

## SAFETY DATA SHEET

### Section 1. Identification of the material and the supplier

Product: **Calcium Chloride Horticultural Grade**  
 Synonyms: Calcium chloride dihydrate (flakes, powder); calcium chloride liquid; calcium dichloride.  
 Product Use: Agent for de-icing roads, sidewalks, stairs in the winter, to prevent the deposition of dust on unpaved roads, sports fields, tennis courts and speedway tracks; desiccant gases and liquids in chemical synthesis, as an additive to plastics to produce calcium; aid in drainage treatment plant; additive to speed up bond and sealing mortar and concrete and other (herbicides, pH adjusting agent, laboratory reagent).  
 Restriction of Use: Refer to Section 15  
 New Zealand Supplier: Horticulture Ltd  
 Address: 10 Firth Street  
 Drury, 2113  
 Telephone: +64 9 294 8453  
 Fax Number: +64 9 294 7272  
**Emergency Telephone: 0800 764 766 (National Poison Centre)**  
 Date of SDS Preparation: 1 April 2019

### Section 2. Hazards Identification

**This substance is hazardous according to the EPA Hazardous Substances (Classification) Notice 2017**

**EPA Approval No: HSR003217**

#### Pictograms



Toxic/Irritant

Signal Word: **Warning**

HSNO Classification	Hazard Code	Hazard Statement	GHS Category
6.1D (oral)	H302	Harmful if swallowed.	Acute Tox. 4
6.3A	H315	Causes skin irritation.	Skin Irrit. 2
6.4A	H319	Causes serious eye irritation.	Eye Irrit. 2A

9.3C	H433	Harmful to terrestrial vertebrates.	
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Prevention Code	Prevention Statement
P102	Keep out of reach of children.
P103	Read label before use.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective clothing as detailed in Section 8.

Response Code	Response Statement
P330	Rinse mouth.
P362	Take off contaminated clothing and wash before re-use.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P305 + P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.

Storage Code	Storage Statement
None allocated	

Disposal Code	Disposal Statement
P501	Dispose of according to Local Regulations or Authorities

### Section 3. Composition / Information on Ingredients

Ingredients	Wt%	CAS NUMBER.
Calcium Chloride	69.5-79.5	10035-04-8

### Section 4. First Aid Measures

Routes of Exposure:

If in Eyes	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists call doctor/physician.
If on Skin	Take off contaminated clothing and wash before re-use. Wash skin with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
If Swallowed	Wash out mouth with water. Never give anything to the mouth of an unconscious person. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering the lungs. Call a POISON CENTER or doctor/physician if you feel unwell.
If Inhaled	Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. Get medical advice if breathing becomes difficult.

#### Most important symptoms and effects, both acute and delayed

Symptoms:

**Ingestion:** Harmful if swallowed. After ingestion may damage the lining of the digestive tract, stomach pain, vomiting and diarrhea.

- Inhalation:** Prolonged inhalation of dust may cause slight irritation to the respiratory system, irritation of mucous membranes of nose and mouth, coughing.
- Skin:** Contact with skin may cause irritation, redness, dryness, itching.
- Eyes:** Irritating to eyes. Significant concentrations of dust or direct ingress of substances into the eyes may cause irritation, redness, tearing, burning and conjunctivitis.
- Treatment:** Remove affected person from the contaminated product of the environment. In the event of health problems, consult your doctor or the center of toxicological concern. Provide the information contained in the SDS. If unconscious do not give anything by mouth.

