SAFETY DATA SHEET

HTH Liquid Chlorinator

EPA Registration Number: 1258-1094

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Arch Chemicals, Inc.
1200 Bluegrass Lakes Parkway
Alpharetta, GA 30004

PRODUCT NAME: HTH Liquid Chlorinator
EPA Registration Number: 1258-1094

REVISION DATE: 04/07/2016
SUPERCEDES: 05/27/2015

MSDS Number: 000000023255
SYNONYMS: Liquid bleach
CHEMICAL FAMILY: Hypochlorite
DESCRIPTION / USE: Swimming pool sanitizer
FORMULA: NaOCl in Water

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Skin corrosion : Category 1B
Serious eye damage : Category 1
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary statements : Prevention:
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS OR CHEMICAL NAME</th>
<th>CAS #</th>
<th>% RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM HYPOCHLORITE</td>
<td>7681-52-9</td>
<td>7.0 - 15.0</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>73.0 - 87.0</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>0.5 - 2.5</td>
</tr>
<tr>
<td>SODIUM CHLORIDE</td>
<td>7647-14-5</td>
<td>5.0 - 11.0</td>
</tr>
</tbody>
</table>
SECTION 4. FIRST AID MEASURES

General Advice: Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

Inhalation: IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Skin Contact: IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye Contact: IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion: IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

SECTION 5. FIREFIGHTING MEASURES

Flammability Summary (OSHA): Product is not known to be flammable, combustible, pyrophoric or explosive.

Flammable Properties
Flash Point: Not applicable
Autoignition Temperature: Not applicable
Fire / Explosion Hazards: Material will not ignite or burn. Will release oxygen when heated, intensifying a fire
Extinguishing Media: Choose extinguishing media suitable for surrounding materials.
Fire Fighting Instructions: In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus.
Hazardous Combustion Products: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Upper Flammable / Explosive Limit, % in air: Not applicable
Lower Flammable / Explosive Limit, % in air: Not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES
Personal Protection for Emergency Situations: Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to boots, impervious gloves, hard hat, splash-proof goggles, impervious clothing, i.e., chemically impermeable suit, self-contained breathing apparatus.

Spill Mitigation Procedures

Air Release: Hazardous concentrations in air may be found in local spill area and immediately downwind. Vapors may be suppressed by the use of water fog.

Water Release: This material is soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so. Retain all contaminated water for removal and treatment.

Land Release: Create a dike or trench to contain materials. Absorb spill with inert material (e.g., dry sand, clay), then place in a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Contain all liquids for treatment or disposal.

Additional Spill Information: Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel. Utilize emergency response personal protection equipment prior to the start of any response. Evacuate all non-essential personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration.

SECTION 7. HANDLING AND STORAGE

Handling: Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor.

Storage: Store this product in a cool, dry area, away from sunlight and heat to avoid deterioration. Keep from freezing.

Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

Respiratory Protection: Wear a NIOSH approved respirator if levels above the exposure limits are possible.

Respirator Type: A NIOSH approved full-face air purifying respirator equipped with combination chlorine/P100 cartridges. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.
Skin Protection: Wear impervious gloves to avoid skin contact. A full impervious suit is recommended if exposure is possible to a large portion of the body. A safety shower should be provided in the immediate work area.

Eye Protection: Use chemical goggles and a faceshield. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Neoprene, Nitrile, Natural Rubber

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components (CAS-No.)</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis (Update)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM HYPOCHLORITE (7681-52-9)</td>
<td>STEL</td>
<td>2 mg/m3</td>
<td>WEEL (2012)</td>
</tr>
<tr>
<td>Sodium hydroxide (1310-73-2)</td>
<td>2 mg/m3</td>
<td>ACGIH (02 2014)</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical State: liquid
- Form: liquid
- Color: light green
- Odor: Chlorine-like
- Molecular Weight: 74.50 g/mol
- Relative density: 1.0800 - 1.2600
- pH: 12.0 - 14.0
- Boiling Point: No Data
- Melting point/freezing point: no data available
- Density: Not applicable
- Vapor Pressure: no data available
- Vapor Density: no data available
- Viscosity: no data available
- Fat Solubility: no data available
- Solubility in Water: soluble
- Partition coefficient n-octanol/water: no data available
- Evaporation Rate: no data available
- Oxidizing: no data available
- Volatiles, % by vol.: 87.500 - 94.500%
- VOC Content: no data available
- HAP Content: no data available

SECTION 10. STABILITY AND REACTIVITY
Stability and Reactivity Summary: Stable under normal conditions. Not sensitive to mechanical shock. Not sensitive to static discharge. Product will not undergo hazardous polymerization.

Conditions to Avoid: Sparks, open flame, other ignition sources, and elevated temperatures. Avoid direct exposure to sunlight or ultraviolet (UV) light sources. Avoid freezing.

Chemical Incompatibility: Iron, copper, Acids, ammonium compounds, Organic materials, Oxidizing.

Hazardous Decomposition Products: Chlorine containing gases.

