SAFETY DATA SHEET

Issue date: 01-01-2018
Supersedes: 01-12-2014

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Aqueous Calcium Chloride. This MSDS is valid for all forms of aqueous solutions of calcium chloride.

Chemical name/synonyms
Calcium chloride

Registration number according to REACH
1. Import qualities: 01-2119494219-28-0001
2. Manufacturing in Kokkola: 01-2119494219-28-0002

CAS-number
10043-52-4

EC-number
233-140-8

Index-number, CLP Annex VI
017-013-00-2

1.2 Relevant identified uses of the substance or mixture and uses advised against
See Annex 1 to this MSDS. Most common uses:
Dust suppression, process aid during oil drilling, dehumidifying, road de-icing, food additive, cooling media.
No uses advised against are identified.

1.3 Details of the supplier of the safety data sheet
Supplier/Importer EU

Address 1
TETRA Chemicals Europe AB
Box 901
251 09 HELSINGBORG
Sweden

Telephone number
+46 42 453 27 00

Fax
+46 42 453 27 80

Address 2
TETRA Chemicals Europe Oy
P.O. Box 551
FI-67701 Kokkola
Finland

Telephone number
+358 6 8282 111

Fax
+358 6 8282 575

e-mail (both suppliers)
msds@tetrachemicals.com

1.4 Emergency telephone number
24 hours service is available at NHS Direct in UK:
+44(0)845 46 47 or call 112 or 999, see also www.nhsdirect.nhs.uk

MSDS issued by
Ann Martens, Ramboll Sweden AB, +46-10-615 54 47

Section 2: Hazards identification

2.1 Classification of the substance or mixture
2.1.1 According to the CLP-constitution EG/1272/2008
Serious eye damage/eye irritation, Hazard Category 2; H319 Causes serious eye irritation.
See also section 15 about the classification.

2.2 Label elements
2.2.1 According to the CLP regulation
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GHS hazard pictogram

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statement</td>
<td>H319 Causes serious eye irritation.</td>
</tr>
</tbody>
</table>

Safety information – precautionary

<table>
<thead>
<tr>
<th>Safety information – measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>P280 Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes.</td>
</tr>
<tr>
<td>P337 + P313 IF eye irritation persists: Get medical advice/attention.</td>
</tr>
</tbody>
</table>

Safety information – storage

- |

Safety information – waste

- |

For safety phrases in plain text, see section 16.

Other labels:
Content: Calcium Chloride 10-40 %

2.3 Other hazards
The product could cause minor skin irritation and dry skin.

Section 3: Composition/information on ingredients

3.1 Substances

3.2 Mixtures

<table>
<thead>
<tr>
<th>EC-no</th>
<th>CAS-no</th>
<th>Reg-no REACH</th>
<th>Name of component</th>
<th>Conc. wt/wt</th>
<th>Classification</th>
<th>Com.</th>
</tr>
</thead>
<tbody>
<tr>
<td>233-140-8</td>
<td>10043-52-4</td>
<td>01-211949421928</td>
<td>Calcium chloride</td>
<td>10-40 %</td>
<td>CLP: Eye irritation, Category 2; H319</td>
<td></td>
</tr>
<tr>
<td>215-137-3</td>
<td>1305-62-0</td>
<td></td>
<td>Calcium hydroxide</td>
<td>&lt;1 %</td>
<td>CLP Corrosive Cat 1; H314</td>
<td>WEL</td>
</tr>
<tr>
<td>231-791-2</td>
<td>7732-18-5</td>
<td>Exempted from registration</td>
<td>Water</td>
<td>60-90 %</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Explanation of abbreviations:
CAS-no. = Chemical Abstracts Service; EUNr (Einecs- or Elincsnumber) = European Inventory of Existing Commercial Chemical Substances or European List of Notified Chemical Substances.
Content specified as; %, %wt/wt, %vol/wt, %vol/vol, mg/m³, ppb, ppm, wt%, vol%.
WEL = The product have a workplace exposure limit, PBT = The product is declared since it’s a PBT or a vPvB substance.
Comments: Probable Contaminants are Calcium Carbonate, Calcium Oxide, Alkali Metal Chlorides, Alkaline Earth Metal Chlorides. Typical content of calcium hydroxide < 1 %.
For risk phrases in plain text, see section 16.