## Section 5. Fire Fighting Measures

<b>Hazard Type</b>	Non Flammable
<b>Hazards from decomposition products</b>	During combustion produce hazardous products (e.g. chlorine, hydrogen chloride). Avoid inhalation of combustion products, because they may pose a health risk.
<b>Suitable Extinguishing media</b>	Extinguishing media suitable to the burning media in the surrounding should be applied. Do not use water jet.
<b>Precautions for firefighters and special protective clothing</b>	Wear full protective equipment and self-contained breathing apparatus with independent air circulation. Containers exposed to fire or high temperature cool with water and if possible remove from the danger zone. Take up mechanically. Keep out of drains, surface waters and soil against pollution. Water from fire treated as hazardous pollution and accumulate in separate containers.
<b>HAZCHEM CODE</b>	<b>None allocated</b>

## Section 6. Accidental Release Measures

Should restrict access to non-emergency personnel to the area of failure until the completion of the disposal of the product. Wear appropriate personal protective equipment. Do not drink, eat and smoke. Provide adequate local and general ventilation. Avoid direct contact with the substance. Avoid inhalation of dust.

Secure the gullies. Prevent contamination of surface water and ground. In the event of any serious pollution of the environment, notify the appropriate administrative authority, control and rescue services. Dispose of used packaging to deliver to eligible organizations.

Keep damaged packaging. Damaged container and place in a substitute container. Collect the spilled substance mechanically avoiding the formation of dust, transfer to a tightly sealed containers and be disposed of or recycled. Wash contaminated area with plenty of water.

## Section 7. Handling and Storage

### Precautions for Handling:

- Read label before use.
- Do not eat, drink or smoke when using this product.
- Remove contaminated clothing and clean before reuse.
- Avoid skin and eye contact.
- Avoid inhalation of dust.
- Wash your hands before break and after working with the product.
- The workplace should be equipped with a shower and eye wash position.
- Prevent against penetration into drains, surface and ground water and soil.
- Wear protective clothing as detailed in Section 8.

### Precautions for Storage:

- Keep out of reach of children.
- Keep in properly labeled, factory tightly sealed, with a label which complies with current regulations.

- Store in dry, cool and well ventilated storage room.
- Avoid to high temperature.
- Protect against moisture (substance may be lumpy).
- Avoid contact with: boron trioxide (in the presence of calcium oxide), zinc (in the presence of water), acids (in contact with the sulfuric acid, hydrogen chloride is separated), bases, water (exothermic reaction).
- Catalyzes exothermic polymerization of methylvinyl ether.

<b>Section 8</b>	<b>Exposure Controls / Personal Protection</b>
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### WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance	TWA	STEL
	ppm mg/m <sup>3</sup>	ppm mg/m <sup>3</sup>
Dusts	10 mg/m <sup>3</sup> (inhalable)	

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2017 9TH EDITION.

#### Systemic effects: DNELacute and DNELlong term

After assessment of the toxicological properties of CaCl<sub>2</sub>, it has been concluded that the substance is not expected to cause adverse systemic effects by either acute or repeated exposure. Therefore no DNELs for systemic effects by either acute or prolonged exposure have been derived either for workers or for general population for any exposure route.

#### Local effects: DNELacute and DNELlong term

##### Dermal:

Calcium chloride is not classified as irritating to skin; therefore DNEL not need to be determined for this route of exposure.

##### Inhalation:

Available data, albeit of poor quality, indicate that anhydrous calcium chloride may cause respiratory tract irritation due to its intense hygroscopic properties. However, available animal data are not sufficient to derive DNEL. Therefore DNELs for respiratory tract irritation by acute or long-term exposure to calcium chloride for workers have been derived by weight of evidence approach, comparing established by ACGIH (American Conference for Governmental Industrial Hygienists) limit values for occupational exposure for either Ca<sup>2+</sup> or Cl<sup>-</sup> containing substances, known to cause respiratory tract irritation.

Therefore set out:

DNELlong-term = 5 mg/m<sup>3</sup> (for workers)

DNELacute = 10 mg/m<sup>3</sup> (for workers)

Using the recommended guidance on information requirements and chemical safety assessment for extrapolation DNEL of value to the general population, set out:

DNELlong-term = 2.5 mg/m<sup>3</sup> (for general population)

DNELacute = 5 mg/m<sup>3</sup> (for general population)

##### Oral:

In the available acute oral toxicity studies with rabbits, several irritating local effects were revealed at gross pathology (ulceration of stomach, haemorrhagic trachea). These effects are regarded to be exaggerated by gavage administration. Taking into account that calcium and chloride are both essential nutrients for humans and a daily intake of more than 1000 mg of each of these ions is recommended, no DNEL needs to be derived for oral route of exposure.

