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SAFETY DATA SHEET – CALCIUM HYPOCHLORITE

1. IDENTIFICATION

Revision Date	July 2023 (*valid for 5 years from this date)*
Product Name	**CALCIUM HYPOCHLORITE, HYDRATED**
Other Names	Bleaching Powder; Calcium Hypochlorite; Calcium Oxychloride; Calcium Salt; Chlorinated Lime; HYPOCHLOROUS ACID, CALCIUM SALT
Uses	Water-treatment agent; Bleaching Agent; Bactericide; Algaecide
	Product contains up to 65% min. - 70% min. of Ca(OCl)2,
Contact Information	Chlorine Discounters
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Emergency Contact	Managing Director or Operations Manager

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)	6
Globally Harmonised System	
Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Oxidising Solids - Category 2 Acute Toxicity (Oral) - Category 4 Skin Corrosion/Irritation - Category 1B Acute Hazard To The Aquatic Environment - Category 1

Pictograms



Signal Word	Danger	
Hazard Statements	H272	May intensify fire; oxidizer.
	H302	Harmful if swallowed.
	H314	Causes severe skin burns and eye damage.
	H400	Very toxic to aquatic life.
Precautionary Statements		
Prevention	P270	Do not eat, drink or smoke when using this product.
	P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
	P220	Keep/store away from combustible materials.
	P221	Take any precaution to avoid mixing with combustibles.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P264	Wash hands and contaminated body thoroughly after handling.
	P260	Do not breathe fume/gas/mist/vapours/spray.
Response	P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P330	Rinse mouth.
	P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303 + P361 + P353	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
	P363	Wash contaminated clothing before reuse.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P310	Immediately call a POISON CENTER or doctor/physician.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P370 + P378	In case of fire: Use sand or water for extinction.
	P321	Specific treatment (see First Aid Measures on Safety Data Sheet).
Storage	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	CAS Number	Proportions (%)
CALCIUM HYPOCHLORITE	[7778-54-3]	> 65.0
SODIUM CHLORIDE	[7647-14-5]	< 25.0
CALCIUM CHLORIDE	[10043-52-4]	< 10.0
WATER	[7732-18-5]	< 10.0
CALCIUM HYDROXIDE	[1305-62-0]	< 6.0
CALCIUM CARBONATE	[471-34-1]	< 2.0
NOTE: AVAILABLE CHLORINE		> 55.0

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed

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.

Eye

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

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.

Inhaled

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 bay and a mask.

Advice to Doctor

Treat symptomatically based on individual reactions of patient and judgement of doctor. Effects may be delayed. May cause corneal burns. 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.

Medical Conditions Aggravated by Exposure

No information available on medical conditions aggravated by exposure to this product. Chronic Exposure: Repeated exposures to calcium hypochlorite may cause bronchitis to develop with cough and/or shortness of breath.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Do NOT move cargo if cargo has been exposed to heat. Dam fire control water for later disposal. Avoid generating dust.
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.
Extinguishing Media	Use flooding quantities of water as fog or spray. Use water spray to keep fire-exposed containers cool. Avoid direct contact with water; reacts with water releasing chlorine gas. Fight fire from protected location or maximum possible distance. Do not use dry chemical fire extinguishers containing ammonium compounds. Do not use carbon tetrachloride fire extinguishers. Do not allow water runoff to enter sewers or waterways.
Fire and Explosion Hazard	Not combustible (does not burn). However, calcium hypochlorite is a strong oxidizing agent and is a serious fire and explosion risk. Containers may explode when heated. Sealed containers may rupture when heated. An explosion can occur if either a carbon tetrachloride or a dry ammonium compound fire extinguisher is used to extinguish a fire involving calcium hypochlorite. Sensitive to mechanical impact.
Hazardous Products of Combustion	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 sulphur compounds, sulphur (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 di-chlorine monoxide above 158'C.
Special Fire Fighting Instructions	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	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) or chemical splash suit.
Flash Point	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	1W

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Avoid accidents, clean up spills immediately, observing precautionsin the protective Equipment section. Remove all sources of ignition. Keep water away from spilled material. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Avoid generating dusty conditions. Remove all sources of ignition. Isolate the danger area. Use clean, non-sparking tools and equipment. Increase ventilation.

