SAFETY DATA SHEET

Calcium Hypochlorite

Section 01 - Product And Company Identification

Product Identifier .................................. HTH® Dry Chlorine Granular

Product Use ........................................ Disinfection in swimming pools and drinking water supplies; slime and odour control. Sanitizer and oxidizer.

Supplier Name...................................... ClearTech Industries Inc.
1500 Quebec Avenue
Saskatoon, SK. Canada
S7K 1V3

Prepared By........................................ ClearTech Industries Inc. Technical Department
Phone: 800-387-7503

24-Hour Emergency Phone............. 800-387-7503

Section 02 - Composition / Information on Ingredients

Ingredients.......................... Calcium Hypochlorite 60-80%
Sodium Chloride 10-20%
Calcium Chloride 0-5%
Calcium Hydroxide 0-4%
Calcium Carbonate 0-5%
Calcium Chlorate 0-5%
Water 5.5-10%

CAS Number................................. Calcium Hypochlorite 7778-54-3
Sodium Chloride 7647-14-5
Calcium Chloride 10043-52-4
Calcium Hydroxide 1305-62-0
Calcium Carbonate 471-34-1
Calcium Chlorate 10137-74-3
Water 7732-18-5

Synonym (s)........................................ Chlortabs
Section 03 - Hazard Identification

Inhalation

HARMFUL IF PRODUCT IS INHALED IN HIGH CONCENTRATIONS. CAUSES BURNS TO RESPIRATORY TRACT.
Dust and vapor irritate the nose and throat. In confined areas, mechanical agitation can result in high levels of dust, and reaction with incompatibles materials (ie: acids and water/moisture) can result in high concentrations of chlorine vapour, 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.

Skin Contact / Absorption

DRY MATERIAL CAUSES MODERATE SKIN IRRITATION. WET MATERIAL CAUSES SKIN BURNS.
Calcium hypochlorite dust and solutions can cause irritation and in severe cases, chemical burns, which are characterized by redness, swelling, and scab formation. Moisture from perspirations will accelerate tissue destruction.

Eye Contact

CAUSES BURNS TO EYES. Severe irritation and/or burns can occur following eye exposure. Direct contact may cause impairment of vision and corneal damage.

Ingestion

MODERATELY TOXIC IF SWALLOWED. CAUSES BURNS TO DIGESTIVE TRACT. 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 or perforation. Significant exposure to this material can lead to serious health effects and/or death.

Exposure Limits

ARCH/ROEG-TWA*: 1 mg/m³
NIOSH/IDHL-TWA: 37-48mg/m³ based on IDHL concentration of chlorine (calcium hypochlorite)
ACGIH-TWA: 5mg/m³ (calcium hydroxide)
OSHA-TWA: 15mg/m³ (calcium hydroxide, total dust)
OSHA-TWA: 15mg/m³ (calcium carbonate, total dust)
OSHA-TWA: 5mg/m³ (calcium carbonate, respirable dust fraction)

* Arch Recommended Occupational Exposure Guideline.

Section 04 - First Aid Measures

Inhalation

Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention if difficulties persist.

Skin Contact / Absorption

Remove contaminated clothing. Wash affected area with soap and water for 15-20 minutes. Seek medical attention if irritation occurs or persists.
Eye Contact: Check for and remove any contact lenses. Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.

Ingestion: Immediately give large amounts of water. Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomitus. Do not give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.

Additional Information: Notes to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

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**Section 05 - Fire Fighting Measures**

**Conditions of Flammability**: This product is chemically reactive with many substances. Any contamination of the product with other substances by spill or otherwise may result in a chemical reaction and fire. This product is a strong oxidizer which is capable of intensifying a fire once started. Product is not known to be flammable, combustible or pyrophoric.

**Means of Extinction**: Drench with water only, and cool surrounding products and area with water. Do not use dry extinguishers containing ammonium compounds.

**Flash Point**: Not applicable

**Auto-ignition Temperature**: Not applicable

**Upper Flammable Limit**: Not applicable

**Lower Flammable Limit**: Not applicable

**Hazardous Combustible Products**: Chlorine may be formed due to decomposition at higher temperatures. Water in contact with calcium hypochlorite can release heat or chlorine gas.

**Special Fire Fighting Procedures**: Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

**Explosion Hazards**: Not sensitive to mechanical impact or static discharge.

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**Section 06 - Accidental Release Measures**

**Leak / Spill**: Wear appropriate personal protective equipment. Ventilate area. Shovel or sweep up spilled material and put into plastic bags, which can be placed into a clean, dry disposal container for future disposal.
Section 07 - Handling and Storage

Handling Procedures
Avoid inhalation of dust and fumes. 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.

Storage Requirements
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 product where the average daily temperature exceeds 35° C / 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage time and temperatures. Store in a cool, dry and well ventilated area. Prolonged storage at elevated temperatures 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.

Do Not Store At temperatures Above: Average daily temperature of 35° C / 95° F. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products.