##### PNECwater:

Because the calcium and chloride concentration varies significantly between aquatic ecosystems (0.06-210 mg/l), it is not considered useful to derive a PNECwater.

##### PNECsediment

Data on the toxicity of sediments freshwater and marine organisms are not available. Calcium chloride is present in the environment as calcium and chloride ions, which implies that it will not adsorb on particulate matter, and it is not considered useful to derive a PNECsediment.

### **PNECsoil**

Terrestrial organisms:

No reliable and relevant toxicity data on terrestrial organisms are available. Calcium chloride is present in the environment as calcium and chloride ions, which implies that it will not adsorb on particulate matter, and it is not considered useful to derive a PNECsoil Terrestrial plants:

A tentative „PNEC“, a so-called „no-effect-deposition“ (NEdep) was derived for the exposure route for deposition of calcium via road salts or dust

suppressors. Plants were exposed for one or more seasons. On this basis it was established value of NEdep to 150 g/m<sup>2</sup>.

PNEC, sensitive terrestrial plants: 215 mg chloride/kg (According to the Canadian Environmental Protection Act (ECHA, 2001), sensitive terrestrial plants may be affected by soil concentrations greater than about 68 mg sodium/kg and 215 mg chloride/kg.

### **PNECatmospheric**

No data available.

### **PNECSTP**

In accordance with section 1 of Annex XI of the REACH Regulation, the study does not need to be conducted as in the aquatic environment; calcium chloride is in the form of ions. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore activated sludge is adapted to these various ion concentrations.

As the pH of the water is neutralised before entering the STP, calcium chloride is not present anymore. Bicarbonate is then present. Therefore, it is not considered useful to derive a generic PNECSTP for calcium chloride.

### **PNECoral**

In view of the nutritional aspects, the metabolism, and the mechanisms of action of calcium and chloride ions, it is not considered useful to derive a PNECoral (secondary poisoning).

### **Engineering Controls**

Mandatory general regulations on occupational health. Do not allow the crossing of the environment, the workplace concentration limits for hazardous constituents.

### **Personal Protection Equipment**



<b>Eyes</b>	Wear suitable protective glasses of goggles type, eg. made of polycarbonate (EN 166).
<b>Hands and Skin</b>	In industrial usage wear protective clothing made of natural materials (cotton) or synthetic fibers and gloves (glove materials: nitrile-, butyl-, neoprene-rubber or PVC); glove thickness: 0.5 mm, break through time: ≥480 min (EN 374).
<b>Respiratory</b>	In the case of high concentrations of dust, use respiratory equipment with particle filter color-coded white and the symbol P.
<b>General</b>	After work, wash and clean the surface of the body and protective clothing. Do not eat, drink, smoke or take drugs at work. Remove contaminated clothing and clean before reuse. Wash hands and face before break and after working with the product. Avoid skin and eye contact. Avoid inhalation of dust. Provide adequate local and general ventilation. The workplace should be equipped with a shower and eye wash position.

## **Section 9 Physical and Chemical Properties**

<b>Appearance</b>	Solid – flakes, powder or monolithic mass.
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Product Name: Calcium Chloride  
Date of SDS: 1 April 2019

Prepared by: Technical Compliance Consultants (NZ) Ltd  
Tel: 64 9 475 5240 www.techcomp.co.nz

