# MSDS NaOCl

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT IDENTIFIER:** SODIUM HYPOCHLORITE SOLUTION
**RECOMMENDED USAGE:** BLEACHING AGENT; DESINFECTANT; WATER TREATMENT; DEODORIZER, SOURCE OF AVAILABLE CHLORINE

**MANUFACTURER:**
**COMPANY INFORMATION Saudi Factory for Chlorine & Alkalies**
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## SECTION 2: COMPOSITION, INFORMATION & SPECIFICATIONS

**CHEMICAL IDENTITY:** SODIUM HYPOCHLORITE SOLUTION 12%
**TRADE NAMES/SYNONYMS:**
BLEACH; HYPOCHLOROUS ACID, SODIUM SALT; SODA BLEACH; SODIUM OXYCHLORIDE; JAVEL WATER; HYPO; HOUSEHOLD BLEACH; INDUSTRIAL BLEACH; LIQUID CHLORINE
**CAS NUMBER:** 7681-52-9
**EC NUMBER (EINECS):** 231-668-3

| Sr. # | Parameters | Unit | Limits |
|---|---|---|---|
| 1 | Excess NaOH | W/V % | 1.2-1.4 |
| 2 | Avg. Chlorine | W/V % | 12.0-17.0 |

## SECTION 3: HAZARDS IDENTIFICATION

**GHS (GLOBAL HARMONIZED SYSTEM) LABELING FOR SODIUM HYPOCHLORITE:**

**Corrosive**

**Oxidizing Agent**

**Danger to Aquatic Environment**

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| Code | Word | Hazard Statement |
|---|---|---|
| H314 | Danger | Causes severe skin burns and eye damage. |
| H290 | Warning | May be corrosive to Metal. |
| H335 | Warning | May cause respiratory irritation. |
| H400 | Warning | Very toxic to aquatic life. |

**Precautionary Statements (P-Codes)**

**Prevention:**

- **P260**: Do not breathe mist/vapors.
- **P280**: Wear protective gloves/eye protection/face protection.
- **P273**: Avoid release to the environment.
- **P284**: [For high concentrations] Wear respiratory protection.

**Response:**

- **P301 + P330 + P331**: If swallowed: Rinse mouth. **Do NOT induce vomiting.**
- **P303 + P361 + P353**: If on skin: Remove contaminated clothing. Rinse immediately with water.
- **P305 + P351 + P338**: If in eyes: Rinse cautiously for 15+ minutes. Remove contact lenses.
- **P310**: Immediately call a poison center/doctor.

**Storage/Disposal:**

- **P405**: Store locked up in corrosion-resistant containers.
- **P501**: Dispose of contents/container per local regulations.

**NFPA Rating:**

Health Rating: 3 - Severe (Poison)
Flammability Rating: 0 - None
Reactivity Rating: 1 - Moderate
Lab Protective Equip: GOGGLES; COAT; VENT HOOD; PROPER GLOVES


## SECTION 4: FIRST AID MEASURES

**INHALATION:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately. Symptoms include coughing, throat irritation, shortness of breath, or pulmonary edema.

**SKIN CONTACT:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse. Symptoms include irritation, blistering, or chemical burns (may be delayed).

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**EYE CONTACT:**
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately. Symptoms include redness, pain, corneal damage, or blindness.

**INGESTION:**
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Wash mouth with water, then give plenty of milk or water to drink and obtain urgent medical attention. Symptoms include throat burns, vomiting, abdominal pain, or circulatory collapse.

**NOTE TO PHYSICIAN:**
Consider oral administration of sodium thiosulfate solutions if sodium hypochlorite is ingested. Do not administer neutralizing substances since the resultant exothermic reaction could further damage tissue. Endotracheal intubation could be needed if glottic edema compromises the airway. For individuals with significant inhalation exposure, monitor arterial blood gases and chest x-ray.

## **SECTION 5:** FIRE FIGHTING MEASURES

**FIRE HAZARD:**
Not considered to be a fire hazard. Substance releases oxygen when heated or reach with some metals, which may increase the severity of an existing fire. Containers may rupture from pressure build-up.

**EXPLOSION HAZARD:**
This solution is not considered to be an explosion hazard. Anhydrous sodium hypochlorite is very explosive.

**SUITABLE EXTINGUISHING MEDIA:**
Use any means suitable for extinguishing surrounding fire. Use water spray to cool fire-exposed containers, to dilute liquid, and control vapor.

