Safety Data Sheet
CALCIUM CHLORIDE

Issue Date : 02.03.2017 Revision Date: 01.03.2022 Version: ONE

Product Name : **CALCIUM CHLORIDE**

Classified as hazardous

1. Identification

GHS Product Identifier	CALCIUM CHLORIDE – as pellets, powder, flake.
Company Name	Wobelea Pty Ltd
Address	18 Embrey Court, Pakenham Vic 3810
Telephone/Fax Number	Tel: (03) 5940 1077 Fax: (03) 5940 2599
Recommended use of the chemical and restrictions on use	basic chemicals, chemical industry:, food/foodstuff additives (sequestrant and salty taste additive), food processing agent, e.g., ingredient in canned vegetables to maintain firmness, heat transferring agents, pH-regulating agents, process regulators.
Other Information	EMERGENCY CONTACT NUMBER: +61 03 5940 1077 Business hours: 8:30am to 5:00pm, Monday to Friday.

Empirical Formula & Structural Formula	$CaCl_2$ (anhydrous). $CaCl_2$-$2H_2O$ (dihydrate). $CaCl_2$-$6H_2O$ (hexahydrate).

2. Hazard Identification

GHS classification of the substance/mixture	Eye Damage/Irritation: Category 2A
Signal Word (s)	WARNING
Hazard Statement (s)	H319 Causes serious eye irritation.
Pictogram (s)	Exclamation mark

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Precautionary statement – Prevention	P264 Wash thoroughly after handling. P280 Wear protective eye protection/face protection.
Precautionary statement – Response	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313 If eye irritation persists: Get medical advice/attention.
Precautionary statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization Solid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Calcium chloride	471-34-1	100 %		
Calcium chloride dihydrate	10035-04-8	100 %		

4. First-aid measures

Inhalation	Remove from exposure, rest and keep warm. Have victim blow nose to remove any excess dust If not breathing give artificial respiration. Ensure airways are clear and have qualified person give oxygen through a face mask if breathing is difficult. In severe cases or if irritation develops and persists seek medical attention.
Ingestion	Rinse mouth thoroughly with water immediately. Give plenty of water to drink. Never give anything by mouth to an unconscious person. If swallowed, do NOT induce vomiting. Seek medical attention.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. In severe cases or if irritation persists, seek medical attention.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically and supportively. Dermatitis may result from prolonged or repeated exposure. Oral ingestion may cause serum acidosis.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Hydrogen chloride (hydrochloric acid), some metallic oxides, highly toxic or irritating fumes (or gases) or dusts.
Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media. Small fire: Use dry chemical, CO2, water spray or foam. Large fire: Use water spray, fog or foam.
Decomposition Temp.	1670 °C (boiling point) (anhydrous). Heated to a temperature of 174 - 176 °C it loses one molecule of water; at 260 °C it forms anhydrous (dihydrate). Loses 4 molecules of water at 30 °C and 6 molecules of water at 200 °C (hexahydrate).
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.
Other Information	At high temperatures or when moistened under fire conditions, calcium chloride may produce toxic or irritating fumes.

6. Accidental release measures

Personal Precautions	Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.
Clean-up Methods - Large Spillages	Stop leak if safe to do so. Do NOT touch or walk through this product. Prevent entry into waterways, drains, confined areas. Prevent dust cloud. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.

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7. Handling and storage

Precautions for Safe Handling	Avoid ingestion and inhalation of vapours, or dusts. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep container tightly closed. Keep locked up. Operations should be carried out in an efficient fume hood or equivalent system. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. Ensure a high level of personal hygiene is maintained when using this product. That is; always wash hands before eating, drinking, smoking or using the toilet. Wash thoroughly after handling. Wash clothing before reuse. Always use cool water when dissolving calcium chloride. Heat evolved is significant. Keep away from incompatibles such as moisture, metals, and acids. Have emergency equipment (for fires, spills, leaks, etc.) readily available.Chemicals should be used only by those trained in handling potentially hazardous materials.
Conditions for safe storage, including any incompatibilities	Store in tightly closed, airtight containers, in a cool, dry, well-ventilated area away from incompatible substances. Product is hygroscopic. Take precautions to avoid contact with atmospheric moisture. This product is subject to deterioration during storage. Protect against moisture as the presence of water will accelerate this deterioration. Protect from direct sunlight. Protect against physical damage. Avoid contact with incompatible materials, such as moisture, zinc and steel and materials that support combustion, such as strong oxidising agents. 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. Store below melting point. Refrigeration has been recommended.
Corrosiveness	The solution is mildly corrosive to many metals including aluminium (and alloys), ferrous metals, stainless steel, yellow brass and zinc. Moist calcium chloride and concentrated solutions can corrode steel.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).
Recommended Materials	Keep in a plastic bin.
Unsuitable Materials	Many metals including aluminium (and alloys), ferrous metals, stainless steel, steel, yellow brass and zinc.

