PRODUCT NAME: HTH® SHOCK 'N SWIM
EPA REG. NO. 1258-1237

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 09-08-2003  SUPERCEDES: 09-08-2003
MSDS NO: 02410-1237 - R51103

MANUFACTURER: Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204

SYNONYMS: None
CHEMICAL FAMILY: Hypochlorite Mixture
FORMULA: Not Applicable/Mixture
DESCRIPTION: Sanitizer and Oxidizer
OSHA HAZARD CLASSIFICATION: Toxic by inhalation, corrosive to eyes and skin, skin and eye hazard, lung toxin

SECTION 2 COMPONENT DATA

PRODUCT COMPOSITION

<table>
<thead>
<tr>
<th>CAS or CHEMICAL NAME</th>
<th>PERCENTAGE RANGE</th>
<th>HAZARDOUS PER 29 CFR 1910.1200</th>
<th>EXPOSURE STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>40-55%</td>
<td>Yes</td>
<td>1 mg/cubic meter (15 min. STEL - TWA): Arch chemicals Internal Exposure Standard</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>5-15%</td>
<td>No</td>
<td>None Established</td>
</tr>
<tr>
<td>Calcium chlorate</td>
<td>0-4%</td>
<td>Yes</td>
<td>None Established</td>
</tr>
<tr>
<td>Calcium chloride</td>
<td>0-4%</td>
<td>Yes</td>
<td>None Established</td>
</tr>
</tbody>
</table>

02410-1237- R51103
CAS or CHEMICAL NAME: Calcium hydroxide
CAS NUMBER: 1305-62-0
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

<table>
<thead>
<tr>
<th>OSHA (PEL)</th>
<th>ppm</th>
<th>mg/cubic-meter</th>
<th>ACGIH (TLV)</th>
<th>ppm</th>
<th>mg/cubic-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA:</td>
<td>None</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEILING:</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>STEL:</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

CAS or CHEMICAL NAME: Calcium carbonate
CAS NUMBER: 471-34-1
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

<table>
<thead>
<tr>
<th>OSHA (PEL)</th>
<th>ppm</th>
<th>mg/cubic-meter</th>
<th>ACGIH (TLV)</th>
<th>ppm</th>
<th>mg/cubic-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA:</td>
<td></td>
<td>15 (Total dust)</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 (Respirable fraction)</td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CEILING:</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>STEL:</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

CAS or CHEMICAL NAME: Magnesium sulfate heptahydrate
CAS NUMBER: 10034-99-8 (anhydrous 7487-88-9)
PERCENTAGE RANGE: 25-35%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 17-22%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

SECTION 3 PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID INHALATION OF DUST AND FUMES. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.

STORAGE CONDITIONS: Keep product tightly sealed in original containers. Store product in a cool, dry, well-ventilated area. Store away from combustible or flammable products. Keep product packaging clean and free of all contamination, including, e.g., other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.

DO NOT STORE AT TEMPERATURES ABOVE: 52 Deg.C (125 Deg.F)

In the event that the calcium hypochlorite were to separate from the blend, storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Also, the magnesium sulfate heptahydrate will begin to lose water of crystallization at approximately 150 Deg.C (302 Deg.F); Should all the water of crystallization be lost, the likelihood of rapid decomposition occurring, as above, would be increased.

PRODUCT STABILITY AND COMPATIBILITY

 SHELF LIFE LIMITATIONS: Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage conditions.
time and temperatures. Do not store product at temperatures above 52 Deg.C (125 Deg.F). When stored under moderate temperature conditions, product will maintain stated label strength for approximately two years. Prolonged storage at 35 Deg.C (95 Deg.F) or above will significantly shorten the shelf life. Storage in a climate-controlled storage area or building is recommended in those areas where extremes of high temperature occur.

INCOMPATIBLE MATERIALS FOR PACKAGING: Product packaging must be clean and free of contamination by other materials, including, e.g., other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Do not allow product to come in contact with other materials, including, e.g., other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.

SECTION 4 PHYSICAL DATA

APPEARANCE: White granules
FREEZING POINT: Not Applicable
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: Onset - Approx. 170-180 Deg.C (338-356 Deg.F)
SPECIFIC GRAVITY: Not Applicable
BULK DENSITY: 0.8 g/cc, loose
pH @ 25 DEG.C: 10.0-10.8 (1% soln.)
SOLUBILITY IN WATER: Approximately 18% @ 25 Deg.C. (Product contains calcium hydroxide and calcium carbonate which will leave a residue.)
VAPOR PRESSURE @ 25 DEG.C: Not Applicable
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
MOLECULAR WEIGHT: 143 (Active ingredient)
ODOR: Chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

SECTION 5 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: Wear a NIOSH approved respirator if dusts are created.

VENTILATION: Use local exhaust ventilation to minimize dust and chlorine level where industrial use occurs. Otherwise, ensure good general ventilation.

SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves and safety glasses to avoid skin and eye contact. Where industrial use occurs, chemical goggles or full impermeable suit may be required.

EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):
RESPIRATOR TYPE: NIOSH approved full face piece air-purifying respirator with chlorine cartridges and dust/mist prefilter. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or in exposure levels which exceed 10X the PEL.

PROTECTIVE CLOTHING TYPE: Neoprene, Nitrile, Natural rubber
(This includes: gloves, boots, apron)
SECTION 6  FIRE AND EXPLOSION HAZARD INFORMATION

This product contains an ingredient which is both a strong oxidizer and is chemically reactive with many substances. Strong oxidizers are capable of intensifying a fire once started. Because of this, any contamination of the product with other substances by spill or otherwise should be avoided. Also see section 3

FLAMMABILITY DATA:
  FLAMMABLE: No
  COMBUSTIBLE: No
  PYROPHORIC: No
  FLASH POINT: Not Applicable
  AUTOIGNITION TEMPERATURE: Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): UEL - Not Applicable         LEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:
  Health: 3
  Flammability: 0
  Reactivity: 1

EXTINGUISHING MEDIA:
  Water only

FIRE FIGHTING TECHNIQUES AND COMMENTS:
  Use water to cool containers exposed to fire. Also see Section 11.
  OTHER: Do not use dry extinguishers containing ammonium compounds

SECTION 7  REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
  TEMPERATURES ABOVE: 170 Deg.C (338 Deg.F)
  MECHANICAL SHOCK OR IMPACT: No
  ELECTRICAL (STATIC) DISCHARGE: No
  HAZARDOUS POLYMERIZATION: Will not occur
  INCOMPATIBLE MATERIALS: This product is chemically reactive with many substances, including, e.g., other pool treatment products, acids, organics, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, corrosive, flammable or combustible materials.
  HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas
  OTHER CONDITIONS TO AVOID: Storage at temperatures >125 Deg.F (52 Deg.C) Prevent ingress of humidity and moisture into container or package. Always close the lid.

SUMMARY OF REACTIVITY: (See also Section 6)
  OXIDIZER: No (Contains an oxidizer - calcium hypochlorite)
  PYROPHORIC: No
  ORGANIC PEROXIDE: No
  WATER REACTIVE: No
  OTHER: Arch calcium hypochlorite products meet the specifications of ASTM method E-487-74 as set forth in 49 C. F. R. Sec. 173.21, Title 49-Code of Federal Regs.(DOT Regs.)

SECTION 8  FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician
at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: Remove victim to fresh air. Support respiration if needed. Call a physician.

SECTION 9  TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
Inhalation, skin and eye contact, ingestion

WARNING STATEMENT AND WARNING PROPERTIES
MODERATELY TOXIC IF SWALLOWED. AVOID BREATHING DUST OR FUMES. HARMFUL IF PRODUCT IS INHALED IN HIGH CONCENTRATIONS. CAUSES EYE, DIGESTIVE TRACT AND RESPIRATORY TRACT BURNS. DRY MATERIAL CAUSES MODERATE SKIN IRRITATION. WET MATERIAL CAUSES SKIN BURNS

HUMAN RESPONSE DATA
ODOR THRESHOLD: Approximately 2.0 mg/cubic-meter, based on odor threshold of chlorine.
IRRITATION THRESHOLD: Approximately 18-31 mg/cubic meter, based on the irritation threshold of chlorine.
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: Approximately 63 mg/cubic-meter, based on IDLH concentration of chlorine.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION
ACUTE:
Inhalation of dust or vapor from this product can be irritating to the nose, mouth, throat and lungs. In confined areas, mechanical agitation can result in high levels of dust, and reaction with incompatible materials (as listed in Section VII) can result in high concentrations of chlorine vapor, either of which may result in burns to the respiratory tract, producing lung edema, shortness of breath, wheezing, choking, chest pains, impairment of lung function and possible permanent lung damage.
CHRONIC:
Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE
Severe irritation and/or burns can occur following eye exposure.
Contact may cause impairment of vision and corneal damage.

SKIN
ACUTE:
Dermal exposure to dry material causes moderate skin irritation characterized by redness and swelling. Dermal exposure to wet material can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause permanent damage.

CHRONIC:
Effects from chronic skin exposure would be similar to those from single exposure. In addition, chronic exposure to wet material may cause
effects secondary to tissue destruction.

INGESTION

ACUTE:
Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. Significant exposure to this material can lead to serious health effects and/or death.

CHRONIC:
There are no known or reported effects from chronic exposure except for effects similar to those experienced from single exposure. The acute corrosivity of this product makes chronic ingestion of significant amounts unlikely.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Asthma, respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY:
Inhalation LC 50: >2.04 mg/l (1hr., rat); > 0.51 mg/l (4 hr., rat) – extrapolated from inhalation toxicity studies using calcium hypochlorite
Oral LD 50: Approximately 1200 mg/kg. (rat) based on extrapolation from oral toxicity studies using calcium hypochlorite
Dermal LD 50: > 2 g/kg. (rabbit)

Irritation: Causes burns to eyes. Dry material causes skin irritation, wet material causes skin burns.

