

TECHNICAL BULLETIN



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CALCIUM CHLORIDE

ANHYDROUS, DIHYDRATE AND 30% SOLUTION FORMS

MATERIAL & FUNCTION

Solid forms of calcium chloride are odorless, white to off-white pellets, mini-pellets or flakes. Commercial forms of the solid are either anhydrous (CaCl_2 anhydrous, 94 – 97% CaCl_2) or Calcium Chloride dihydrate ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$; 74-78% CaCl_2). A 30% solution is also available. Food Grade and Technical Grade (Feed Grade) are available.

PROPERTIES

Calcium chloride (CaCl_2) is an ionic compound of calcium and chlorine. It is highly soluble in water and it is deliquescent (ie, absorbs moisture from the atmosphere to the extent that a solution forms). It is a salt that is solid at room temperature, and it behaves as a typical ionic halide.

CAS No.: 10043-52-4 (Anhydrous) ; dihydrate: 10035-04-8

Molecular formula ; CaCl_2

Molar mass, g/mol: 111 (CaCl_2 anhyd.)

Property	CaCl_2	$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	CaCl_2 30%
Composition, % CaCl_2	100	75.49	30
Molecular Weight	110.99	147.02	
Melting Point, C	773	176	Ca. -50
Boiling Point, C	1935	174	
Density at 25C, g/cm ³	2.16	1.85	1.29
Heat of Fusion (Cal/g)	61.5	21	
(Btu/lb)	110.6	38	
Heat of Soln, cal/g	-176.2	-72.8	
Heat of Formation at 25C, kcal/mole	-190.10	-335.58	
Heat Capacity at 25C cal/g.C	0.16	0.28	

Food Compatibility. Calcium Chloride generally recognized as safe (GRAS) by the U.S. Food and Drug Administration. The average intake of calcium chloride as food additives has been estimated to be 160-345 mg/day for individuals it is listed as a permitted food additive in the European Union for use as a sequestrant and firming agent with the E number E509. The anhydrous form has been approved by the FDA as a packaging aid to ensure dryness (CPG 7117.02).

Safety: ingestion of concentrated or pure calcium chloride products may cause gastrointestinal irritation or ulceration. Skin and eye exposure to calcium chloride can cause irritation and even a burn. Vapors are unlikely due to physical properties, however dust or mists may cause irritation to the upper respiratory tract. Calcium chloride is an irritant, particularly on moist skin. Wear gloves and goggles or a full face shield to protect hands and eyes; avoid inhalation. Dry calcium chloride reacts exothermically when exposed to water. Burns can result in the mouth and esophagus if humans or other animals ingest dry calcium chloride pellets.

Ecology: It promotes algae and higher plant growth. Chloride ions are also required for normal cellular operations in animals and humans, and serve as a micronutrient for plants, playing important roles in photosynthesis and osmoregulation. Calcium chloride is considered to be practically non-toxic to aquatic organisms and bioaccumulation is unlikely

APPLICATIONS

Calcium Chloride is used for its hygroscopic property, it can be applied to keep a liquid layer on the surface of the roadway, which holds dust down.http://en.wikipedia.org/wiki/Calcium_chloride_-_note-0#_note-0 It is used in concrete mixes to help speed up the initial setting, however chloride ion leads to corrosion of steel rebar, so it should not be used in reinforced concrete.

Oil and gas well fluids – to boost the efficiency of drilling and the completion of wells

Miscellaneous smaller applications – tyre ballast, water treatment, hydrocarbon desiccant, refrigeration brine, food processing agent or coagulating agent and additive for foods

Industrial processing – as additives in plastics, for calcium salt production, drainage aids for wastewater treatment, etc.

CAUTION

Avoid contact with skin and eyes and avoid breathing dust.

IMPORTANT NOTICE TO CUSTOMER

*Since the use of this product is beyond the control of either seller or manufacturer, their only obligation shall be to replace any quantity of product which is proven defective. They cannot assume any risk or liability in excess of the purchase price of the product itself, which does not include labour or any consequential damages resulting from the use of this product. Determining the suitability of this product for any intended use shall be solely the responsibility of the user. **ALWAYS TEST FIRST.***

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