8. Exposure controls/personal protection

Other Exposure Information	A time weighted average (TWA) concentration for an 8 hour day, and 5 day week has not been established by Safe Work Australia for this product. There is a blanket limit of 10 mg/m³ for dusts when limits have not otherwise been established.
Appropriate engineering controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, nitrile and neoprene. Fair: Vinyl gloves.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Solid, powder

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Appearance	Very hygroscopic, colourless to white or off-white or white-greyish deliquescent crystals, crystalline solid, granules, beads, lumps, pellets, powder or flakes. (anhydrous) Hygroscopic, colourless or white fine crystals, granules, flakes or crystalline powder. (dihydrate) Colourless to white solid or white, fine trigonal crystals. (hexahydrate)
Odour	Odourless.
Decomposition Temperature	1670 °C (boiling point) (anhydrous). Heated to a temperature of 174 - 176 °C it loses one molecule of water; at 260 °C it forms anhydrous (dihydrate). Loses 4 molecules of water at 30 °C and 6 molecules of water at 200 °C (hexahydrate).
Melting Point	ca. 771 - 773 °C (anhydrous). Heated to a temperature of 174 - 176 °C it loses one molecule of water; at 260 °C it forms anhydrous (decomposition) (dihydrate). 29 °C (decomposition) (hexahydrate).
Boiling Point	ca. 1600 - 1670 °C (anhydrous and dihydrate) Loses 4H2O @ 30 °C and 6H2O @ 200 °C (decomposition) (hexahydrate)
Solubility in Water	Freely soluble in water, exothermic, forms mono-, di-, tetra-, and hexahydrates; very hygroscopic (74.5 g/100 ml (20 °C)) (anhydrous). Very soluble, very exothermic (dihydrate). Extremely soluble in water (hexahydrate).
Solubility in Organic Solvents	Freely soluble in alcohol, ethanol, acetone and acetic acid (anhydrous). Freely soluble in alcohol (dihydrate and hexahydrate).
Specific Gravity	2.15 @ 25 °C (anhydrous). 1.85 @ 25 °C (dihydrate). 1.71 @ 25 °C (hexahydrate).
pH	4.5-8.5 at 25°C; ~8-10 (100 g/l H2O).
Vapour Pressure	Negligible.
Viscosity	5.81 mPa.s (20 °C) in 35.5% aqueous solution (anhydrous).
Volatile Component	0 %vol @ 21 °C
Partition Coefficient: n-octanol/water	Log P(o/w): 0.05 (dihydrate).
Flash Point	Calcium chloride has no flash point.
Flammability	Non combustible material.
Auto-Ignition Temperature	May be combustible at high temperature.
Explosion Properties	Explosive Properties: Not considered to be an explosion hazard; furan-2-peroxycarboxylic acid + calcium chloride causes an explosion at room temperature.
Molecular Weight	110.99 (anhydrous). 147.02 (dihydrate). 219.08 (hexahydrate).
Oxidising Properties	No oxidizing properties.
Dynamic Viscosity	4.7 mPas, 34 % at 20 °C.
Other Information	Taste: Saline. Refractive Index: 1.52 (anhydrous).

10. Stability and reactivity

Chemical Stability	Stable under ordinary conditions of use and storage. This product is strongly hygroscopic, substance will take the moisture from the air and change into solution if exposed in open containers, therefore do not leave containers standing open. The solution in water is a weak base.
Conditions to Avoid	Extremes of temperature, excess heat and direct sunlight, exposure to moisture, moist air or water, acidic conditions, dust generation and incompatible materials.
Incompatible Materials	Boron oxides, calcium oxide, mixtures of lime and boric acid, boric anhydride, strong acids, sulfuric acid, bromine trifluoride, barium chloride, metals, aluminium (and alloys), ferrous metals, stainless steel, yellow brass, zinc, furan-2-peroxycarboxylic acid, methyl vinyl ether, strong oxidizers, moisture, water and boiling water.
Hazardous Decomposition Products	Toxic and corrosive fumes of hydrogen chloride gas (hydrochloric acid) (in presence of sulfuric or phosphoric acids or with water at elevated temperatures), chlorine fumes (Cl-), halogenated compounds, and calcium oxides.

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Possibility of hazardous reactions	Reaction with water (especially hot water) is violent (violent boiling), with liberation of much heat. Reactions with bromine trifluoride and mixtures of lime and boric acid are violent. Reaction with reactive metals (e.g. zinc) in the presence of water forms highly flammable hydrogen gas (reaction may be delayed). Reaction with methyl vinyl ether initiates self-polymerization, generating heat and pressure. Reaction with furan-2-peroxycarboxylic acid is explosive at room temperature.
Hazardous Polymerization	Generates heat and violent polymerization occurs when mixed with methyl vinyl ether.

