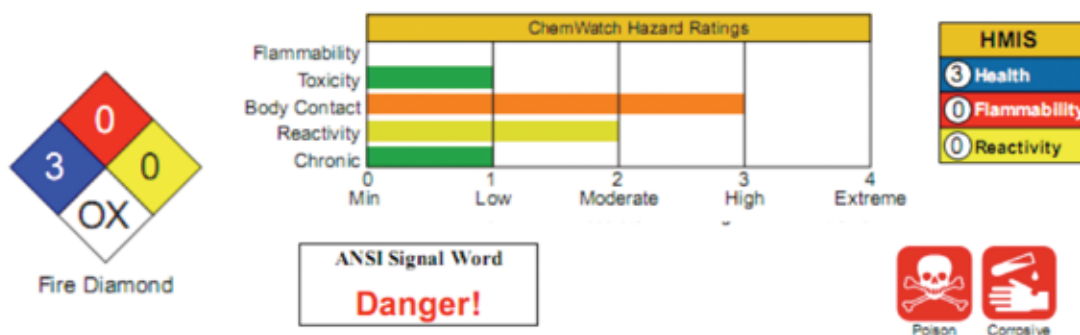
Synonyms: Sodium Hypochlorite; SODIUM HYPOCHLORITE; ANTIFORMIN; B-K LIQUID; CARREL-DAKIN SOLUTION; CHLOROS; CHLOROX; CHLOROZONE; CLOROPOL; CLOROX; CLOROX LIQUID BLEACH; DAKINS SOLUTION; DEOSAN; DEOSAN GREEN LABEL STERILISER; DIVERSOL BX; EPA PESTICIDE CHEMICAL CODE 014703; HOSPITAL MILTON; HYCLORITE; HYPOCHLOROUS ACID, SODIUM SALT; HYPOSAN AND VOXSAN; JAVEX; KLOROCIN; MILTON; MILTON CRYSTALS; NEO-CLEANER; NEOSEPTAL CL; PAROZONE; PURIN B; SODIUM CHLORIDE OXIDE; SODIUM OXYCHLORIDE; SURCHLOR

General Use: Used in the bleaching of paper pulp and textiles, for the purification of water, in medicine, as a swimming pool disinfectant and laundering agent and as a fungicide and germicide. Also used in the manufacture of organic chemicals and as a chemical intermediate.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Sodium hypochlorite	7681-52-9	>98 Marketed as sodium hypochlorite solution containing more than 5% available chlorine.
<u>OSHA PEL</u>	<u>NIOSH REL</u>	<u>AIHA WEEL</u>
<u>ACGIH TLV</u>	<u>IDLH Level</u>	STEL: 2 mg/m ³ , 15-min.

Section 3 - Hazards Identification



Emergency Overview

Pale-yellow or greenish liquid; chlorine odor. Corrosive. Poison. Other Acute Effects: cough, difficulty breathing, stomatitis, nausea, pulmonary edema, circulatory collapse, convulsions. Strong oxidizer.

Potential Health Effects

Target Organs: skin, eyes, mucous membranes, respiratory system

Primary Entry Routes: inhalation, ingestion

Acute Effects

Inhalation: The vapor is highly discomforting to the upper respiratory tract and lungs. Excessive inhalation of vapors, mists or fumes may cause bronchial irritation, coughing, labored breathing, nausea and pulmonary edema. Additional effects have included circulatory collapse and confusion, delirium and coma.

If warmed to temperatures greater than 40 deg. C or mixed with acids, toxic and irritating chlorine gas is released.

Eye: The liquid is corrosive to the eyes and is capable of causing severe damage with loss of sight if exposure is prolonged. The vapor is highly discomforting to the eyes. The material may produce moderate eye irritation leading to inflammation.

Repeated or prolonged exposure to irritants may produce conjunctivitis.

Accidental eye contact with a 5% sodium hypochlorite solution produced a temporary burning discomfort and slight irritation of the corneal epithelium with no injury.

Skin: The liquid is highly discomforting to the skin and is capable of causing skin reactions which may lead to dermatitis if exposure is prolonged. Skin contact will result in rapid drying, bleaching, and leading to chemical burns on prolonged contact.