Section 08 - Exposure Controls and Personal Protection

Protective Equipment

Eyes
Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

Respiratory
Use NIOSH-approved respirator-full facepiece with chlorine/P100 combination cartridges when dust is present. Use a self-contained breathing apparatus for major spills.
Gloves........................................... Impervious gloves of chemically resistant material (rubber, neoprene, nitrile) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Clothing.......................................... Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Footwear......................................... Impervious boots of chemically resistant material should be worn at all times.

Engineering Controls

Ventilation Requirements.............. Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other........................................... Emergency shower and eyewash should be in close proximity.

**Section 09 - Physical and Chemical Properties**

**Physical State**.......................... Solid

**Odor and Appearance**.............. White tablets with a strong chlorine odour

**Odor Threshold**....................... ~ 1.4 mg/m³ [based on odour threshold of chlorine]

**Specific Gravity (Water=1)**......... Not applicable

**Vapor Pressure (mm Hg, 20C)**....... Not applicable

**Vapor Density (Air=1)**............... Not applicable

**Evaporation Rate**..................... Not applicable

**Boiling Point**.......................... Decomposes at 170-180°C

**Freeze/Melting Point**.............. Not applicable

**pH**.......................................... 10.4-10.8 [1% solution in neutral, distilled water @ 25°C]

**Water/Oil Distribution Coefficient** Not applicable

**Bulk Density**........................... 0.8 g/cm³

**% Volatiles by Volume**............. Not available
Solubility in Water: 18% at 25°C

Molecular Formula: Ca(OCl)_2

Molecular Weight: 142.98

Section 10 - Stability and Reactivity

Stability: Product is not sensitive to mechanical shock or impact. Product will not undergo hazardous polymerization. Product is an NFPA Class 3 oxidizer which can cause a severe increase in fire intensity. Not pyrophoric. Not an organic peroxide. If subjected to excessive temperatures, the product may undergo rapid decomposition, evolution of chlorine gas, and heat sufficient to ignite combustible substances. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter. Use copious amounts of water for fires involving this product.

Incompatibility: 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. Do not allow product to contact any foreign matter, including other water treatment products. Contamination or improper use may cause a fire of great intensity, explosion or the release of toxic gases. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter.

Hazardous Products of Decomposition: Water in contact with calcium hypochlorite releases chlorine gas. Contact with incompatibles presents an explosion and fire hazard. Toxic or corrosive fumes may be liberated. These include chlorine gas. Decomposition temperature: 170 - 180°C - [338 - 356 °F].

Polymerization: Will not occur

Section 11 - Toxicological Information

Irritancy: Dry material causes moderate irritation and burns to eyes and skin. Wet material causes skin burns.

Sensitization: Not known or reported to be a skin or respiratory sensitizer.

Chronic/Acute Effects: Skin irritation may occur from repeated or prolonged skin contact. Chronic inhalation exposure may cause impairment of lung function and permanent lung damage. Asthma, respiratory and cardiovascular disease may be aggravated by exposure to this chemical.
Synergistic Materials
Not available

Animal Toxicity Data
\[\text{LC}_{50}\text{(inhalation, rat, 1 hour): 2.04mg/L (65\% calcium hypochlorite)}\]
\[\text{LD}_{50}\text{(oral, rat): 850mg/kg (65\% calcium hypochlorite)}\]
\[\text{LD}_{50}\text{(dermal, rabbit): > 2000mg/kg (65\% calcium hypochlorite)}\]

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).

Reproductive Toxicity
Not reported to show reproductive toxicity.

Teratogenicity
Results in laboratory analysis show it is not a tetrogen.

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 in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

**Section 12 - Ecological Information**

Fish Toxicity
\[\text{LC}_{50}\text{(bluegill, 96 hour, nominal, static): 0.088mg/L (calcium hypochlorite)}\]
\[\text{LC}_{50}\text{(rainbow trout, 96 hour, nominal, static): 0.16mg/L (calcium hypochlorite)}\]
\[\text{LC}_{50}\text{(daphnia magna, 48 hour, nominal, static): 0.11mg/L}\]

Biodegradability
Not available

Environmental Effects
Highly toxic to fish and other aquatic organisms.

**Section 13 - Disposal Consideration**

Waste Disposal
Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Section 14 - Transport Information

TDG Classification

Shipping Name............................... Calcium Hypochlorite

Class........................................... 5.1

Group.......................................... III

PIN Number.................................. UN 1748

Other.......................................... Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

Section 15 - Regulatory Information

WHMIS Classification.......................C, E

NOTE: THE PRODUCT LISTED ON THIS MSDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS MSDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

NSF Certification............................Product is certified under NSF/ANSI Standard 60 for disinfection, oxidation and algicide treatment at a maximum dosage of 15mg/L.

Section 16 - Other Information

Version #...................................... Two

Preparation Date.............................. February 5, 2014

Revision Date................................. May 6, 2014

Revision Note................................. Updated technical and CTI information.

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.
Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service or technical service department.

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24 Hour Emergency Number - All Locations – 1 (800) 387-7503