

Calcium chloride

Granular form

Mass of solid granules with white color with the formula CaCl_2 . Toxic, irritates skin in moisture. Highly soluble in water while exothermic reaction. The applications include: O&G upstream, well drilling liquids, deicing, moisture control, dust control, water treatment, desiccant, pulp & paper and food industries.

Parameter	Unit	Amount
Purity of Calcium chloride	%Wt	Min 94
Total alkali Chloride as NaCl	%Wt	Max 6
Total Magnesium as MgCl_2	%Wt	Max 0.5
Calcium Hydroxide	%Wt	Max 0.2



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Calcium Chloride

Intro

Calcium chloride (CaCl_2) is a versatile compound known for its hygroscopic properties and its ability to attract moisture from the environment. Available in various forms, such as flakes, pellets, and granules, calcium chloride granules have a wide range of applications across numerous industries. In this article, we will explore the properties, uses, and safety considerations of calcium chloride granules, highlighting their significance in everyday life and industrial processes.

Properties of Calcium Chloride Granules

Calcium chloride is an inorganic salt that appears as white or colorless granules. It is highly soluble in water, dissolving in the process and generating exothermic heat. With a melting point of around $772\text{ }^\circ\text{C}$ ($1,422\text{ }^\circ\text{F}$), calcium chloride remains stable under standard conditions. Its hygroscopic nature allows it to absorb moisture from the air, which is a crucial characteristic utilized in various applications.

In addition to its moisture-absorbing properties, calcium chloride has a high affinity for water, making it an effective desiccant. It can also lower the freezing point of water, enabling its use in cold environments and applications. These properties make calcium chloride granules a valuable resource in both industrial and commercial settings.

Applications of Calcium Chloride Granules

Calcium chloride granules have numerous applications across different sectors:

- Deicing and Snow Melting:** One of the most common uses of calcium chloride is as a deicer for roads, sidewalks, and driveways. When spread on icy surfaces, calcium chloride lowers the freezing point of water, which helps to melt ice and snow efficiently, making it safer for vehicular and pedestrian traffic during winter weather.
- Dust Control:** In construction and unpaved road maintenance, calcium chloride granules are used to control dust. When applied to surfaces, they absorb moisture from the air, keeping the dust damp and reducing airborne particles, which can enhance air quality and visibility.



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3. **Desiccant:** Calcium chloride is often employed as a desiccant in packaging and shipping. Its ability to absorb moisture helps protect goods such as electronics, leather, and food products from humidity-related damage during transit and storage.
4. **Food Preservation:** In the food industry, calcium chloride is used as a firming agent in the processing of fruits and vegetables. It helps maintain texture and firmness in canned vegetables, pickles, and even some cheeses.
5. **Water Treatment:** Calcium chloride is utilized in water treatment processes to help coagulate impurities and improve the clarity of drinking water. It can also be added to swimming pools to increase calcium levels and stabilize pH.
6. **Concrete Accelerant:** In construction, calcium chloride is often added to concrete mixtures to accelerate setting times, allowing for quicker project completion, particularly in cold weather conditions.
7. **Oil Well Drilling:** Calcium chloride granules are also critical in the oil and gas industry, particularly in oil well drilling. They are used in drilling fluids to improve their density and stability. By adding calcium chloride to the drilling mud, operators can effectively control fluid loss while managing the wellbore pressure. The highly soluble nature of calcium chloride helps create a more efficient drilling process, allowing for better lubrication and cooling of the drill bits, ultimately enhancing drilling performance and reducing costs.

Safety Considerations

While calcium chloride granules have many beneficial uses, it is essential to handle them with care. Here are some safety considerations:

- **Personal Protective Equipment (PPE):** When handling calcium chloride, it is advisable to wear gloves, goggles, and masks to prevent skin and eye irritation as well as respiratory discomfort from inhaling dust.
- **Storage Conditions:** Calcium chloride should be stored in a cool, dry place in tightly sealed containers to prevent its hygroscopic nature from causing clumping or degradation.



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- **Environmental Precautions:** While calcium chloride is generally safe to use, it can be harmful if released in large quantities into natural water bodies, as excessive levels can disrupt aquatic life. Care should be taken to minimize environmental impact.
- **First Aid Measures:** In case of contact with skin or eyes, it's crucial to rinse immediately with plenty of water for at least 15 minutes. If ingested, do not induce vomiting; seek medical assistance promptly.

Conclusion

Calcium chloride granules are a powerful and versatile compound widely used across various industries due to their unique properties and effectiveness. From deicing roads to preserving food and aiding in oil well drilling, the applications of calcium chloride are extensive and impactful. However, while leveraging its benefits, it is vital to adhere to safety guidelines to mitigate potential risks. Proper handling and awareness ensure that calcium chloride can continue to provide value in countless applications, enhancing efficiency and safety in both industrial and everyday contexts.



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