Contact may cause severe itchiness, skin lesions and mild eczema. A 5.25% solution of sodium hypochlorite applied to intact human skin for 4 hours and observed at 4, 24 and 48 hours resulted in exudation and slight sloughing of the skin on 4 of 7 subjects.

A few individuals may show allergic/sensitization responses which may be minor to severe. Exposure will aggravate this pre-existing condition and those with sensitization reactions should not be required to work where exposure may occur.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.

The liquid is corrosive to the gastrointestinal tract and harmful if swallowed. Ingestion may cause irritation of the mucous membranes, pain and inflammation of the mouth and stomach, vomiting, fall of blood pressure, shock, confusion, delirium, coma and, in severe cases, death. Perforation of the esophagus or stomach may occur.

Necrosis and hemorrhage of the upper digestive tract, edema and pulmonary emphysema were found on autopsy after suicidal ingestion, and methemoglobinemia was also reported in another fatal case.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: A number of fibro sarcomas and squamous cell carcinomas were observed in mice treated dermally with repeated sub carcinogenic doses of 4-nitroquinoline-1-oxide, followed by dermal treatment with sodium hypochlorite.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air. Lay patient down. Keep warm and rested. If available, administer

medical oxygen by trained personnel. If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital, or doctor, without delay.

Eye Contact: Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear. Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

Ingestion: If poisoning occurs, contact a doctor or Poison Control Center. If swallowed, do NOT induce vomiting. Give a glass of water. After first aid, get appropriate in-plant, paramedic, or community medical support.

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Note to Physicians: For acute or repeated exposures to hypochlorite solutions:

1. Release of small amounts of hypochlorous acid and acid gases from the stomach following ingestion, is usually too low to cause damage but may be irritating to mucous membranes. Buffering with antacid may be helpful if discomfort is evident.
2. Evaluate as potential caustic exposure.
3. Decontaminate skin and eyes with copious saline irrigation. Check exposed eyes for corneal abrasions with fluorescein staining.
4. Emesis or lavage and catharsis may be indicated for mild caustic exposure.
5. Chlorine exposures require evaluation of acid/base and respiratory status.
6. Inhalation of vapors or mists may result in pulmonary edema.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable

Extinguishing Media: Water spray or fog. Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide.

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Fire Diamond

General Fire Hazards/Hazardous Combustion Products: Noncombustible liquid. Heating may cause expansion or decomposition leading to violent rupture of containers. Decomposes on heating and produces toxic fumes of chlorine caustic compounds.

Fire Incompatibility: Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous. Avoid reaction with copper, acids, ammonium salts and oxidizable materials. Reacts explosively with amines and methanol. When finely divided materials such as sugar, wood dust and paper are contaminated with the solution they burn more readily when dry. Incompatible with bowl cleaners containing bisulfites.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Use fire fighting procedures suitable for surrounding area. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: Clean up all spills immediately.

Avoid breathing vapors and contact with skin and eyes.

Wear protective clothing, impervious gloves and safety glasses.

Neutralize with sodium metabisulfite or sodium thiosulfate.

Wipe up and absorb small quantities with vermiculite or other absorbent material. Place in suitable containers for disposal.

Wash spill area with large quantities of water.

Large Spills: Contact fire department and tell them location and nature of hazard.

Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.

Increase ventilation.

Stop leak if safe to do so.

Contain spill with sand, earth or vermiculite.

Collect recoverable product into labeled containers for recycling.

Neutralize with sodium metabisulfite or sodium thiosulfate.

Absorb remaining product with sand, earth or vermiculite.

Collect residues and seal in labeled drums for disposal.

Wash spill area with large quantities of water.

If contamination of drains or waterways occurs, advise emergency services.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).



Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist.

Do not allow clothing wet with material to stay in contact with skin. Avoid all personal contact, including inhalation.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

Avoid smoking, bare lights or ignition sources.

Avoid contact with incompatible materials.

When handling, DO NOT eat, drink or smoke.

Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately.

Launder contaminated clothing before reuse.

Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Glass container. Container should have vented cap. Polyethylene or polypropylene container. Plastic carboy. Plastic drum Polyliner drum. Packing as recommended by manufacturer.

