



Paramount Pools & Spas

a division of PoolQuip Limited

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If you have a Chemical Emergency phone 111 and ask for Fire
In case of Poisoning contact The National Poisons Centre on 0800 POISON (0800 764 766)
The most current version of this document is available online at www.poolquip.co.nz

MATERIAL SAFETY DATA SHEET (MSDS)

1.0 Product & Company Information

Revision Date: April 2011

Product Name: **Calcium Hypochlorite**

Other Names: **Pool Master Pool Chlor Granules**, Chlorine Granules, Calcium Hypochlorite Hydrated, Bleaching Powder

Uses: Swimming Pool Water Sanitization

Distributor Details: As per header at top of page, and any of our authorised retailers & distributors.

2.0 Hazard Data

Classified as Dangerous Goods according to NZS 5433:1999
Oxidizing Corrosive Dangerous For The Environment

Risk Phrases:	R8	Contact with combustible material may cause fire
	R31	Contact with acids liberates toxic gas
	R34	Causes burns
	R22	Harmful if swallowed
	R50	Very toxic to aquatic organisms
Safety Phrases:	S1/2	Keep locked up and out of the reach of children
	S26	In case of contact with eyes, rinse immediately with plenty

	of water and seek medical advice
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61	Avoid release to the environment. Refer to special instructions / MSDS

ERMA New Zealand Approval Code: HSR001317
 HSNO Hazard Classification: 5.1B 6.1D 8.1 1A 8.2B 8.3A 9.1A 9.2A 9.3C

3.0 Composition

Chemical Name: Calcium Hypochlorite
 CAS Number: 7778-54-3
 Percentage Rating: 60-80%
 Hazardous Per 29 CFR 19010.1200: Yes
 Exposure Standards: 3 mg/cubic meter (ceiling) as Manufacturer's Standard

Chemical Name: Sodium Chloride
 CAS Number: 7647-14-5
 Percentage Rating: 10-20%
 Hazardous Per 29 CFR 19010.1200: No
 Exposure Standards: None Established

Chemical Name: Calcium Chlorate
 CAS Number: 10137-74-3
 Percentage Rating: 0-5%
 Hazardous Per 29 CFR 19010.1200: Yes
 Exposure Standards: None Established

Chemical Name: Calcium Chloride
 CAS Number: 10043-52-4
 Percentage Rating: 0-5%
 Hazardous Per 29 CFR 19010.1200: Yes
 Exposure Standards: None Established

Chemical Name: Calcium Hydroxide
 CAS Number: 1305-62-0
 Percentage Rating: 0-4%

Hazardous Per 29 CFR 19010.1200: Yes
Exposure Standards: None Established

4.0 First Aid Measures

Description of necessary measures according to routes of exposure.

- Swallowed:** Rinse mouth with water. Give water to drink provided victim is conscious. DO NOT induce vomiting. If vomiting occurs naturally, rinse mouth and repeat administration of water. Seek medical attention immediately.
- Eyes:** Immediately flush eyes with water for at least 20-30 minutes. Neutral saline solution may be used as soon as it is available. DO NOT interrupt the flushing. Take care not to rinse contaminated water into the non-affected eye or onto the face. Seek immediate medical attention.
- Skin:** Immediately flush skin with water for at least 20-30 minutes. DO NOT interrupt flushing. Under running water, remove contaminated clothing. Discard contaminated leather goods. Transport to the nearest medical facility for treatment.
- Inhaled:** Remove victim from exposure to fresh air. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bay and a mask. Seek immediate medical assistance.
- Advice to Doctor:** Treat symptomatically based on individual reactions of patient and judgement of doctor. Effects may be delayed. May cause corneal burns.
- Aggravated medical:** Persons with pre-existing skin, eye, tooth or respiratory disorders, or with seasonal allergic rhinitis may be more susceptible to the effects of this material.

