# MATERIAL SAFETY DATA SHEET

# Calcium Hypochlorite

## Section 01 - Chemical And Product And Company Information

**Product Identifier** ..... Pulsar® Plus Tabs

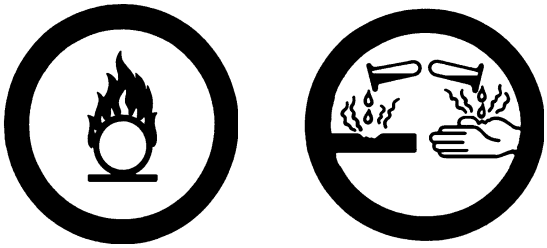
**Product Use** ..... Disinfection/sanitizer in swimming pools and drinking water supplies; slime and odour control.

**Supplier Name**..... ClearTech Industries Inc.
2302 Hanselman Avenue
Saskatoon, SK. Canada
S7L 5Z3

**Prepared By**..... ClearTech Industries Inc. Technical Department
Phone: (306)664-2522

**Preparation Date**.....March, 30, 2014

**24-Hour Emergency Phone**..... 306-664-2522



## Section 02 - Composition / Information on Ingredients

| | | |
|---|---|---|
| **Hazardous Ingredients**..... | Calcium Hypochlorite | 60-80% |
| | Sodium Chloride | 10-20% |
| | Calcium Chloride | 0-5% |
| | Calcium Hydroxide | 0-4% |
| | Calcium Carbonate | 0-4% |
| | Calcium Chlorate | 0-5% |
| | 1,2,4-Butanetricarboxylic Acid, 2-Phosphono-, Sodium Salt | 0.2-0.8% |
| | Water | 4-10% |

| | | |
|---|---|---|
| **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 |
| | 1,2,4-Butanetricarboxylic Acid, 2-Phosphono-, Sodium Salt | 40372-66-5 |
| | Water | 7732-18-5 |

**Synonym (s)**.....None

## Section 03 - Hazard Identification

**Inhalation**..... Dust and mist irritate the nose and throat. In confined areas, mechanical agitation can result in high levels of dust, and reaction with incompatibles materials (e.g., 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**..... 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**..... Exposure to calcium hypochlorite can cause eye irritation and vision impairment. Contact can produce impairment of vision and corneal damage.

**Ingestion**..... When ingested, there will be burning of the mouth and throat. Can cause abdominal cramps, vomiting, diarrhea, nausea, and/or tissue ulceration which may lead to convulsions, coma, and even death.

**Exposure Limits**..... NIOSH-IDHL= 37-48mg/$m^3$ based on IDHL concentration of chlorine (calcium hypochlorite)
ACGIH-TWA= 5mg/$m^3$ (calcium hydroxide)
OSHA-PEL= 15mg/$m^3$ (calcium hydroxide, total dust)
ACGIH-TWA= 10mg/$m^3$ (calcium carbonate)
OSHA-PEL= 15mg/$m^3$ (calcium carbonate, total dust)

## 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.

**Skin Contact / Absorption**..... Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.

**Eye Contact**..... 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**..... Probable mucosal damage may contraindicate the use of gastric lavage.

## Section 05 - Fire Fighting

**Conditions of Flammability**..... Non-flammable. Note calcium hypochlorite is a strong oxidizing agent; may form explosive mixtures with combustibles, organic, or other oxidizable materials.

**Means of Extinction**..... Drench with water, and cool surrounding products and area with water. Avoid 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, oxygen, and chlorine monoxide at higher temperatures. Water in contact with hot calcium hypochlorite can release hydrochloric acid 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.

## Section 06 - Accidental Release Measures

**Leak / Spill**..... Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Remove all sources of ignition. 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. Prevent material from entering sewers. Flush with water to remove any residue.

**Deactivating Materials**..... Hydrogen peroxide, sodium sulphite, or sodium bisulphite.

## Section 07 - Handling and Storage

**Handling Procedures**..... 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**..... Store in a cool, dry, well-ventilated place. Keep container tightly closed, and away from incompatible materials such as combustible and flammable products. Keep out of the sun. Keep product pacakging clean and free from contact including 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 08 - Personal Protection and Exposure Controls

### 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 and dust/mist cartridges when dust is present. A self-contained breathing apparatus should be used for major spills.

**Gloves**..... Impervious gloves of chemically resistant material (neoprene) 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/m$^3$ based on 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**.....……..... Not applicable

**Freeze/Melting Point**.....……..... Decomposes at 170-180°C

**pH**.....…….. 10.4-10.8 (1% solution)

**Water/Oil Distribution Coefficient**.... Not applicable

**Bulk Density**.....…….. 1.9 g/cm$^3$

**% 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**..... Stable in optimum storage conditions. Heat, sunlight and contamination could cause decomposition.

**Incompatibility**..... Acids, reducing agents, combustible materials such as wood, cloth, or organic materials, dry powder fire extinguishers containing monoammonium phosphate, metals such as iron and copper and their alloys, water or steam, ammonia, urea, amines.

**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.

**Polymerization**..... Will not occur

## Section 11 - Toxicological Information

**Irritancy**..... Causes irritation and burns to eyes and skin.

**Sensitization**..... Not available

**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**..... $LC_{50}$(inhalation,rat,1 hour)= 1300mg/$m^3$ based on chlorine
$LD_{50}$(oral,rat)= 850mg/kg
$LD_{50}$(dermal,rabbit)= > 2000mg/kg

**Carcinogenicity**..... Not considered to be carcinogenic as per IARC, NTP, OSHA, and ACGIH.

**Reproductive Toxicity**..... Not reported to show reproductive toxicity.

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

**Mutagenicity**..... Results in laboratory analysis show it is not a mutagen.

## Section 12 - Ecological Information

**Fish Toxicity**..... $LC_{50}$(bluegill,96 hour)= 0.088mg/L
$LC_{50}$(rainbow trout,96 hour)= 0.16mg/L
$LC_{50}$(daphnia magna,48 hour)= 0.11mg/L

**Biodegradability**..... Not available

**Environmental Effects**..... Not available

## 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 - Transportation Information

**TDG Classification**

**Class**..... 5.1

**Group**..... II

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

**Other**..... Secure containers (full and/or empty) with suitable hold down devises during shipment.

## 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.**

## Section 16 - Other 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 / MSDS 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 Material 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.

## ClearTech Industries Inc. - Locations

**Corporate Head Office: 2302 Hanselman Avenue, Saskatoon, SK, S7L 5Z3**
**Phone: 306-664-2522**
**Fax: 306-665-6216**

**www.ClearTech.ca**

| Location | Address | Postal Code | Phone Number | Fax Number |
|---|---|---|---|---|
| Richmond, B.C. | 12431 Horseshoe Way | V7A 4X6 | 604-272-4000 | 604-272-4596 |
| Calgary, AB. | 5516E - 40th St. S.E. | T2C 2A1 | 403-279-1096 | 403-236-0989 |
| Edmonton, AB. | 11750 - 180th Street | T5S 1N7 | 780-452-6000 | 780-452-4600 |
| Saskatoon, SK. | 2302 Hanselman Avenue | S7L 5Z3 | 306-933-0177 | 306-933-3282 |
| Regina, SK. | 555 Henderson Drive | S42 5X2 | 306-721-7737 | 306-721-8611 |
| Winnipeg, MB. | 340 Saulteaux Crescent | R3J 3T2 | 204-987-9777 | 204-987-9770 |
| Mississauga, ON. | 7480 Bath Road | L4T 1L2 | 905-612-0566 | 905-612-0575 |

## 24 Hour Emergency Number - All Locations - 306-664-2522