11. Toxicological Information

Acute Toxicity - Oral	LD50 (rat): 2300 mg/kg (anhydrous);
Ingestion	Low toxicity material but ingestion may cause serious irritation of the mucous membrane and can burn the mouth and oesophagus due to heat of hydrolysis (exothermic reaction with water). Ingestion of large amounts may cause severe gastrointestinal tract irritation with burning sensation, nausea, vomiting, abdominal pain, diarrhoea and possible burns and gastrointestinal hemorrhage. In very severe cases, may affect cardiovascular system (cardiac disturbances, slow heart beat), behaviour (seizures), metabolism, blood, and brain, respiration (rapid respiration) and seizures, or death, may occur.
Inhalation	Granular material does not pose a significant inhalation hazard, but inhalation of dust may cause severe irritation of the nose, throat and the respiratory tract, with symptoms of coughing, sore throat, tachypnea, dyspnoea and wheezing, with burning sensation and pain in nasal cavities, occasional nose bleeding and tickling in the throat, inflammation and possible burns. Cases of perforation of the nasal septum have also been reported. The substance can be absorbed into the body by inhalation of its aerosol.
Skin	Solid may cause mild irritation on dry skin, erythema and peeling of facial skin; strong solutions or solid in contact with moist/wet skin may cause severe irritation, dry skin, itching, scaling, reddening, or, occasionally, blistering, with possible burns, swelling and pain. Risk of skin absorption.
Eye	Contact with eyes, particularly by dust, may cause severe irritation, possible transient corneal injury, and possible eye burns from heat of hydrolysis and chloride. Inflammation of the eye is characterized by redness, lacrimation, eye discharge, itching, stinging and blurring.
Carcinogenicity	Not listed in the IARC Monographs.
Chronic Effects	Repeated or prolonged exposure to the substance can produce damage to the heart and cardiovascular system. Prolonged or repeated skin contact may lead to allergic contact dermatitis in some individuals. The skin may react by producing redness, irritation weals or pustules. The substance may have effects on the nasal mucous membrane, resulting in ulcerations. Chronic ingestion of calcium salts combined with alkali may result in milk-alkali syndrome. Hypercalcemia, alkalosis, and renal dysfunction are the primary effects seen. Hypochloremia and occasionally hypokalemia may occur. Chronic ingestion resulting in mild hypercalcemia and renal dysfunction without severe neurologic signs (stupor, coma) (blood calcium level is increased, resulting in the precipitation of calcium in the kidney, which may cause renal damage) are readily reversible within a few days of discontinuation of calcium salts if treated early. Chronic ingestion resulting in symptomatic hypercalcemia may require specific therapy. Conjunctivitis due to chronic ingestion and calcium deposition is seen in the milk-alkali syndrome. Acute single ingestions of calcium salts have not caused this syndrome. Effects may be delayed.
Serious eye damage/irritation	Eye irritation test (rabbit): Result: moderate to severe irritation effect. Remark: Application of 2 to 10 % solution caused no permanent damage. Calcium chloride solid particles have been known to cause transient irritation and superficial injury without permanent damage.
Mutagenicity	Mutagenic effects have occurred in experimental animals.
Skin corrosion/irritation	Skin Irritation Test, rabbit, Result: not irritating (anhydrous), not irritating (dihydrate), slightly irritating (hexahydrate), not irritating (CaC12 33 % solution); Skin Irritation Test, human, Result: moderately irritating.

12. Ecological information

Ecological Information	No ecological problems are to be expected when the product is handled and used with due care and attention.
Ecotoxicity	Increases the hardness of water. A harmful effect of aquatic organisms is only to be expected at high concentrations.
Persistence and degradability	Calcium chloride does not biodegrade.
Mobility	Distribution: log P(o/w): 0.05.

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Bioaccumulative Potential	Calcium chloride does not bioaccumulate. No bioaccumulation is to be expected (log P(o/w) < 1).
Other Adverse Effects	In countries where Calcium Chloride is used instead of salt to melt snow on roads there have been serious losses among wild animals drinking from the melted snow at the roadside.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	LC50: >100 mg/l 96 hours; L. macrochirus LC50: 10650 mg/l/96 h. (anhydrous substance).
Acute Toxicity - Daphnia	Daphnia magna EC50: 144 mg/l/48 h (anhydrous substance). Algae IC50: 3130 mg/l/120 h (anhydrous substance).
Acute Toxicity - Algae	Bacteria EC50: > 100 mg/l (anhydrous substance).
Acute Toxicity - Bacteria	Nitzschia linearia LC50: 3130 mg/l/120h in static water.
Acute Toxicity - Other Organisms	

13. Disposal considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	Not Scheduled

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons No. 15', Commonwealth of Australia, November 2016. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Substances Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
Contact Person/Point	Sarah Bliss (03) 5940 1077 DISCLAIMER STATEMENT: All information provided in this data sheet or by our supplier representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Wobelea Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet, by our suppliers or by our technical representatives.

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