ACUTE TARGET ORGAN TOXICITY: This product is corrosive to the eyes and upon inhalation may cause irritation to mucous membranes and respiratory tract. The dry material is irritating to the skin. However when wet, it will produce burns to the skin

CHRONIC TOXICITY:
There are no known or reported effects from repeated exposure except those secondary to burns.

REPRODUCTIVE TOXICITY:
Calcium hypochlorite has been tested for teratogenicity in laboratory animals. Results of this study have shown that calcium hypochlorite is not a teratogen.

CARCINOGENICITY:
This product is not known or reported to be carcinogenic by any reference source, including: IARC, OSHA, NTP or EPA.
One hundred mice were exposed dermally 3 times a week for 18 months to a solution of calcium hypochlorite. Histopathological examination failed to show an increased incidence of tumors.
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. (Group 3 substance).

MUTAGENICITY:
Calcium hypochlorite has been tested in the dominant lethal assay in male mice, and it did not induce a dominant lethal response.
Calcium hypochlorite has been reported to produce mutagenic activity
in two in vitro assays. It has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

AQUATIC TOXICITY:
Bluegill, 96 hr. LC50: Approximately 0.12 mg/l (nominal, static) based on extrapolation from studies using calcium hypochlorite
Rainbow trout, 96 hr. LC50: 0.22 mg/l (nominal, static) based on extrapolation from studies using calcium hypochlorite
daphnia magna, 48 hr. LC50: 0.15 mg/l (nominal, static) based on extrapolation from studies using calcium hypochlorite

TOXICITY TO WILDLIFE:
Bobwhite quail, dietary LC50: > 7,000 ppm based on extrapolation from studies using calcium hypochlorite
Mallard ducklings, dietary LC50: > 7,000 ppm based on extrapolation from studies using calcium hypochlorite
Bobwhite quail, oral LD50: Approximately 4800 mg/kg. based on extrapolation from studies using calcium hypochlorite

SECTION 10  TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL ONLY IF PACKING CONTAINS 10 POUNDS OR GREATER OF CALCIUM HYPOCHLORITE

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

Land (U.S. DOT):
PACKING CONTAINS 10 POUNDS OR GREATER OF CALCIUM HYPOCHLORITE:
RQ, Other Regulated Substances, Solid, NOS (Calcium Hypochlorite), 9, NA 3077, III


Hazard Label/Placards: Class 9 - Miscellaneous Hazardous Materials
2000 Emergency Response Guide# 171

Water (IMDG): Not Regulated
Marine Pollutant: Not Listed

Air(IATA/ICAO): Not Regulated

1) Inhalation toxicity data indicates product to be toxic by inhalation, however, diameter of over 90% of granules well exceed 10 micron limit. Particles cannot be inhaled through lungs.

2) Important: Product not regulated in transport for U.S. ground shipments, if package does not contain 10 Lbs. or greater of calcium hypochlorite.

SECTION 11  SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.
REPORTABLE QUANTITY: 10 lbs. (as Calcium hypochlorite) Per 40 CFR 302.4

SPILL MITIGATION PROCEDURES:
Hazardous concentrations in air may be found in local spill area and
immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. All water utilized to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal and/or treatment.

WATER RELEASE: This material is heavier than water. This material is soluble in water. Monitor all exit water for available chlorine and pH. Advise local authorities of any contaminated water release.

LAND SPILL: Contact  at 1-800-6546-911 immediately.
DANGER: All spills of this product should be treated as contaminated. Contaminated product may initiate a chemical reaction which may spontaneously ignite any combustible material present, resulting in a fire of great intensity. In case of a spill, separate all spilled product from packaging, debris and other material. Using a clean broom or shovel, place all spilled product into plastic bags, and place those bags into a clean, dry disposal container, properly marked and labeled. Disposal containers made of plastic or metal are recommended. Do not seal disposal containers tightly. Immediately remove all product in disposal containers to an isolated area outdoors. Place all damaged packaging material in a disposal container of water to assure decontamination (i.e. removal of all product) before disposal. Place all undamaged packaging in a clean, dry container properly marked and labeled. Call for disposal procedures.

SPILL RESIDUES:
Dispose of per guidelines under Section 12, WASTE DISPOSAL.
This material may be neutralized for disposal; you are requested to contact ACEAN at 800-6546-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
Response to this material requires the use of a full encapsulated suit and a NIOSH approved positive pressure supplied air respirator.

SECTION 12 WASTE DISPOSAL
If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous waste, it should be disposed of in accordance with local, state and federal regulations.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS 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.

SECTION 13 ADDITIONAL REGULATORY STATUS INFORMATION
TOXIC SUBSTANCES CONTROL ACT:
This substance is listed on the Toxic Substances Control Act inventory.
SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE 3: HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:
Immediate (Acute)

PHYSICAL:
None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:
EXTREME HAZARDOUS SUBSTANCE – THRESHOLD PLANNING QUANTITY:
None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

SECTION 14 ADDITIONAL INFORMATION

REGULATED UNDER FIFRA, USDA & FDA
MSDS REVISION STATUS: Sections 2 and 10 revised

SECTION 15 MAJOR REFERENCES


Additional references are available upon request.