5.0 Fire Fighting Measures

- Extinguishing Media** **SMALL FIRE:** Use flooding quantities of water. DO NOT use dry chemicals, carbon dioxide or foam. If safe to do so, move undamaged containers from fire area. DO NOT move cargo if cargo has been exposed to heat. **LARGE FIRE:** Flood area with water from a protected position. Cool containers with flooding quantities of water until well after fire is out. If impossible, withdraw from area and let fire burn. Avoid getting water inside container: a violent reaction may occur. Dam fire control water for safe disposal.
- Hazards from Combustion Products** Powerful oxidizing solid. Will accelerate burning when involved in a fire. This strong oxidiser may cause a fire as it contacts with

combustible materials. Containers may explode when heated. Incompatible with flammable, organic and combustible materials, ammonia, primary amines, aromatic amines, and urea acids, ammonium chloride, different types of chlorinating chemicals, ethanol or methanol, hydroxy compounds, acetylene, acetic acid and potassium cyanide, reducing agents, metal oxides, charcoal + heat, metals, organic sulfur compounds, sulfur (damp), turpentine and all sources of ignition. When involved in a fire, this product may generate irritating and highly toxic gases of hydrogen chloride gas, hydrochloric acid, calcium oxides, calcium chlorate, calcium hydroxide, calcium carbonate, and chlorine, oxygen gas, and dichlorine monoxide above 177°C.

Special Protective Precautions and Equipment for Fire Fighters

Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources.

Flammability Conditions

Non combustible solid. Strong oxidiser and its heat of reaction with reducing agents, contaminants or combustibles may cause ignition. Explosions involving calcium hypochlorite have occurred. Product will cause a severe increase in the burning rate of combustible materials with which it comes into contact or that will undergo vigorous self-sustained decomposition due to contamination or exposure to heat.

Hazchem Code

1W

6.0 Accidental Release Measures

Emergency Procedures

Personnel involved in the clean up should wear full protective clothing. Evacuate all unnecessary personnel. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. DO NOT let product reach drains or waterways. If product does enter a waterway advise the Environmental Protection Authority or your local Waste Management. Use clean, non-sparking tools and equipment.

Methods and Materials for Containment and Clean Up

Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly as hazardous waste.

7.0 Handling & Storage

Precautions for Safe Handling

Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended

procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product dust/fumes. Do NOT allow product to get damp. Do NOT mix with other chemicals. Do NOT add water to the product - add the product to the water. Use only clean utensils for handling as remnants of other products may cause a violent reaction leading to fire or explosion.

Conditions for Safe Storage (Including any compatibles)

Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials such as flammable, organic and combustible materials, ammonia, primary amines, aromatic amines, and urea acids, ammonium chloride, different types of chlorinating chemicals, ethanol or methanol, hydroxy compounds, acetylene, acetic acid and potassium cyanide, reducing agents, metal oxides, charcoal + heat, metals, organic sulfur, compounds, sulfur (damp), turpentine and all sources of ignition. Protect from direct sunlight, moisture, food and feedstuffs. Avoid storage in wood floors. Store and transport in an upright container. The bulk material may ignite or explode in storage. Traces of water may initiate the reaction. Store in an area without drain or sewer access. Store below 50°C to avoid slow decomposition, room temperature recommended. **This product has a UN Classification of 2880 and a Dangerous Goods Class 5.1 Oxidiser** according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.

Container Type

Packaging must comply with requirements of Hazardous Substances (Packaging) Regulations 2001. Store in original packaging as approved by manufacturer. SUITABLE : A metallic or coated fibreboard drum using a strong polyethylene inner package.

8.0 Exposure Controls / Personal Protection

National Exposure Standards

No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the exposure standard for dust not otherwise specified is 10mg/m³ (for inspirable dust) and 3mg/m³ (for respirable dust). A time weighted average (TWA) has been established for chlorine (worksafe Aust) of 3mg/m³, (1ppm)(Peak Limitation). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8hr working day for a 5 day working week. Peak Limitation: a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.

Biological Limit Values

No information available on biological limits for this product.

Engineering Controls

A system of local and/or general exhaust is recommended to keep

employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Protection RESPIRATOR: Wear an approved positive pressure, full-facepiece SCBA where engineering controls are inadequate (AS1715/1716). EYES: Wear a full face shield or chemical goggles (AS1336/1337). HANDS: Vinyl gloves are recommended (AS2161). CLOTHING: Flame-retardant coveralls and anti-static footwear (AS3765/2210).