Section 4: First aid measures

4.1 Description of first aid measures

| Inhalation | The product is only possible to inhale if it is sprayed. Remove to fresh air, keep warm and at rest. If symptoms persist; Seek medical attention. |
| Skin contact | Remove contaminated clothing. |
Wash off any skin contamination immediately with plenty of water. Launder clothes before reuse.

Eye contact
Remove contact lenses if present. Rinse eye thoroughly with eye wash solution or clean water for at least 10 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical attention.

Ingestion
DO NOT induce vomiting. Wash out mouth with water and give plenty of water to drink (at least 300 ml). Obtain medical advice if symptoms persist.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation
Inhalation of aerosols from the product could irritate the respiratory systems. For single exposure no irreversible effect is known.

Skin contact
Could cause moderate skin irritation. The product will not give delayed symptoms.

Eye contact
Could cause severe irritation of the eye. If the eye is not washed thoroughly, there is a risk of irreversible eye damage.

Ingestion
Could cause irritation of esophagus and the stomach. No delayed or irreversible symptoms are expected.

4.3 Indication of any immediate medical attention and special treatment needed
DO NOT induce vomiting. The product could, tougher with the hydrogen chloride from the stomach cause irritation on esophagus or it might irritate the respiratory system. Wash out mouth with water and give plenty of water to drink (at least 300 ml.) and observe the patient.

Section 5: Firefighting measures

5.1 Extinguishing media
a. Recommended Extinguishing media
b. Not Recommended Extinguishing media
a. The product is not combustible. Choose extinguishing media depending on surrounding fire.
b. All extinguishing media are allowed; Select the appropriate extinguishing media depending on the surrounding fire.

5.2 Special hazards arising from the substance or mixture
Non specific.

5.3 Advise for firefighters
Depending on surrounding fire

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel
For personal protection equipment see section 8.

6.1.2 For emergency responders
For personal protection equipment see section 8.

6.2 Environment precautions
Prevent uncontrolled discharges into the environment (rivers, water courses, sewers etc.). See relevant exposure scenarios covering intended use in the environment like de-icing and dust suppression (ES7), not enclosed to this MSDS.

6.3 Methods and material for containment and cleaning up

6.3.1 Surrounding embankment/sealing
If large releases to a sensitive environment area; Embank with sand or other inert material and collect the material.
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6.3.2 Recommended cleaning up measures
Clean up contaminations/spillages as soon as they occur. Collect as much as possible in a suitable clean container, preferably for reuse, otherwise for disposal.
Wash the spillage area with large quantities of water. Do not wash out with water in a sensitive environment.

6.3.3 Non-recommended measures

6.4 Reference to other sections
For waste measures, see section 13.

Section 7: Handling and storage

7.1 Precaution for safe handling
Operate in a well-ventilated area, atmospheric levels should be controlled in compliance with the exposure scenarios and occupational exposure limits.
Avoid inhalation of dusts.
Avoid contact with skin and eyes.
Wash contaminated skin or clothes immediately after contact with the product.
Report any skin problems that may develop.
See section 8 for personal protection and ventilation control measurements.
Do not eat, drink or smoke when handling the product.
Wash hands after finishing working with the product.
See relevant exposure scenarios: ES8.

7.2 Condition for safe storage, including any incompatibles
Store at a dry place, not above normal room temperature.
Do not store with acids or strong oxidizing or reducing agents.
For ventilation during handling; See ES8.

7.3 Specific end use(s)
See the different exposure scenarios. None specific identified.

Section 8: Exposure controls/personal protection

8.1 Control parameters
National occupational exposure limits values, EH 40, 2005 with updates

<table>
<thead>
<tr>
<th>CAS-no</th>
<th>Substance name</th>
<th>WEL 8 h</th>
<th>WEL 5 min</th>
<th>WEL 15 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>1305-62-0</td>
<td>Calcium hydroxide</td>
<td>5 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WEL = Workplace Exposure Limit

Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>CAS-no</th>
<th>Substance name</th>
<th>DNEL (way of exposure)</th>
<th>Exposure scenario Annex 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Worker DNEL inhalation - long term 5 mg/m³</td>
<td>ES8</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Worker DNEL inhalation - short term 10 mg/m³</td>
<td>ES8</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Consumer, general population DNEL inhalation - long term 2.5 mg/m³</td>
<td>ES10 (not enclosed, see the web page of Tetra Chemicals)</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Consumer, general population DNEL inhalation - short term 5 mg/m³</td>
<td>ES10 (not enclosed, see the web page of Tetra Chemicals)</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>The DNEL dermal acute needs only be derived if an acute toxicity hazard (leading to classification and labelling) has been identified and peak exposures are likely to occur. The available data do not trigger classification for acute systemic dermal toxicity.</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>DNEL dermal long term effects. DNEL not derived.</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>DNEL inhalation long term systemic effects: No DNEL is derived. No long term effects are expected, also taking into account the recommended daily intake of 1000 mg/kg bw CaCl₂.</td>
<td></td>
</tr>
</tbody>
</table>
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The ES 1 for Production and ES 10 for consumer uses are not annexes to this ES.