Clean Up Procedures	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to suitable, labelled, corrosion-resistant containers and dispose of promptly as hazardous waste. Do not get water inside containers. Do not use combustible materials such as paper towels to clean up spill.
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean-up should wear full protective clothing as listed in section 8**.**

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. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Storage	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 sulphur, compounds, sulphur (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. This product has a UN classification of 2880 and a Dangerous Goods Class 8 (corrosive) according to The Australian Code for the Transport of Dangerous Goods by Road and Rail.
Container	Packaging must comply with requirements of Hazardous Substances (Packaging) Regulations. Store in original packaging as approved by manufacturer. SUITABLE: A plastic or fibreboard drum using a strong polyethylene chloride inner package.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	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).
Exposure Limits	No Data Available
Biological Limits	No information available on biological limits for this product.

Engineering Measures	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. 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 Protection Equipment	RESPIRATOR: For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. A respiratory protection program must be followed whenever workplace conditions warrant a respirator's use. (AS1715/1716). EYES: Wear appropriate protective eyeglasses, chemical safety goggles, chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area (AS1336/1337). HANDS: Wear appropriate protective gloves to prevent skin exposure (AS2161). CLOTHING: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact and safety footwear (AS3765/2210).
Work Hygienic Practices	No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White to Cream Powder or Crystalline Granule
Formula	Ca.2ClHO
Odour	Strong Chlorine Odour
Vapour Density	6.9
Boiling Point	Decomposes
Melting Point	Approx. 100'C deg C
Solubility in Water	21g/100mL (25'C)
Specific Gravity	2.35 (20'C) (Water = 1)
pH	10.8 (10% Solution)
Percent Volatile	0% Vol (21'C)
Properties of Materials that May Initiate or Contribute to Fire Intensity	Fire accelerant
Potential for Dust Explosion	Not applicable.
Reactions that Release Flammable Gases	Not applicable.
Fast or Intensely Burning Characteristics	Will accelerate burning when involved in a fire.
Decomposition Temperature	100'C (Decomposes exothermically > 177'C)
Additional Information	Odour Threshold: 1-3ppm (Value for chlorine) Refractive Index: 1.545(alpha), 1.69 (beta) Bulk Density: 0.8g/cm3 (loose granules) Moisture content: 5.5-10% Molecular Weight: 142.98 Solubility: Insoluble in ethanol

10. STABILITY AND REACTIVITY

General Information	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 hypo- chlorites. 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 catalyse the decomposition. Reaction with organic sulphur compounds may cause a flash fire/explosion. A mixture of damp sulphur and 'solid swimming pool chlorine' caused a violent exothermic reaction. May explode with turpentine.
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.
Materials to Avoid	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 sulphur, compounds, sulphur (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 di-chlorine monoxide above 177'C. In contact with incompatible materials, the formation of extremely hazardous gases such as explosively unstable N-mono of Di- Chloramines, corrosive chlorine gas, explosive nitrogen trichloride, alkyl hypochlorites, and explosive chloroacetylenes.
Hazardous Polymerisation	Hazardous Polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Toxicity to Animals: Acute oral toxicity (LD50): 850 mg/kg [Rat]. Investigated as a tumorigen and mutagen. 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. Repeated exposures to calcium hypochlorite may cause bronchitis to develop with cough and/or shortness of breath.

