

Calcium Ammonium Nitrate Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Application (Fertilizers, Explosives, Others), By Region and Competition

<https://marketpublishers.com/r/C8258F53DF45EN.html>

Date: October 2023

Pages: 190

Price: US\$ 4,900.00 (Single User License)

ID: C8258F53DF45EN

Abstracts

The Global Calcium Ammonium Nitrate Market achieved a valuation of USD 3.68 billion in 2022 and is expected to reach the market size of USD 4.46 billion in 2028, with a projected Compound Annual Growth Rate (CAGR) of 3.27% through 2028. Calcium ammonium nitrate, also known as nitro limestone and nitro chalk, is a widely used fertilizer on a global scale. It is produced by blending powdered limestone with ammonium nitrate, resulting in a neutral mixture with the ability to neutralize acidic soil. This fertilizer is an essential source of nitrogen for plant growth, known for its rapid absorption by plant roots during the fruiting stage, making it highly valued by farmers worldwide. Additionally, the presence of calcium not only enhances soil health but also ensures long-term benefits. Typically, the fertilizer grade of calcium ammonium nitrate contains around 8% calcium and 21% to 27% nitrogen, making it suitable for enhancing root and soil health. Interestingly, calcium ammonium nitrate serves as a viable alternative in countries where ammonium nitrate is banned. Moreover, due to its hygroscopic nature, it has the ability to retain water molecules even at room temperature, further contributing to its effectiveness.

Key Market Drivers

Growing Demand for Calcium Ammonium Nitrate in the Agriculture Industry

Calcium Ammonium Nitrate (CAN) is a highly regarded fertilizer in the agriculture industry, prized for its exceptional composition and the multitude of benefits it offers for crop growth. With the increasing demand for high-quality food and the urgent need for

sustainable agricultural practices, the popularity of CAN has witnessed a significant surge. CAN, a compound fertilizer, boasts a unique blend of two vital nutrients essential for robust plant growth: nitrogen and calcium. The perfectly balanced ratio of nitrogen and calcium within CAN serves to promote healthy plant development, facilitate optimal nutrient absorption, and ultimately enhance both crop yield and quality.

Nitrogen, a crucial macronutrient indispensable for plant growth, is often found deficient in soil. Fortunately, CAN acts as a reliable source of nitrogen, providing plants with the necessary fuel to produce proteins, enzymes, and chlorophyll. By doing so, it not only fosters vigorous vegetative growth but also bolsters the process of photosynthesis, resulting in lush, green foliage. Equally important, calcium plays a pivotal role in the formation of strong cell walls, fortifying plants against diseases, and facilitating proper nutrient uptake. CAN's calcium content helps prevent nutrient deficiencies, fosters robust root development, and significantly improves fruit quality.

Moreover, it aids in minimizing disorders such as blossom-end rot in tomatoes or bitter pit in apples. Additionally, CAN acts as a pH regulator in the soil, ensuring optimal conditions for nutrient availability and uptake by plants. Its unique properties contribute to maintaining a suitable pH level, facilitating efficient nutrient absorption, and preventing any imbalances that could hinder plant growth. Given the escalating global population and evolving dietary preferences, the demand for high-quality agricultural produce continues to soar. Calcium Ammonium Nitrate proves invaluable in facilitating improved crop growth, enhanced nutrient absorption, and superior quality, making it an indispensable component for farmers striving to meet this demand. This factor significantly propels the adoption of CAN and fuels the growth of the global Calcium Ammonium Nitrate market.

Growing Demand for Calcium Ammonium Nitrate in the Construction Industry: Calcium Ammonium Nitrate, or CAN, is commonly used as an additive in concrete production, playing a vital role in enhancing the strength and durability of concrete structures. Acting as a nitrogen source, CAN not only improves the setting time and workability of concrete but also enhances its compressive strength, making it highly desirable for a wide range of construction projects. Aside from its application in concrete production, Calcium Ammonium Nitrate is an essential component in the manufacturing of explosives used in various construction-related activities.

From mining and quarrying to demolition, CAN serves as both a source of nitrogen and an oxidizing agent, contributing to the controlled explosive reactions required for these applications. Furthermore, CAN finds its utility as a blasting agent in construction

projects that involve rock excavation or tunneling. Its explosive properties, combined with its stability and safety features, make it a preferred choice for controlled blasting operations, ensuring efficient and secure excavation processes. Not limited to its role in concrete and blasting, Calcium Ammonium Nitrate is also utilized for soil stabilization purposes in construction.