Predicted No Effect Concentration (PNEC)

<table>
<thead>
<tr>
<th>CAS-no</th>
<th>Substance name</th>
<th>PNEC (compartment environment)</th>
<th>Exposure-scenario Annex 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Deposition onto soil and plants: NEdep* 150 g/m²</td>
<td>If the product is used for deicing or dust suppression, see ES7 (not enclosed to this MSDS).</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Sensitive terrestrial plants: 215 mg chloride/kg</td>
<td>If the product is used for deicing or dust suppression, see ES7 (not enclosed to this MSDS).</td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>Because the calcium and chloride concentration varies between aquatic ecosystems (0.06-210 mg/L), it is not considered useful to derive a generic PNECwater or PNECmarine (neither added nor intermittent values)</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>No toxicity data on freshwater or marine sediment 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 PNECfreshwater or PNECmarine sediment.</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>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 PNECterrestrial.</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>No toxicity tests on the effect of calcium chloride on sewage treatment plant (STP) organisms are available. Because the calcium and chloride concentration varies significantly between aquatic ecosystems, it is not considered useful to derive a generic PNECSTP or PNECSTP-added.</td>
<td></td>
</tr>
<tr>
<td>10043-52-4</td>
<td>Calcium chloride</td>
<td>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).</td>
<td></td>
</tr>
</tbody>
</table>

* 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. It should be noted, that although the units refer to exposure via air, this value reflects effects caused by CaCl₂ deposited from air into soil or onto a plants’ surface.

Biological limit values

None.

Recommended surveillance procedure

Normally not necessary.

8.2 Exposure controls

8.2.1 Recommended technical control measures

See the different ES for appropriate engineering controls and ventilation. Operate in a well-ventilated area, atmospheric levels should be controlled in compliance with the exposure scenarios and occupational exposure limits. Normally handling of aqueous solution of calcium chloride does not demand any special ventilation. See ES8

8.2.2 Individual protection measures, e.g. personal protection equipment

Eye/face protection

See ES8.
### Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

All data in this section is for anhydrous material if not other specified.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Clear to slightly turbid, colourless or slightly coloured</td>
</tr>
<tr>
<td>Odour</td>
<td>None</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>7-11 in 10 % water solution</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>-40 to 20 ºC depending on the concentration.</td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>100 ºC</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>The substance is non-flammable.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Non applicable</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>The substance is non-explosive.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Negligible</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Non applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td></td>
</tr>
<tr>
<td>40 % solution 1.40 g/cm³ at 20 ºC</td>
<td></td>
</tr>
<tr>
<td>10 % solution 1.09 g/cm³ at 20 ºC</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient n-octanol/water</td>
<td>Not applicable for an inorganic substance</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1.7 mPa·s depending on the concentration.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>The substance is non-explosive.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>The substance is non-oxidizing</td>
</tr>
</tbody>
</table>

9.2 Other information

None
Section 10: Stability and reactivity

<table>
<thead>
<tr>
<th>10.1 Reactivity</th>
<th>The substance could react with strong reducing or oxidizing agents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.2 Chemical stability</td>
<td>Stable under recommended storage and handling conditions.</td>
</tr>
<tr>
<td>10.3 Possibility of hazardous reactions</td>
<td>Calcium chloride could react violently with some strong reducing and oxidizing agents.</td>
</tr>
<tr>
<td>10.4 Conditions to avoid</td>
<td>Strong reducing and oxidizing agents.</td>
</tr>
<tr>
<td>10.5 Incompatible materials</td>
<td>Calcium chloride can cause pitting and corrosion of some grades of stainless steel under high temperature and stress conditions can promote stress corrosion cracking.</td>
</tr>
<tr>
<td>10.6 Hazardous decomposition products</td>
<td>None when used according to identified uses.</td>
</tr>
</tbody>
</table>