<b>Colour</b>	White; the commercial substance could have small impurities of iron that gives light nuance coloration to the end product depending on the state of oxidation of iron itself (off-white, yellow, pink) (20°C and 101.3 kPa)
<b>Odour</b>	Odourless
<b>Odour Threshold</b>	Not available
<b>pH</b>	8 - 9 (5 % water solution)
<b>Boiling Point</b>	Initial boiling point and boiling range: In accordance with column 2 of REACH Annex VII, the boiling point study does not need to be conducted, as the substance has a melting point >300°C. However, data are available showing that calcium chloride has a boiling point >1600°C
<b>Melting/Freezing Point</b>	782°C
<b>Freezing Point</b>	Not available
<b>Flash Point</b>	Not available
<b>Flammability</b>	In accordance with Annex XI of REACH the study is scientifically unjustified, as the substance is commonly known to be a stable inorganic salt. Flammability essentially reflects the ability of the substance to react with oxygen in air at elevated temperatures in a strong exothermic reaction. In CaCl <sub>2</sub> the metal cation is already present in the highest possible oxidation state and thus cannot be further oxidized by oxygen. Chloride anion cannot be oxidized by oxygen due to its high electronegativity, which is only slightly lower than that of oxygen itself. Thus, as a reaction with oxygen is not possible, calcium chloride can be considered non-flammable. The substance does not exhibit water reactivity or pyrophoric properties.
<b>Upper and Lower Explosive Limits</b>	Not available
<b>Vapour Pressure</b>	In accordance with column 2 of REACH Annex VII (section 7.5), a vapour pressure study does not need to be conducted as the melting point is above 300°C
<b>Vapour Density</b>	Not applicable (calcium chloride is an inorganic salt)
<b>Relative Density</b>	2.15 g/cm <sup>3</sup> at 20°C (calcium chloride) 1.8 g/cm <sup>3</sup> at 20°C (calcium chloride dihydrate)
<b>Solubilities</b>	In water: 745 g/l at 20°C, 1590 g/l at 100°C. Solubility in other solvents: soluble in ethanol
<b>Partition Coefficient:</b>	Not available
<b>Auto-ignition Temperature</b>	In accordance with Annex XI of REACH the study is scientifically unjustified. The self-ignition temperature of a substance is defined as a minimum temperature at which the substance will ignite at predefined conditions. However, as the metal ion is already present in the highest possible oxidation state and chloride cannot be oxidized by oxygen at normal conditions due to its high electronegativity, the interaction with oxygen is not possible, thus the substance is essentially non-flammable. Therefore the performance of the test on auto ignition temperature is considered to be not necessary.
<b>Decomposition Temperature</b>	The temperature of 175°C CaCl <sub>2</sub> · 2H <sub>2</sub> O loses one molecule of water. At a temperature of 260°C followed by complete dehydration. No decomposition below 1600°C
<b>Kinematic Viscosity</b>	Not available
<b>Particle Size</b>	Not available
<b>Evaporation Rate</b>	Negligible, because calcium chloride is an inorganic salt (vapour pressure is practically equal to 0)

## Section 10. Stability and Reactivity

<b>Stability of Substance</b>	Under the conditions of storage and handling as intended - no
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	reactivity. Product is hygroscopic.
<b>Hazardous Reactions</b>	Not specified.
<b>Conditions to Avoid</b>	High temperature, moisture (substance may be lumpy).
<b>Incompatible Materials</b>	Boron trioxide (in the presence of calcium oxide), zinc (in the presence of water), acids (in contact with the sulfuric acid, hydrogen chloride is separated), bases, water (exothermic reaction). Catalyzes exothermic polymerization of methylvinyl ether.
<b>Hazardous Decomposition Products</b>	None under normal conditions of use and storage.