By modifying the properties of the soil, CAN helps improve its load-bearing capacity and compaction characteristics, making it suitable for building foundations and infrastructure development. This aspect of CAN's application underscores its significance in ensuring the stability and longevity of construction projects. Considering the construction industry's heavy reliance on mining and excavation activities for sourcing raw materials and preparing sites, Calcium Ammonium Nitrate's role in explosives manufacturing and blasting operations becomes indispensable. As mining and excavation projects continue to expand globally, the demand for CAN as a reliable and effective blasting agent rises accordingly, emphasizing its pivotal role in the construction sector.

Growing Demand for Calcium Ammonium Nitrate in the Manufacturing of Explosives: Calcium Ammonium Nitrate (CAN) has emerged as a crucial ingredient in the manufacturing of explosives due to its unique properties and advantages. With the increasing demand for explosives in various industries like mining, quarrying, and construction, the significance of CAN has witnessed remarkable growth. CAN serves as an exceptional source of nitrogen, which is a key component required for explosive reactions. The high nitrogen content in Calcium Ammonium Nitrate provides the necessary energy for controlled detonation, making it an indispensable ingredient in explosive formulations. The controlled release of energy ensures the safe and efficient operation of explosive devices.

Furthermore, Calcium Ammonium Nitrate plays a vital role as an oxidizer in explosives manufacturing. As an oxidizing agent, it provides a crucial supply of oxygen to support the combustion process within the explosive mixture. This property significantly enhances the efficiency and effectiveness of explosive reactions when combined with other components, ensuring optimal performance in various applications. In addition to its explosive properties, CAN offers distinct advantages in terms of stability and safety during handling and storage. Thanks to its relatively low sensitivity to shock and friction, the risk of accidental detonation is significantly reduced, providing a higher level of safety in explosive operations. This makes Calcium Ammonium Nitrate a preferred choice for applications that require controlled and safe explosive operations, giving users peace of mind. Overall, the unique characteristics of Calcium Ammonium Nitrate make it a versatile and indispensable ingredient in the explosives industry. Its ability to

provide energy, act as an oxidizer, and offer stability and safety makes it an essential component for various explosive applications, ensuring efficient and controlled operations in industries worldwide.

Key Market Challenges

Growing Preference for Organic Fertilizers: Calcium Ammonium Nitrate, known for its hygroscopic properties, is primarily utilized as an inorganic fertilizer. However, the excessive use of such fertilizers can lead to environmental issues such as soil, water, and air pollution due to nutrient leaching and the accumulation of toxic chemicals. In response to these concerns, governments have launched various investments and initiatives to promote the use of organic or biofertilizers. For instance, in March 2022, the United States Department of Agriculture announced plans to invest a substantial amount of US\$250 million in promoting the production of sustainable and organic fertilizers nationwide. This initiative aims to support the transition towards environmentally friendly agricultural practices.

Additionally, the European Union introduced the Organic Action Plan for the 2021-2030 period as part of its Farm to Fork Strategy in March 2021. This comprehensive plan aims to increase organic farming practices and the usage of organic fertilizers throughout Europe. As these initiatives and investments gain traction, there is a growing challenge for the calcium ammonium nitrate industry. The widespread adoption of organic fertilizers is expected to negatively impact the calcium ammonium nitrate market size during the forecast period. This shift towards more sustainable agricultural practices reflects the increasing global awareness of the importance of environmental conservation and the need to minimize the potential harmful effects of chemical fertilizers on ecosystems. In summary, the calcium ammonium nitrate industry faces challenges in the form of environmental concerns and the rising demand for organic alternatives. The implementation of government initiatives and investments promoting the use of eco-friendly fertilizers is expected to shape the future of the market, driving the transition towards sustainable agricultural practices.

Key Market Trends

Adoption of Advanced Farming Technologies: Precision agriculture, the cutting-edge approach to farming, involves the strategic use of advanced tools such as global positioning systems (GPS), sensors, and data analytics. These tools empower farmers to monitor and manage agricultural practices with unrivaled precision. By precisely targeting nutrient application, including the optimized use of fertilizers like Calcium

Ammonium Nitrate, the waste can be minimized, while crop efficiency is vastly improved.

To further enhance nutrient management, controlled-release fertilizers are specifically designed to gradually release nutrients over an extended period. This remarkable feature allows these fertilizers to align perfectly with the specific needs of crops. As a result, controlled-release fertilizers not only enhance nutrient uptake but also reduce leaching, minimizing the overall environmental impact. In the realm of sustainable nutrient management, Calcium Ammonium Nitrate can be formulated as a controlled-release fertilizer, making it compatible with advanced farming technologies.