Section 11: Toxicological information

11.1 Information on toxicological effects

Calcium chloride is easily dissociated into calcium and chloride ions in water. The absorption, the distribution and the excretion of the ions are regulated separately. Calcium and chloride are essential constituents of the body of all animal species. Calcium is essential for the formation of skeletons and the regulation of neural transmission, muscle contraction and coagulation of the blood. Chloride is required for regulating intracellular osmotic pressure and buffering. 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 CaCl₂ per day) (Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, 1999). For chloride, the reference nutrient intake is set at 2500 mg/day (equivalent to 3.9 g CaCl₂ 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). Therefore small amounts of the product are normally not harmful except if in contact with the eye.

a) Acute toxicity

**Short term exposure**

*Ingestion:* Calcium chloride could irritate esophagus and the stomach. 
LD₅₀: 2301 mg/kg bw (rat male/female). Method OECD 401.

*Inhalation:* Could cause irritation of mucous membranes of pharynx and throat and unpleasant sensation in mouth already after the first inhalations if high concentrations of dust levels. Inhalation is only possible if the product is sprayed.

In accordance with column 2 of REACH Annex VIII, the study of acute inhalation does not need to be conducted, as reliable information on acute toxicity by two other routes of exposure, oral and dermal, is available. See however “Other information” below about experience in humans.

*Eye contact:* Calcium chloride is classified as irritating to eyes, category 2. The effect is however local and uptake or other systemic toxic effects through eye contact are not expected.

*Skin contact:* LD₅₀ (dermal) > 5000 mg/kg bw (male/female).

**Long term exposure:**

*Ingestion:* Taking into account the recommended daily intake of 1000 mg/kg bw CaCl₂ no adverse long term exposure is expected if ingested.

*Inhalation:* Based on the available data and taking into account the toxicokinetics and normal physiological role of calcium chloride systemic effects are not anticipated after repeated exposure.

*Eye contact:* No toxic effect is expected except from the irritation properties of calcium chloride. See below about eye irritation.

*Skin contact:* No toxic systemic effect is expected at long term dermal exposure of calcium chloride. The skin uptake is probably slow and calcium and chloride are normally occurring ions in the body.

b) Skin corrosion/irritation

Calcium chloride could give moderate irritation to the skin, especially the anhydrous calcium chloride.

Calcium chloride is however not classified as a skin irritant. Not irritating on rabbit according to OECD 404. Long term effects:

Calcium chloride is not irritating to skin; thus it is not expected to induce local effects by dermal exposure. However all long term exposure with water solution with mild irritants could give atopic dermatitis and skin irritations for sensitive individuals.

c) Serious eye damage/irritation

Anhydrous calcium chloride (rabbit): Highly irritating OECD 405.
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Calcium chloride di- and tetrahydrates (rabbit): Irritating (OECD 405)
Calcium chloride hexahydrate (rabbit) (and the same for water solution): Moderately irritating (OECD 405)
The difference in eye irritation between the water free substance and the hydrates could be explained by the reaction when the water
free calcium chloride takes up crystal water from the eye. This reaction is exothermic and irritates the eye by drying the lenses and
causes injuries when heat is evolved. This exothermic reaction does not take place in a water solution and thus this product is
moderately irritating.
Long term contact with the eye or not washing the eye properly at short time exposure contact could give irreversible damage to the
eye.

d) Respiratory or skin sensitisation
Calcium chloride is not a respiratory or skin sensitizer.
In accordance with section 1 of REACH Annex XI, testing does not appear scientifically necessary; Calcium chloride is considered not
to have any sensitising properties, based on the physiological role of both its constituent ions, as well as the fact that sensitising effects
of both ions have never been reported, despite long-term historical and wide dispersive use (e. g. via food and medication).
e) Germ cell mutagenicity
Bacterial reverse mutation assay: Negative for Salmonella. Typhimurium, other: TA92, TA1535, TA100, TA1537, TA94, TA98 (all
strains/cell types tested); met. act.: with; cytotoxicity: no, but tested up to limit concentrations. In vitro mammalian chromosome
aberration test (chromosome aberration), negative for Chinese hamster lung fibroblasts (V79) (all strains/cell types tested)
All tests for genotoxic properties were negative. Calcium and chloride are normal constituents of the body. The substance is not
expected to be genotoxic.
f) Carcinogenicity
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. Based on this information, it is concluded that the substance is not carcinogenic.
g) Reproductive toxicity
Calcium chloride 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.
An oral developmental study was performed in 3 species (mouse, rat and rabbit). In all three species no maternal or teratogenic effects
were noted with calcium chloride, and NOAEL’s were above the highest dose given. Thus calcium chloride is not expected to have
any reproductive toxicity.
h) STOT-single exposure
Respiratory tract: not irritating.
i) STOT-repeated exposures
Respiratory tract: not irritating.
j) Aspiration hazard
k) Other information
Experience of calcium chloride inhalation in humans (Vinnikov): Sixty five tuberculosis patients (51 males, 14 females; age from below
30 till over 50) were treated with aerosol inhalations of 2-5% aqueous solution of calcium chloride. The number of inhalations varied
from below 10 (24 patients), till over 30 (2 patients). Several patients reported irritation of mucos membranes of pharynx and throat
and unpleasant sensation in mouth already after the first inhalations. However, the frequency of such cases was described as minor by
the authors. Overall calcium chloride inhalations were said to have beneficiary effects on disease symptoms.