## Section 11 Toxicological Information

### Acute Effects:

<b>Swallowed</b>	Harmful if swallowed. After ingestion may damage the lining of the digestive tract, stomach pain, vomiting and diarrhea.
<b>Dermal</b>	Not applicable.
<b>Inhalation</b>	Not triggered however prolonged inhalation of dust may cause slight irritation to the respiratory system, irritation of mucous membranes of nose and mouth, coughing.
<b>Eye</b>	Irritating to eyes. Significant concentrations of dust or direct ingress of substances into the eyes may cause irritation, redness, tearing, burning and conjunctivitis. In the available eye irritation study with anhydrous calcium chloride, the observed signs of irritation were not fully reversible within 21 days of observation period. This suggests that anhydrous substance should be classified as H318 (causes serious eye damage). No examples of calcium chloride causing irreversible damage to eyes in humans have been reported, despite its long history of widespread use. It is feasible that eye irritating properties of calcium chloride are directly related to its hygroscopic properties. Anhydrous calcium chloride is a highly hygroscopic substance, and its dissolution in water is a highly exothermic process (heat of dissolution 81.3 kJ/mol), while calcium chloride hydrates are significantly less hygroscopic and their dissolution in water is only slightly exothermic. Available studies have been performed in accordance with OECD Guideline 401 adopted in 1981, which stated that eyes can be rinsed 24 hours post-instillation. According to the modern version of the guideline, rinsing of eyes 1 hour post-instillation is allowed. It is thus feasible that more severe effects have been observed due to the longer presence of the test substance in a conjunctival sac.
<b>Skin</b>	Contact with skin may cause irritation, redness, dryness, itching. Calcium chloride was found to be not irritating to rabbit skin in the GLP-compliant study, performed according to OECD Guideline 404 (Koopman et al., 1986). No effects were noted in any of three rabbits at any observation time points (1, 24, 48 and 72 hours) following an application of the anhydrous substance under occlusive dressing for 4 hours. Based on the results of GLP-compliant guideline studies, calcium chloride does not need to be classified for skin irritation. The results of the corrosion studies indicate that the substance was not corrosive to skin.

### Chronic Effects:

<b>Carcinogenicity</b>	Not applicable. Calcium chloride is not genotoxic in vivo. Calcium and chloride are both essential nutrients for humans and a daily intake of more than 1000 mg for each of the ions is recommended. As for healthy humans, the tolerable upper intake level for calcium is set at 2500 mg per day (equivalent to 6.9 g CaCl <sub>2</sub> per day) (Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, 1999). For chloride, the reference nutrient intake is set at 2500
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	mg/day (equivalent to 3.9 g CaCl <sub>2</sub> per day) (Department of Health, UK, 1991). The estimated intake of calcium chloride in a form of food additives (160-345 mg/day) is considerably smaller than these values. Consistent with this, the establishment of an ADI for calcium chloride has not been deemed necessary by JECFA (Joint FAO/WHO Expert Committee on Food Additives; 1974, 2001). Based on this information, it is concluded that the substance is not carcinogenic and the performance of a carcinogenicity study for calcium chloride is not indicated.
<b>Reproductive Toxicity</b>	Not applicable. Effects on fertility: In accordance with section 1 of REACH Annex XI, testing does not appear scientifically necessary, as CaCl <sub>2</sub> will usually not reach the foetus or the male and female reproductive organs when exposed orally, dermally or by inhalation, as it does not become available systemically. As such, it is considered not useful to perform a reproduction study. Developmental toxicity: It can be stated that the substance will neither reach the foetus nor reach male and female reproductive organs (as it does not become systemically available), which shows that there is no risk for developmental toxicity and no risk for toxicity to reproduction. An oral developmental study was performed in 3 species (mouse, rat and rabbit). In all three species no maternal or teratogenic effects were noted, and NOAEL 's were above highest dose given. NOAEL (oral): 169 mg/kg bw/day.
<b>Germ Cell Mutagenicity</b>	Not applicable. Calcium chloride was negative in the bacterial mutation tests and the mammalian chromosome aberration test, showing no genotoxic potential for calcium chloride. In addition, calcium chloride is already present in the tissue culture media of the in vitro test systems for genetic toxicity testing, and needed for normal function of the cells in culture. Testing calcium chloride in vitro will affect the cellular homeostasis due to osmolarity and/or pH of the culture medium which might give rise to non-specific effects. Considering these aspects and taken into account that calcium chloride is a normal constituent of the body, no further genotoxicity testing is considered necessary. Based on the results of two bacterial mutation assays and an in vitro chromosome aberration test in Chinese hamster lung fibroblasts, calcium chloride is considered not to have a genotoxic potential.
<b>Aspiration</b>	Not applicable.
<b>STOT/SE</b>	Not applicable.
<b>STOT/RE</b>	Not applicable. In accordance with column 2 of REACH Annex VIII and IX, the repeated dose toxicity studies (required under section 8.6) are not needed if a substance undergoes immediate disintegration and there are sufficient data on the cleavage products. In aqueous solution calcium chloride immediately dissociates into the ions Ca <sup>2+</sup> and Cl <sup>-</sup> , which are both essential nutrients for humans and a daily intake of more than 1000 mg for each of the ions is recommended. As for healthy humans, the tolerable upper intake level for calcium is set at 2500 mg per day (equivalent to 6.9 g CaCl <sub>2</sub> per day). For chloride, the reference nutrient intake is set at 2500 mg/day (equivalent to 3.9 g CaCl <sub>2</sub> per day). The estimated intake of calcium chloride in a form of food additives (160-345 mg/day) is considerably smaller than these values. Consistent with this, the establishment of an ADI for calcium chloride has not been deemed necessary by JECFA. Therefore, repeated dose toxicity studies are considered (scientifically) not necessary.