Another innovative farming practice is vertical farming, which involves the cultivation of crops in vertically stacked layers, often in controlled indoor environments. This technology revolutionizes traditional farming as it maximizes land utilization, optimizes resource consumption, and enables year-round crop production. In vertical farming systems, Calcium Ammonium Nitrate is commonly used to provide essential nutrients to plants grown in these controlled environments, ensuring their healthy growth and development. In addition to vertical farming, hydroponics and aeroponics are soilless cultivation methods that utilize nutrient-rich solutions or mist to deliver essential nutrients directly to plant roots. These state-of-the-art systems are at the forefront of technology-driven agriculture, enabling superior nutrient absorption, faster growth rates, and higher yields. Calcium Ammonium Nitrate, with its rich nitrogen and calcium content, is frequently employed in hydroponic and aeroponic setups, ensuring optimal growth and yield of plants.

By integrating advanced tools, adopting innovative practices, and utilizing Calcium Ammonium Nitrate as a key component, modern agriculture is making great strides in achieving sustainable and efficient crop production. These technological advancements are not only transforming the farming landscape but also ensuring a brighter and more sustainable future for the agricultural industry.

Segmental Insights

Application Insights: Based on the category of application, the fertilizers segment emerged as the dominant player in the global market for Calcium Ammonium Nitrate in 2022. Calcium Ammonium Nitrate (CAN) plays a vital role in the agriculture industry due to its diverse applications. One of its most significant applications is its use as an effective oxidizing agent, which facilitates the conversion of nitrogen into ammonia, leading to improved soil fertility and productivity. This unique property allows for easy

blending with other fertilizers, enhancing their overall effectiveness. Moreover, CAN serves as an exceptional top dressing that helps control the growth of stubborn weeds and pests in agricultural lands. Its application ensures a healthier crop growth by minimizing the competition for essential nutrients and resources. Beyond its role as an oxidizing agent, CAN also exhibits remarkable soil-enhancing properties by binding with clay minerals. This interaction improves soil structure, enabling better water infiltration and aeration. Consequently, it contributes to the long-term maintenance of soil productivity by preventing nutrient leaching and ensuring a sustainable nutrient supply for crops. With its versatile nature, Calcium Ammonium Nitrate proves to be a highly effective fertilizer for a wide range of crops, including maize, wheat, rice, and sugarcane. Its balanced nutrient composition and gradual release mechanism provide optimal nourishment to plants throughout their growth cycle, resulting in healthier yields and improved agricultural outcomes. In summary, Calcium Ammonium Nitrate stands as a cornerstone of modern agricultural practices, offering farmers an invaluable tool to enhance soil fertility, control pests and weeds, and promote sustainable crop growth.

Regional Insights: Asia Pacific emerged as the dominant player in the Global Calcium Ammonium Nitrate Market in 2022, holding the largest market share in terms of both value and volume. The demand for calcium ammonium nitrate in the Asia-Pacific region is significantly influenced by its growing applicability in the agriculture sector. The increasing investments and favorable government policies have led to a rapid growth in agriculture production output across major Asian-Pacific countries. For instance, according to Statistics Indonesia, between January to April 2022, rice production in Indonesia reached 25.4 million tonnes, showing a notable 7.7% increase compared to the same period in 2020. Similarly, as reported by the National Bureau of Statistics, China's total grain output in 2021 stood at 682.85 million tonnes, indicating a 2% growth from 2020. Furthermore, according to the Ministry of Agriculture & Farmers Welfare, India's total food grain production in 2021 reached 316.06 million tonnes, reflecting a substantial 6.9% increase in production output. The remarkable surge in agriculture output has significantly accelerated the demand for calcium ammonium nitrate for inorganic fertilizer applications. This, in turn, has positively contributed to the growth of the calcium ammonium nitrate industry in the Asia-Pacific region. The continuous support from governments and the increasing need for efficient agricultural practices further drive the expansion of this industry.

Key Market Players

Barium & Chemicals, Inc.

Yara International ASA

EuroChem Group

Achema AB

Origin Fertilizers Limited

Fertinagro India Pvt. Ltd

Agrico Canada

San Corporation

Helm AG

Pakarab Fertilizers Limited

Report Scope:

In this report, the Global Calcium Ammonium Nitrate Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Calcium Ammonium Nitrate Market, By Application:

Fertilizers

Explosives

Others

Calcium Ammonium Nitrate Market, By Region:

Asia-Pacific

China

India

Japan

Australia

South Korea

North America

United States

Canada

Mexico

Europe

France

Germany

United Kingdom

Italy

Spain

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Egypt

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Calcium Ammonium Nitrate Market.

Available Customizations:

Global Calcium Ammonium Nitrate Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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