

MATERIAL SAFETY DATA SHEET

Calcium Hypochlorite (sodium process)

SECTION 1 – CHEMICAL PRODUCT IDENTIFICATION

MSDS Name: Calcium Hypochlorite

Catalog Numbers: AC199030010

Synonyms:

Calcium oxychloride; Bleaching powder; Calcium Salt; Chlorinated lime

CAS Registry Number: 7778-54-3

PIN (UN/NA Number(s)): 1748 2880

RTECS Number(s): NH3485000

Chemical Family: Salt of hypochlorous acid

Molecular Formula: Ca-Cl₂-O₂

Structural Formula: Ca(OCl)₂

Specification: Available chlorine 65%min.-70%min.; Water 5.5%-10%; Granular size 90%min. (14-50mesh)

Ingredients (by weight %): it contains up to 65%min.-70%min. of Ca(OCl)₂, the remainder includes sodium chloride, water, calcium chloride, calcium carbonate, calcium hydroxide and calcium perchlorate etc. water content should not be too high or too low in an effort to avoid product to react with organic contaminates violently.

The presence of magnesium oxide in lime used to prepare calcium hypochlorite may lead to the formation of magnesium hypochlorite, which is dangerously reactive.

Impurities such as rust (iron oxide) or other metal oxides can catalyze decomposition of the material and must be kept at very low levels.

Product Use: Water-treatment agent, Bleaching Agent, Bactericide, Algacide

SECTION 2 – HAZARDOUS IDENTIFICATION

Appearance: white solid; products may have a strong chlorine odour resulting from decomposition of calcium hypochlorite.

Danger Overview: Strong oxidizer. Contact with such material as oil etc. may cause a fire. Corrosive. May be harmful if swallowed. Cause eye and skin burns. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns.

Potential Health Effects

Eye Contact:

Exposure to calcium hypochlorite dust and mist can cause eye irritation. Concentrated solutions can cause burns which may result in permanent eye damage.

Skin Contact:

Calcium hypochlorite dust and solutions can cause irritation, and in severe cases, chemical burns with permanent scar.

Ingestion:

Calcium hypochlorite may cause burns to the mouth and digestive tract. Symptoms include abdominal pain, vomiting, difficulty in breathing, confusion, delirium and, in severe cases, coma and death.

Inhalation:

Dust and mist may irritate the nose and throat and upper respiratory tract. When mixed with acids, chlorine gas is released. This gas can cause severe irritation of the nose and throat. Prolonged exposure to high concentration of chlorine gas may result in severe lung damage.

Chronic:

Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects.

SECTION 3—EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentration low.

Personal Protective Equipment

Eyes: wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: wear appropriate protective gloves to prevent skin exposure.

Clothing: wear appropriate protective clothing to prevent skin exposure.

Respirators: a respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirement or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

SECTION 4 – FIRST AID MEASURES

Eye Contact:

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20-30 minutes, by the clock, holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. Take care not to rinse contaminated water into the non-affected eye or on to face. If irritation persists, repeat flushing. Quickly transport victim to an emergency care facility

Skin Contact:

Avoid direct contact with this material. Wear impervious protective gloves if necessary. Once contacted, as quickly as possible to flush contaminated area with lukewarm, gently running water for at least 20-30 minutes, by the clock. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Discard contaminated leather goods and transport victim to an emergency care facility immediately.

Ingestion:

Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing.

Have victim rinse mouth thoroughly with water.

Do NOT induce vomiting. Have victim drink 240 to 300ml (8 to 10 oz.) of water to dilute material in stomach. If vomiting occurs naturally, rinse mouth and repeat administration of water.

Obtain medical attention immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately.

If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth respiration.

If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Comments:

Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Control Centre for all exposure except minor instance of inhalation or skin contact.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point:

Not combustible (does not burn). However, calcium hypochlorite is a strong oxidizing agent and is a serious fire and explosion risk.

General Information:

This strong oxidizer may cause a fire as it contacts with combustible materials; Contaminating or mixing with foreign materials such as combustibles, grease, and fuels can cause fire;

Containers may explode when heated;

As in any fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion, wear a self-contained breathing apparatus in pressure-demand, MSHA/NROSH (approved or equivalent), and full protective gear during a fire.

Extinguishing Media:

Use water spray to cool fire-exposed containers. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out. For small fires DO NOT use dry chemicals, carbon dioxide or foams. USE WATER ONLY. For large fires, flood fire area with water from a distance.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 3.