Decomposition Temperature: no data available

SECTION 11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology
Oral LD50 value:
SODIUM HYPOCHLORITE
LD50 = 8,910 mg/kg Rat
Sodium hydroxide
LD50 ca. 300 - 500 mg/kg Rat
SODIUM CHLORIDE
LD50 = 3,000 mg/kg Rat

Component Animal Toxicology
Dermal LD50 value:
SODIUM HYPOCHLORITE
LD50 > 2,000 mg/kg Rabbit
Sodium hydroxide
no data available
SODIUM CHLORIDE
LD50 > 10,000 mg/kg Rabbit

Component Animal Toxicology
Inhalation LC50 value:
SODIUM HYPOCHLORITE
Inhalation LC50 1 h > 10.5 mg/l Rat
Sodium hydroxide
no data available
SODIUM CHLORIDE
Inhalation LC50 1 h > 42 mg/l Rat

Product Animal Toxicity
Oral LD50 value:
LD50 > 5,000 mg/kg Rat
Dermal LD50 value:
LD50 > 2,000 mg/kg Rabbit
Inhalation LC50
Inhalation LC50 1 h > 10.5 mg/l Rat

Skin Irritation: This material is expected to be corrosive.
Eye Irritation: This material is expected to cause irreversible effects to the cornea with impairment of vision or corrosion to the eyes.
Skin Sensitization: This material tested negative for skin sensitization in animals.
Acute Toxicity: This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

Subchronic / Chronic Toxicity: Not known or reported to cause subchronic or chronic toxicity.

Reproductive and Developmental Toxicity: This product did not cause developmental effects in a study with laboratory animals.

Mutagenicity: This product has been tested for mutagenicity. Tests revealed both positive and negative results. Based on the weight of evidence, we judge this product NOT to be a mutagenic hazard.

SODIUM HYPOCHLORITE

This product has been tested for mutagenicity. Tests revealed both positive and negative results. Based on the weight of evidence, we judge this product NOT to be a mutagenic hazard.

Sodium hydroxide

This chemical has been shown to be non-mutagenic based on a battery of assays.

Carcinogenicity: IARC (International Agency for Research on Cancer) reviewed studies conducted with several hypochlorite salts. IARC has classified hypochlorite salts as having inadequate evidence for carcinogenicity to humans and animals. IARC therefore considers hypochlorite salts to be not classifiable as to their carcinogenicity to humans.

SODIUM HYPOCHLORITE

This material did not cause cancer in long-term animal studies.

Sodium hydroxide

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

SECTION 12. ECOLOGICAL INFORMATION

Overview: Moderately toxic to fish and other aquatic organisms.

Ecological Toxicity Values for: SODIUM HYPOCHLORITE

Bluegill - (measured, flow-through) 96 h LC50 = 2.13 mg/l
Pimephales promelas (fathead minnow) - (measured, flow-through) 96 h LC50 = 1.37 mg/l
Daphnia magna, - (static). 24 h LC50= 0.18 mg/l

Ecological Toxicity Values for: Sodium hydroxide

Mosquito fish - 96 h LC50 = 125 mg/l
Bluegill - 48 h LC50 = 99 mg/l
SECTION 13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary : If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D002.

Disposal Methods : As a hazardous solid waste it should be disposed of in accordance with local, state and federal regulations.

Potential US EPA Waste Codes : D002

SECTION 14. TRANSPORT INFORMATION

DOT
UN number : 1791
Description of the goods : Hypochlorite solutions
Class : 8
Packing group : III
Labels : 8
Emergency Response : 154
Guidebook Number

TDG
UN number : 1791
Description of the goods : HYPOCHLORITE SOLUTION
Class : 8
Packing group : III
Labels : 8

IATA
UN number : 1791
Description of the goods : Hypochlorite solution
Class : 8
Packing group : III
Labels : 8
Packing instruction (cargo aircraft) : 856
Packing instruction (passenger aircraft) : 852
Packing instruction : Y841
IMDG-CODE
UN number : 1791
Description of the goods : HYPOCHLORITE SOLUTION
Class : 8
Packing group : III
Labels : 8
EmS Number 1 : F-A
EmS Number 2 : S-B
Marine pollutant : yes

SECTION 15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

Signal word : DANGER!
Hazard statements : Corrosive. Causes skin burns.
Corrosive. Causes irreversible eye damage.
This pesticide is toxic to fish.

WHMIS Classification : E: Corrosive Material

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>7681-52-9</td>
<td>100</td>
<td>667</td>
</tr>
</tbody>
</table>

SARA 302
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations
Massachusetts Right To Know

| Sodium hypochlorite | 7681-52-9 |
| Sodium hydroxide    | 1310-73-2 |
Pennsylvania Right To Know
Sodium hypochlorite  7681-52-9
Sodium chloride  7647-14-5
Sodium hydroxide  1310-73-2

New Jersey Right To Know
Sodium hypochlorite  7681-52-9
Sodium chloride  7647-14-5
Sodium hydroxide  1310-73-2

California Prop 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:
TSCA : This is an EPA registered pesticide.

Inventories
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION

SECTIONS REVISED: 14
Major References : Available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.