Based on available data,

Oral:LD50 (rat): 2301 mg/kg bw (Toxicological Laboratories Limited, 1987)

Dermal: Ld50 (New Zealand rabbits): 5000 mg/kg bw (Carreon et al., 1981a)



**Section 12. Ecotoxicological Information**

HSNO Classes: 9.3C = Harmful to terrestrial vertebrates.

<b>Persistence and degradability</b>	Hydrolysis: In accordance with section 1 of REACH Annex XI, the study does not need to be conducted as in water; calcium chloride is dissociated. Biodegradation: In accordance with section 2 of Annex XI of the REACH Regulation, the ready biodegradability test, the simulation test on ultimate degradation in surface water, the sediment simulation test and the soil simulation test are not need to be conducted as the substance is inorganic.
<b>Bioaccumulation</b>	In accordance with section 1 of REACH Annex XI, the study does not need to be conducted as in water, calcium chloride is easily dissociated into calcium and chloride ions and both ions are essential constituents of the body of all animals. Octanol-water partition coefficient (Kow): Not applicable (calcium chloride is salt of inorganic). Bioconcentration factor (BCF): Not applicable (calcium chloride is salt of inorganic).
<b>Mobility in Soil</b>	In accordance with section 1 of REACH Annex XI, the study does not need to be conducted as in water; calcium chloride is dissociated into calcium and chloride ions and chloride ions will not adsorb on particulate matter. The calcium ion may bind to soil particulate or may form stable inorganic salts with sulphate and carbonate ions, but calcium is naturally present in soil.
<b>Other adverse effects</b>	No data available.

**Toxicity**

The lowest L(E)C50 value is > 100 mg/l (48-h EC50 is 2,400 mg/l in daphnids (*Daphnia magna*)) and the lowest chronic value is > 0.1 mg/l (21-d EC16 is 320 mg/l in daphnids (*Daphnia magna*)). Therefore calcium chloride needs not to be classified according to Directive 67/548/EEC and EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008.

**Acute toxicity to fish:**

Several studies on acute toxicity to fish have been reported. The lowest 96-hour LC50 value of 4630 mg/l is from a study with fathead minnow (*Pimephales promelas*) conducted under EPA guideline. Furthermore, there are two studies with bluegill sunfish (*Lepomis macrochirus*) from Cairns and Scheier (1959) and Trama (1954) and a study with mosquitofish (*Gambusia affinis*) from Wallen et al. (1957) in which 96-hour LC50 values between 9500 and 13400 mg/l were determined.

LC50 for freshwater fish (*Pimephales promelas*): 4630 mg/l/96h (Mount, D.R., Gulley, D.D., Hockett, J.R., Garrison, T.D. and Evans, J.M. (1997)). Chronic toxicity to fish:

In accordance with section 1 of REACH Annex XI, the study does not need to be conducted as in the aquatic environment; calcium chloride is easily dissociated. Both ions are essential constituents of the body of all animals.