Spills/leaks:

Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the protective Equipments section. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. Do not get water inside containers. Do not use combustible materials such as paper towels to clean up spill.

SECTION 7 – HANDLING AND STORAGE

Handling:

Use only in a well ventilated area. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Label containers and keep containers tightly closed after its use. Avoid contact with heat, sparks and flame. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Discard contaminated shoes. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse.

Storage:

Store in original container. Store tightly closed containers in a clean, cool open or well ventilated area. Keep out of sun, sparks and flame. The storage area should have a non-combustible, corrosion-resistant floor and approved drainage. Protect containers from damage or breakage. Keep away from incompatible material.

Avoid storage for prolonged periods. Regularly and carefully inspect containers for damage and corrosion. Only corrosion-resistant equipment should be used in storage area.

SECTION 8 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Crystalline granular

Appearance: white

Odor: strong chlorine like

Molecular Weight: 142.9848

Conversion Factor: Not applicable

Melting Point: Decomposes at temperatures above 100 deg C

Boiling Point: Not applicable

Flash Point: Not applicable

Decomposition temperature: 175 deg C

Specific Gravity/Density: 2.350 (water=1)

Solubility in Water:

21.5g/100ml at 0 deg C; 23.4g/100ml at 40 deg C

Solubility in Other Liquids:

Not available. Calcium hypochlorite reacts with many organic materials.

Vapor Pressure: Not applicable

Vapor Density: Not applicable

Evaporation Rate: Not applicable

PH Value: not available

SECTION 9 – STABILITY AND REACTIVITY

Chemical Stability:

Normally unstable, it readily undergoes violent chemical changes, but does not detonate. Small amount of water added to a container of calcium hypochlorite may generate enough heat to initiate the hazardous decomposition of this material. However, it is stable at room temperature in closed container under normal storage and handling conditions.

Condition to Avoid:

High temperatures, incompatible materials, ignition sources, dust generation, acids, excess heat, combustible materials, organic materials, reducing agents.

Incompatibility-Material To Avoid:

Reducing agents, carbontetrachloride, ammonia, aliphatic amines, aromatic amines, sulfur, sulfides (inorganic, e.g. ferric sulfide, lead sulfide, sodium sulfide), metal oxides, glycerol, phenols, diethylene, glycol monomethyl ether, carbon, acetic acid + potassium, cyanides (e.g. potassium cyanide, sodium cyanide), ammonium chloride, charcoal, N,N-dichloromethylamine+heat, ethanol, menthol, iron oxide, rust, 1-propanethiol, isobutanethiol, turpentine, sodium hydrogen sulfate + starch + sodium carbonate, acetylene, hydroxy compounds (e.g. ethanol, ethylene glycol, glycerol, sugar), combustible material (e.g. anthracene, grease, oil, mercaptans, methyl carbitol, nitromethane, organic matter, and propylmercaptan).

Hazardous Decomposition Products:

Hydrogen chloride, irritating and toxic fumes and gases, oxygen, chlorine.

Hazardous Polymerization: does not occur.

Comments:

The stability of solid calcium hypochlorite depends on the content of moisture, lime and impurities (e.g., magnesium hypochlorite and metal oxides), and the temperature and humidity of the storage area. Anhydrous calcium hypochlorite containing 1% moisture may lose 1-3% available chlorine per year

SECTION 10– DISPOSAL CONSIDERATIONS

Untreated waste calcium hypochlorite must never be discharged directly into sewers or surface water. Following decontamination, disposal of residue by secure landfill may be acceptable.

SECTION 11 – TRANSPORT INFORMATION

Description And Shipping Name: Calcium hypochlorite, dry or Calcium hypochlorite mixtures with more than 39% available chlorine (water content 3%-5.5%).

Product Identification Number (PIN): 1748

Classification: 5.1 – Oxidizing substance

Special Provisions: 48, 99, 109

IMO Classification: 5.1

ICAO Classification: 5.1

Packing Group: II

Description And Shipping Name: Calcium hypochlorite, hydrated or Calcium hypochlorite hydrated, mixtures with not less than 5.5% but more than 10% water.

Product Identification Number (PIN): 2880

Classification: 5.1 – Oxidizing substance

Special Provisions: 109

IMO Classification: 5.1

ICAO Classification: 5.1

Packing Group: II