9.0 Physical and Chemical Properties

Appearance	White to Cream Powder or Crystalline Granules. May also appear in 20 gram tablet form.
Formula	Ca. 2ClHO
Odour	Strong Chlorine Odour
Vapour Pressure	Not Applicable
Vapour Density	6.9
Boiling Point	Not Available
Melting Point	Approx 100 Deg C.
Solubility in Water	21g/100mL (at 25 Deg C.)
Specific Gravity	2.35 (at 20 Deg C.) (Water = 1)
Flash Point	Not Applicable
pH	10.8 (10% Solution)
Rate of Solid Materials	Fire Accelerant
Decomposition Temperature	100 Deg C. (Decomposes exothermically > 177 Deg C.)
Additional Information	Odour Threshold : 1-3ppm (Value for chlorine) Refractive Index : 1.545 (alpha), 1.69 (beta) Bulk Density : 0.8g/cm ³ (loose granules) Moisture content : 5.5-10% Molecular Weight : 142.98 Solubility : Insoluble in ethanol

10.0 Stability and Reactivity

Chemical Stability Thermically stable when stored and used as directed. May decompose violently if exposed to heat or direct sunlight. All hypochlorite solutions are unstable and slowly decompose on contact with air, especially if acidified, or contaminated. Decomposition may lead to spontaneous ignition through self-heating.

Conditions to Avoid Avoid excessive heat, elevated temperatures, sunlight, flame, sources of ignition and shock, dust generation, moisture/high humidity, contamination with combustible materials, acidic conditions, the presence of metals and other impurities.

Incompatible Materials Incompatible with flammable, organic and combustible materials, ammonia, primary amines, aromatic amines, and urea acids,

ammonium chloride, different types of chlorinating chemicals, ethanol or methanol, hydroxy compounds, acetylene, acetic acid and potassium cyanide, reducing agents, metal oxides, charcoal + heat, metals, organic sulfur, compounds, sulfur (damp), turpentine and all sources of ignition.

**Hazardous
Decomposition
Products**

In a fire, this product may generate irritating and highly toxic gases of hydrogen chloride gas, hydrochloric acid, calcium oxides, calcium chlorate, calcium hydroxide, calcium carbonate, and chlorine, oxygen gas, and dichlorine monoxide above 177°C. In contact with incompatible materials, the formation of extremely hazardous gases such as explosively unstable N-mono or Di-Chloramines, corrosive chlorine gas, explosive nitrogen trichloride, alkyl hypochlorites, and explosive chloroacetylenes.

Hazardous Reactions

Hazardous Polymerisation will not occur, however this product is a highly reactive oxidising chlorine compound. May cause fire or explosion. Readily ignites with flammable and combustible materials, in contact with anhydrous (dry) calcium hypochlorite. Reacts with ammonia, primary amines, aromatic amines, and urea to form explosive nitrogen trichloride. May explode upon contact with ethanol or methanol, due to the formation of the alkyl hypochlorites. Contact with hydroxy compounds causes ignition and may be explosive. Contact of acetylene may lead to formation of explosive chloroacetylenes. Reaction with acetic acid and potassium cyanide may be explosive. Reaction with reducing agents causes a violent reaction. Reaction with metal oxides can cause a violent oxygen-evolving decomposition of hypochlorites. A confined intimate mixture of calcium hypochlorite + finely divided charcoal exploded on heating. Metals catalyze the decomposition. Reaction with organic sulfur compounds may cause a flash fire/explosion. A mixture of damp sulfur and 'solid swimming pool chlorine' caused a violent exothermic reaction. May explode with turpentine.

11.0 Toxicological Information

Toxicity Data

Oral LD50 Rat : 850mg/Kg Dermal LD50 Rabbit : >2000mg/Kg (40% water solution) Carcinogenicity : Hypochlorite salts are evaluated in the IARC monographs as Group 3: Not Classifiable as to carcinogenicity to Humans. Mutagenicity : Calcium Hypochlorite was mutagenic in bacteria and cultured mammalian cells. Mutation in microorganisms, Bacteria - Salmonella typhimurium: 1mg/plate Cytogenetic analysis, hamster fibroblast: 4mg/L Eye Irritation Test: Rabbit, dosage: equivalent to 0.1mg/volume-70mg sample: Results: Corrosive injury. Rabbit, dosage: 5% solution/30 seconds followed by rinsing with water. Results: Superficial injury. Within one day injury had healed almost completely. Skin Irritation : 0.5mg moistened with water/24hrs: Corrosive injury.