Check all containers are clearly labeled and free from leaks.

Not to be transported in unlined metal drums. Inner packaging shall be fitted with vented closures and plastics drums and carboys shall have vented closures or be performance tested to a minimum of 250 kPa. All non-vented packaging shall be filled so that the ullage is at least 10% at 21-25 °C. Vented packages may be filled to ullage not less than 5% at 21-25 °C, provided that this ullage does not result in leakage from, nor distortion of, the packaging.

Storage Requirements: Avoid generating and breathing mist.

Do not allow clothing wet with material to stay in contact with skin.

Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area.

WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

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When handling, DO NOT eat, drink or smoke.

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Launder contaminated clothing before reuse.

Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build-up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear.

Use in a well-ventilated area. General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances.

If risk of overexposure exists, wear NIOSH-approved respirator.

Correct fit is essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

Avoid contact with eyes.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves e.g. PVC gloves with barrier cream.

Wear safety footwear or PVC safety gumboots.

Respiratory Protection:

Exposure Range >2 to 20 mg/m³

Air Purifying, Negative Pressure, Half Mask

Exposure Range >20 to 200 mg/m³

Air Purifying, Negative Pressure, Full Face

Exposure Range >200 to 2000 mg/m³

Supplied Air, Constant Flow/Pressure Demand, Full Face
Exposure Range >2000 to unlimited mg/m³
Self-contained Breathing Apparatus, Pressure Demand, Full Face Cartridge Color: white with dust/mist prefilter (use P100 or consult supervisor for appropriate dust/mist prefilter)
Other: Overalls. PVC apron. PVC protective suit may be required if exposure severe.
Eyewash unit. Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White crystals with disagreeable odor. Strong oxidizing agent. Highly unstable in air unless mixed with sodium hydroxide. Usually stored and used in solution. This report is for sodium hypochlorite solution.

Physical State: Divided solid

Formula Weight: 74.77

Boiling Point: Decomposes at 1 atm

Freezing/Melting Point: 18 °C (64.4 °F)

Water Solubility: Soluble in cold water

Specific gravity: 1.173

PH: 12.95

Vapor pressure(mm Hg): 6.6 @ 50°C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Contact with acids liberates toxic gases.

Contact with acids produces toxic fumes of chlorine. Product is considered stable under normal handling conditions. Hazardous polymerization will not occur.

Storage Incompatibilities: Avoid storage with amines, methanol, copper, peroxides, metal salts, reducing agents, acids, ammonium salts, solvents, combustible materials, greases and wood.

Contact with acids liberates toxic gases i.e. chlorine.

Conditions To Avoid: Light, heat, air and incompatibles.

Section 11 - Toxicological Information

Toxicity

Oral (mouse) LD50: 5800 mg/kg

Oral (woman) TDLo: 1000 mg/kg

as sodium hypochlorite pent hydrate

Oral (rat) LD50: 8910 mg/kg

Irritation

Eye (rabbit): 10 mg - moderate

Skin (rabbit): 500 mg/24 hr-moderate

Eye (rabbit): 100 mg - moderate

See RTECS NH 3486300, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: No data found.

BCF: no food chain concentration potential

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Consult manufacturer for recycling options.
Follow all applicable federal, state, and local regulations. Treat and neutralize at an effluent treatment plant.
Bury residue in an authorized landfill. Puncture containers to prevent reuse.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Hypochlorite solutions

ID: UN1791

Hazard Class: 8 - Corrosive material

Packing Group: II - Medium Danger

Symbols:

Label Codes: 8 - Corrosive

Special Provisions: A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24

Packaging:

Exceptions: 154 Non-bulk: 202 Bulk: 242

Quantity Limitations:

Passenger aircraft/rail: 1 L Cargo aircraft only: 30 L

Vessel Stowage:

Location: B **Other:** 26



Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 100 lb (45.35 kg)

SARA 40 CFR 372.65: Not listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Label Precautions:

Avoid breathing mist.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling
Keep container closed.
Use with adequate ventilation.

Label First Aid:

In case of contact immediately flush eyes or skin with plenty of water for at least 15 mins while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

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