**SPECIAL INFORMATION:**
In the event of fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

## **SECTION 6:** ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS:**
Wear appropriate personal protective equipment as specified in Section 8.

**ENVIRONMENTAL PRECAUTIONS:**
Ventilate area of leak or spill. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.

**METHODS & MATERIALS FOR CONTAINMENT & CLEANING UP**
Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities.

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## SECTION 7: HANDLING AND STORAGE

**PRECAUTIONS FOR SAFE HANDLING:**

Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Avoid contact with eyes and skin.

**PRECAUTIONS FOR SAFE STORAGE (including any incompatibilities):**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not store near acids, heat, oxidizable materials or organics.

## SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

**CONTROL PARAMETERS:**

**Airborne Exposure Limits:**

| Regulatory Agency / Standard | Exposure Limit | Notes |
|---|---|---|
| OSHA PEL (Ceiling) | 2 mg/m³ (as NaOH) | Ceiling limit for sodium hydroxide impurity (29 CFR 1910.1000). |
| ACGIH TLV (TWA) | 0.5 ppm (as $Cl_2$) | Chlorine gas TWA (8-hour) from decomposition (ACGIH 2024). |
| NIOSH REL (Ceiling) | 0.5 ppm (as $Cl_2$) | IDLH = 10 ppm for chlorine gas (NIOSH Pocket Guide). |
| AIHA WEEL (STEL) | 2 mg/m³ (as NaOCl) | Short-term exposure limit (15-min) for NaOCl mist (AIHA 2023). |
| OSHA PEL (STEL) | 1 ppm (as $Cl_2$) | Chlorine gas STEL (OSHA 1910.1000). |

**APPROPRIATE ENGINEERING CONTROLS:**

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

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**PERSONAL RESPIRATORS (NIOSH APPROVED):**
Use NIOSH-approved APR with acid gas cartridges (TC-23C) for ≤5 ppm; SCBA for >5 ppm. If the exposure limit is exceeded, a full-face piece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**SKIN PROTECTION:**
Wear impervious protective clothing, including boots, gloves (nitrile or neoprene), lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**EYE PROTECTION:**
Use chemical safety goggles and/or a full-face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## **SECTION 9:** PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE**
**PHYSICAL STATE:** Clear Liquid.
**COLOR:** Banana-colored
**ODOR:** Pungent, chlorine-like odor.
**ODOR THRESHOLD:** Not available
**Molecular Weight:** 74.45
**Chemical Formula**: NaOCl
**pH:** (11-14)
**MELTING POINT:** -18.3C
**BOILING POINT:** 103.8C (219F)
**FLASH POINT:** Not available
**EVAPORATION RATE (BuAc=1):** Not applicable. (Similar to water)
**FLAMMABILITY (solid, gas):** Not available
**VAPOR PRESSURE (mm Hg):** Approx. 2.5 KPA at 20°C
**VAPOR DENSITY (Air=1):** Heavier than air; critical for spill response
**SPECIFIC GRAVITY:** (1.168 – 1.238) @ 60 °F
**SOLUBILITY IN WATER:** Completely soluble
**% Volatiles by volume @ 21C (70F):** Decompose leaving salt solution.
**PARTITION COEFICIENT n-octanol / water:** Not available
**AUTO-IGNITION TEMPERATURE:** Not available
**DECOMPOSITION TEMPERTURE:** ~40°C for 12% solution

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## **SECTION 10:** STABILITY AND REACTIVITY

**CHEMICAL STABILITY:** Slowly decomposes on contact with air. Rate increases with the concentration and temperature. Exposure to sunlight accelerates decomposition. Sodium hypochlorite becomes less toxic with age.
**CONDITIONS TO AVOID:** Light, heat, air and incompatibles. Do not mix with other chemicals.
**INCOMPATIBILITIES:** Ammonia (chloramine gas may evolve), amines, ammonium salts, aziridine, methanol, phenyl acetonitrile, cellulose, ethyleneimine, oxidizable metals, acids, soaps, and bisulfates, **hydrogen peroxide** (explosive reaction) and **urea** (forms toxic $NCl_3$).
**HAZARDOUS DECOMPOSITION PRODUCTS:** Emits toxic fumes of chlorine when heated to decomposition. Sodium oxide at high temperatures. Sodium chloride (NaCl) and oxygen ($O_2$) as common decomposition products
**HAZARDOUS POLYMERIZATION:** Will not occur.