Health Effects – Acute

Swallowed	Harmful if swallowed. Corrosive. Calcium hypochlorite can react with organic material and stomach acids to release chlorine gas, which can cause vomiting, difficulty breathing and chemical injury to the respiratory tract and lungs. Ingestion of calcium hypochlorite solid or solutions can cause severe burns to the mouth, throat and stomach, sore throat, swelling of the throat, severe and permanent damage and perforation of the digestive tract and stomach with immediate pain, gastrointestinal symptoms, nausea, vomiting, diarrhoea, abdominal pain, convulsions, delirium, coma, respiratory collapse, and possible death. As little as 1 ounce may be lethal. Concentrations lower than 15% available chlorine can also be lethal.
Eye	Solids and solutions are corrosive, and can cause permanent eye damage, including blindness. Dust may cause irritation of the inner eyelids and injury to the cornea (ulcers). Solutions release corrosive chlorine gas at normal temperatures. The amount of chlorine gas released depends on the concentration of the solution, pH, temperature, ionic strength, exposure to light and the presence of metals and other impurities. Airborne chlorine can produce severe eye irritation at concentrations of 1 ppm and above. Prolonged or repeated eye contact may cause conjunctivitis. Effects may be delayed.
Skin	Solutions are corrosive and can cause burns, blisters, and permanent scarring. Dusts will form concentrated solutions on wet or sweaty hands. The irritation hazard increases with increasing concentration of the solution and duration of contact. May be harmful if absorbed through the skin. With severe exposures, death could result. Prolonged or repeated skin contact may cause dry, red, itchy, cracked skin (dermatitis).
Inhaled	May be harmful if inhaled. Dust may cause severe irritation and injury to the nasal passages including tissue death (necrosis) and injury to the throat (laryngeal oedema) and upper respiratory tract. Solid calcium hypochlorite decomposes and releases corrosive chlorine gas. Depending on the concentration, chlorine gas can cause nose throat and respiratory tract irritation and or severe lung injury and death. Mists formed from solutions may be moderately to severely irritating. Symptoms of exposure include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Inhalation may be fatal as a result of spasm inflammation and oedema of the larynx and bronchi, chemical pneumonitis and pulmonary oedema.

12.0 Ecological Information

Ecotoxicity	No data available
Persistence and Degradability	No information available on persistence/degradability for this product

Mobility	Soluble in water: 21g / 100mL (at 25 Deg C.)
Environmental Fate (Exposure)	DO NOT allow product to reach waterways, drains or sewers
Bioaccumulative Potential	No information available on bioaccumulation for this product

13.0 Disposal Considerations

Disposal	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of at an approved facility.
Special Precautions for Land Fill or Incineration	Contact a specialist disposal company or the local waste regulator for advice. This should be done in accordance with the Hazardous Waste Act. This material may be suitable for a secure landfill.

14.0 Transport Information

Land and Sea Transport

UN Number	2880
Shipping Name	Calcium Hypochlorite
Dangerous Goods Class	5.1
Packing Group	II
Hazchem Code	1W

15.0 Regulatory Information

Classified as hazardous according to The Australian Safety and Compensation Council (ASCC) and Annex I European Directive 67/548/EEC. EINECS No: 231-908-7 Calcium Hypochlorite

Poisons Schedule	6
EPG	31
AICS Name	HYPOCHLOROUS ACID, CALCIUM SALT
NZ Toxic Substance	3
HSNO Hazard Classification	5.1.1B 6.1D 8.1A 8.2B 8.3A 9.1A 9.2A 9.3C
ERMA Approval Code	HSR001317

16.0 Other Information

Disclaimer

This document is a summary of the health and safety information made available to PoolQuip by the individual chemical manufacturers. Whilst great care has been taken to ensure this information is accurate and current, PoolQuip Limited cannot be held liable for any incorrect information.