**Acute toxicity to invertebrates:**

There are seven acute toxicity data available for Cladocera. Two of them were conducted according to international or national guidelines, giving the 48-hour EC50 of 2400 mg/l for *Daphnia magna* and the 48-hour LC50 of 1830 mg/l for *Ceriodaphnia* sp. (Mount et al., 1997). The lowest valid 48-hour EC50 was 1062 mg/l for *Daphnia magna* (Biesinger and Christensen, 1972). The acute toxicity studies with other invertebrates showed LC50 or EC50 values in the range of 780-44400 mg/l. These studies were not conducted according to standard guidelines, but the test conditions were fully described and these data are acceptable.

EC50/LC50 for freshwater invertebrates(*Daphnia magna*): 2400 mg/l/48h (de Groot, W.A. and Groeneveld, A.H.C. (1998)).

**Chronic toxicity to invertebrates:**

The chronic effect of 21-day exposure on reproduction of *Daphnia magna* has been investigated as a long-term study. The methods and test conditions used in the study are fully described,

and appear to be scientifically acceptable, although the study was conducted prior to the acceptance of standard guidelines for this type of study. The concentration required for 16% and 50% inhibition of reproduction (EC16 and EC50) was 320 and 610 mg/l, respectively. EC10/LC10 or NOEC for freshwater invertebrates: 320 mg/l/21d (Biesinger, K.E. and Christensen, G.M. (1972)).

**Algae and aquatic plants:**

There is one study with fresh water algae *Pseudokirchneriella subcapitata* (*Selenastrum capricornutum*), which was conducted according to OECD guideline 201. The 72-hour EC50 and EC20 obtained on the basis of biomass from the study were 2900 and 1000 mg/l, respectively. EC50/LC50 for freshwater algae: 2900 mg/l (de Groot, W.A. (1998)) EC20/LC20 or NOEC for freshwater algae: 1000 mg/l (de Groot, W.A. (1998))

**Toxicity to birds:**

In accordance with section 1 of REACH Annex XI, the study does not need to be conducted as calcium chloride is easily dissociated into calcium and chloride ions in water. The absorption, the distribution and the excretion of the ions in animals are regulated separately. Both ions are essential constituents of the body of all animals. Calcium is essential for the formation of skeletons, neural transmission, muscle contraction, coagulation of the blood, and so on. Chloride is required for regulating intracellular osmotic pressure and buffering.

Do not allow to enter waterways.

**Section 13. Disposal Considerations**

**Disposal Method:**

Collect spilt substance into appropriate sealable containers. Ensure the containers are labelled with "Hazardous Waste" along with appropriate pictograms, hazard statements and the contact details of the business. Send for disposal to an appropriate disposal company.

**Precautions or methods to avoid:** Avoid release to the environment.

**Section 14 Transport Information**

**This product is NOT classified as a Dangerous Good for transport in NZ ; NZS 5433:2012**

**Section 15 Regulatory Information**

EPA Approval Code: HSR003217

HSNO Classification: 6.1D(oral), 6.3A, 6.4A, 9.3C

HSWA & EPA Controls	Trigger Quantity
Certified Handler	Not required
Location Certificate	Not required
Tracking Trigger Quantities	Not required
Signage Trigger Quantities	1000kg (9.3C)
Emergency Response Plan	1000kg (6.1D)
Secondary Containment	1000kg (6.1D)
Restriction of Use – Regulation 77A	No person may use this substance as a pesticide, or veterinary medicine; however, this substance may be used in the formulation of a pesticide or veterinary medicine.

**Section 16 Other Information**

**Glossary**

EC <sub>50</sub>	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.

LC <sub>50</sub>	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD <sub>50</sub>	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2017 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2012
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

This document has been prepared by TCC (NZ) Ltd and serves as the suppliers Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to TCC (NZ) Ltd or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer. While TCC (NZ) have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, TCC (NZ) Ltd accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS

The information herein is given in good faith, but no warranty, express or implied is made.

Please contact the New Zealand distributor, if further information is required.

Issue Date: 1 April 2019                      Review Date: 1 April 2024