## **SECTION 11:** TOXICOLOGICAL INFORMATION

**Irritation data:** Serious eye damage/irritation
LD50 oral rat: 8.91 g/kg, LD50 dermal rabbit: > 20000 mg/kg,
LC50 Inhalation – Rat: 10.5 mg/l - Moderate Investigated as a tumorigenic, mutagen.
**POTENTIAL HEALTH EFFECTS**
**INHALATION:**
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, coma.
**INGESTION:**
May cause erosion of the mucous membranes. Symptoms include vomiting, circulatory collapse, confusion, coma, and death. May cause edema of pharynx, glottis, and larynx and perforation of the esophagus or stomach. Effects are less damaging at lower concentrations.
**SKIN CONTACT:**
Contact may cause severe irritation with blistering and eczema, especially at higher concentrations. Prolonged exposure may cause destruction of the dermis with impairment of the skin. Burn may not be immediately apparent.
**EYE CONTACT:**
Contact may cause impairment of vision and corneal damage, especially at higher concentration. Severe irritation and burn can occur.
**CHRONIC EXPOSURE:**
A constant irritant to the eyes and throat. May cause lung damage, tissue destruction, & eye burns. May act as a sensitizer. **dental erosion** and **asthma-like symptoms** from long-term exposure.
**AGGRAVATION OF PRE-EXISTING CONDITIONS:**
Persons with impaired respiratory function may be more susceptible to the effects of the substance.

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## **SECTION 12:** ECOLOGICAL INFORMATION

**ECOTOXICITY:**
This material will not harm biological sewage treatment work in normal use.
The surfactant(s) contained in this preparation complies (comply) with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents.
LC50 (fish): 4.5 mg/L (96h, Rainbow trout) for completeness.
NaOCl decomposes rapidly in water but may lower pH; monitor aquatic systems.
FATE AND TRANSPORT: This material is not expected to bio-accumulate under normal use.

## **SECTION 13:** DISPOSAL CONSIDERATIONS

Product does not contain any prescribed substances under the Environmental Protection Act Regs (1991) but is classified as special waste under the Control of Substances (Special Waste) Regs 1996. Dilute with water and flush to sewer if local ordinances allow, otherwise, whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. For small quantities dilute with at least 1000 parts of water and pour down wastewater drain (foul sewer). Rinse out empty containers thoroughly and recycle if facilities exist or dispose of as commercial waste. For larger quantities contact a licensed waste contractor.

## **SECTION 14:** TRANSPORT INFORMATION

**Domestic (Land, D.O.T.) & International (Water, I.M.O.)**
**Proper Shipping Name**: HYPOCHLORITE SOLUTION
**Hazard Class:** 8
**UN/NA:** UN1791
**Packing Group**: II
**ERG Guide 154** (for UN1791, Hypochlorite Solutions)
**Information reported for product/size**: 4L

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## SECTION 15: REGULATORY INFORMATION

**U.S. Federal Regulations**

| Regulation | Classification | Notes |
|---|---|---|
| OSHA (29 CFR 1910.1200) | Hazard Class: Corrosive (Skin Corr. 1B), Oxidizer (Cat. 2) | Requires GHS labeling and SDS. |
| EPA (40 CFR 302.4) | CERCLA RQ: 100 lbs (45.4 kg) for chlorine (from NaOCl decomposition) | Reportable spill quantity. |
| SARA Title III (311/312) | Immediate (Acute) Health Hazard, Reactive | Tier II reporting required. |

**International Regulations**

| Regulation | Classification | Notes |
|---|---|---|
| EU (CLP) | Ox. Liq. 2 (H272), Skin Corr. 1B (H314), Aquatic Acute 1 (H400) | EUH031 applies if mixed with acids. |
| Canada (WHMIS) | D2A (Toxic), E (Corrosive) | SDS required under HPR. |
| KSA (SASO) | GHS Rev. 9: Corrosive, Oxidizer | Compliant with SASO 1503:2018. |

**Transport Regulations**

| Mode | UN Number | Hazard Class | Packing Group |
|---|---|---|---|
| DOT (49 CFR) | UN1791 | 8 (Corrosive) | III |
| IMO (IMDG) | UN1791 | 8 | III |
| IATA | UN1791 | 8 | III |

## SECTION 16: OTHER INFORMATION

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