Section 12: Ecological information

12.1 Toxicity
Calcium chloride is not classified as hazardous for the environment.
Calcium and chloride are normally occurring ions in the entire ecosystem and release to the environment are not expected to have any
long term negative effects. High amounts of chloride ions could however cause local disturbance and damage in a sensitive
environment.

Acute toxicity
Fish (Pimephales promelas) LC50 (96 h): 4630 mg/L
LC50 (48 h): > 6560 mg/L
LC50 (24 h): > 6660 mg/L
Method: other: EPA/600/4-90/027, EPA/600/6-91/003
Crustaceans (Daphnia magna) LC50 (48 h): 2400 mg/L based on: mobility (static OECD 202)
Algae: Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
- EC50 (72 h): 2900 mg/L based on: biomass
- EC50 (72 h): > 4000 mg/L based on: growth rate
- EC20 (72 h): 1000 mg/L based on: biomass
- OECD Guideline 201 (Alga, Growth Inhibition Test)

algae/cyanobacteria: Pseudokirchneriella subcapitata (as Selenastrum capricornutum).
EC50 (72 h) 2.9 and EC20 1.0 mg/L, OECD guideline 201.

Long term toxicity
Fish: No reliable studies are available.
Crustaceans (Daphnia magna): EC50 (21 d): 610 mg/L based on: reproductive impairment
EC16 (21 d): 320 mg/L based on: reproductive impairment
LC50 (21 d): 920 mg/L based on: mortality
Method not mentioned

Alga: EC10/LC10 or NOEC for freshwater algae: 1000 mg/L

Terrestrial organisms
Calcium chloride is dissociated into calcium and chloride ions and chloride ions will not adsorb on particulate matter. The calcium ions may bind to particulate matter or may form stable inorganic salts with sulphate and carbonate ions, but calcium is naturally present in soil. Therefore, exposure or adverse effects of the soil compartment is unlikely.

Plants
Calcium is well known as an essential nutrient for higher plants and has important roles for cell wall formation, cell division and cell elongation. Chloride is an essential micronutrient for plants and has an important role in regulating osmotic pressure of cells (SIDS, 2002).
However high doses could harm sensitive plants.
In one study of Sugar maples (Acer saccharum) were exposed to runoff of sodium chloride and calcium chloride for 6 winters (total treatment of 11.2 tonnes /ha per treatment and 15 treatments per winter at weekly intervals, equalling 11.2 kg/m² in total and 1.87 kg/m² in one season).
Results: Damage to roadside vegetation has been reported and is attributed largely to the absorption of salt splashed foliage. Leaves of these maple trees contained 3 to 6 times the chloride concentration compared to a control stand. Damage to the maples varied but could be correlated with the chloride concentration in the leaf.
One field study with spruce tree (Picea sp.) was carried out for ten weeks during a winter season, and a total dose of 1.5 kg/m² NaCl, CaCl₂ or a 75/25 NaCl/CaCl₂ mixture.
In the presence of calcium chloride the uptake of Cl⁻ in the root was inhibited. Effects of calcium chloride are present but it depends on the amount of accumulated Cl⁻.

Effects on micro-organisms living in wastewater treatment plants
No study is available.
Calcium plays crucial roles in strengthening cell walls. Chloride is also an essential micronutrient for bacteria and has important roles in the photosynthesis and osmoregulation. No adverse effect is suspected for micro-organisms living in sewage treatment plants.

12.2 Persistence and degradability
In accordance with column 2 of REACH Annex VII, biodegradability test does not need to be conducted as the substance is inorganic.