Eye Irritant	Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Exposure to calcium hypochlorite dust and mist can cause eye irritation. Concentrated solutions can cause burns which may result in permanent eye damage.
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. Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhoea.
Inhalation	Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, and 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. Dust and mist may irritate the nose and throat and upper respiratory tract. When mixed with acids, chlorine gas releases. 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.
Skin Irritant	Corrosive. Symptoms of redness, pain, and severe burn can occur. Calcium hypochlorite dust and solutions can cause irritation, and in severe cases, chemical burns with permanent scar.
Carcinogen Category	No Data Available Toxicity Data

12. ECOLOGICAL INFORMATION

Ecotoxicity	BOD5 and COD: Not available.
Persistence/Degradability	Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise. Toxicity of the Products of Biodegradation: The products of degradation are more toxic.
Mobility	No Data Available
Environmental Fate	No Data Available
Bioaccumulation Potential	No Data Available
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice. Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. 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.

14. TRANSPORT INFORMATION

Land Transport (Australia)

Regulation Name	ADG
UN Number	2880
Shipping Name	CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE with not less than 5.5% but not more than 16% water
Dangerous Goods Class	5.1 Oxidising Agent (not an organic peroxide)
Subsidiary Risk	Not applicable.
Pack Group	II
Precaution for User	OXIDIZING CORROSIVE DANGEROUS FOR THE ENVIRONMENT
Hazchem Code	1W
EPG	31 OXIDIZING SUBSTANCES
Special Provision	Not applicable.



Sea Transport

Regulation Name	IMDG
UN Number	2880
Shipping Name	CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE with not less than 5.5%but not more than 16% water
Dangerous Goods Class	5.1 Oxidising Agent (not an organic peroxide)
Subsidiary Risk	Not applicable.
Pack Group	II
Precaution for User	OXIDIZING CORROSIVE DANGEROUS FOR THE ENVIRONMENT
Hazchem Code	1W
EPG	31 OXIDIZING SUBSTANCES
Special Provision	Not applicable.



15. 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

Environmental Protection Authority (New Zealand) Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR006978
National/Regional Inventories	Australia (AICS) Listed

16. OTHER INFORMATION

Literature References	No data available.
Sources for Data	No data available.

Legend to Abbreviations and Acronyms

<	less than
<	greater than
ADG	Australian Dangerous Goods Code
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstracts Service (Registry Number)
cm2	square centimetres
CO2	Carbon Dioxide
COD	Chemical Oxygen Demand
deg C ('C)	degrees Celsius
ERMA	Environmental Risk Management Authority
g	gram
g/cm3	grams per cubic centimetre
g/l	grams per litre
HSNO	Hazardous Substance and New Organism

IATA	International Air Transport Association Dangerous Goods Regulations
IDLH	Immediately Dangerous to Life and Health
IMDG	International Maritime Dangerous Goods Code
Immiscible	liquids are insoluble in each other
Kg	kilogram
kg/m3	kilograms per cubic metre
LC50	LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50	LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals
ltr	Litre
m3	cubic metre
mbar	millibar
mg	milligram
mg/24H	milligrams per 24 hours
mg/kg	milligrams per kilogram
mg/m3	milligrams per cubic metre
Misc	miscible
Miscible	liquids form one homogeneous liquid phase regardless of the amount of either component present
mm	millimetre
mPa.s	milli Pascal per second
N/A	Not Applicable
NOHSC	National Occupational Health and Safety Commission
OECD	Organization for Economic Co-operation and Development
PEL	Permissible Exposure Limit
ppb	parts per billion
ppm	parts per million
ppm/2h	parts per million per 2 hours
ppm/6h	parts per million per 6 hours
RCP	Reciprocal Calculation Procedure
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
tne	tonne
TWA	Time Weighted Average
ug/24H	micrograms per 24 hours
UN	United Nations (number)
wt	weight

This SDS summarises Chlorine Discounters best knowledge of the health and safety hazard information of the selected substance and how to safely handle the selected substance in the workplace however Chlorine Discounters expressly disclaims that the SDS is a representation or guarantee of the chemical specifications for the substance.

Each user should read the SDS and consider the information in the context of how the selected substance will be handled and used in the workplace including its use in conjunction with other substances.