12.3 Bioaccumulative potential
Calcium chloride is easily dissociated into calcium and chloride ions and both ions are essential constituents of the body of all animals. No bioaccumulation or biomagnifications is expected for calcium chloride.

12.4 Mobility in soil
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.

12.5 Results of PBT and vPvB assessment
Not applicable for an inorganic substance. According to Annex XIII of the REACH Regulation 1907/2006/EC inorganic substances do not need to be subjected to a PBT assessment.

12.6 Other adverse effects
None specific.
SAFETY DATA SHEET

Section 13: Disposal consideration

<table>
<thead>
<tr>
<th>13.1 Waste treatment methods</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If recycling or reuse is not practical then the product must be disposed of in accordance with local, state or national regulations. A suitable way of disposal is landfill or controlled emission to a large recipient, with naturally occurring levels of calcium and chloride ions, like the sea. Do not dispose of with acids or strong reducing or oxidizing agents.</td>
</tr>
<tr>
<td></td>
<td>Packaging</td>
</tr>
<tr>
<td></td>
<td>If recycling or reuse is not practical then the packaging material must be disposed of in accordance with local, state or national regulations. Clean packaging material with water and dispose of the water in accordance with local regulations. Package could be incinerated in a plant with a permit from competent authorities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waste codes (EWC)</th>
<th>Depends on were the waste is generated. Calcium chloride has a wide dispersive use in many areas and all relevant codes could not be given in this MSDS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The product is classified as hazardous waste</td>
<td>No</td>
</tr>
<tr>
<td>Waste codes (EWC) for the container</td>
<td>15 01 02 (plastic packaging ); 15 01 05 (big bags of composite packaging)</td>
</tr>
<tr>
<td>A not thoroughly cleaned container is considered dangerous waste</td>
<td>No</td>
</tr>
<tr>
<td>Other information</td>
<td>See section 8 for personal protection when handling waste from the product.</td>
</tr>
</tbody>
</table>

Section 14: Transport information

<table>
<thead>
<tr>
<th>General</th>
<th>Not regulated as hazardous goods.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN number</td>
<td>-</td>
</tr>
<tr>
<td>14.2 UN Proper Shipping Name</td>
<td>-</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>-</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>-</td>
</tr>
<tr>
<td>14.5 Environmental hazards</td>
<td>-</td>
</tr>
<tr>
<td>14.6 Special precautions for users</td>
<td>-</td>
</tr>
<tr>
<td>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code</td>
<td>-</td>
</tr>
</tbody>
</table>

Section 15: Regulatory information

15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture
None specific.

15.2 Chemical safety assessment
Chemical safety assessment is performed for calcium chloride according to article 14 in REACH.

Section 16: Other information
SAFETY DATA SHEET

This MSDS is changed in the following sections:
Removal of references to DSD 67/548/EEC.
This MSDS supersedes all previous issues.

Hazard and Precautionary statements from section 2 and 3 in plain text (CLP):
H314: Causes severe skin burns and eye damage.
H319: Causes serious eye irritation.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes.
P337 + P313 IF eye irritation persists: Get medical advice/attention.

Sources for data in this MSDS:
• Registration dossier according to the REACH regulation
• ESIS (European chemical Substances Information System)
• Quick Selection Guide to Chemical Protective Clothing, Kristers Forsberg
• Handbook of Chemistry and Physics CRC Press Inc.

Other information:
Provide basic employee training to prevent/minimise exposures when handling the product.

The precautionary statements are chosen according to the CLP 1272/2008 regulation article 28. The precautionary statements for an Eye Irritant Category 2 are not mandatory and could vary depending on the form of calcium chloride that is put on the market. The registrant does not consider it necessary to use the statement “P264: Wash….thoroughly after handling” and “P338 Remove contact lenses, if present and easy to do. Continue rinsing.” The full agreed CLP classification and labelling given in the joint submission in IUCLID section 2.1.

Normally the registrant only uses the following precautionary statements in the labelling (see section 2 of this MSDS):
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes.
P337 + P313 IF eye irritation persists: Get medical advice/attention.
The other precautionary statements (P 264 and P338) are communicated in section 4 “First aid measures” and in ES to this extended MSDS.

The safety data sheet is based on the REACH regulation EC 1907/2006 and the regulation EU 453/2010.
Classification according to CLP regulation EC 1272/2008.
Names in section 3 are given according to harmonised classified substances in Annex VI, CLP regulation EC/1272/2008. See article 18 in the CLP regulation.