

Chitosan Market Report by Grade (Industrial Grade, Food Grade, Pharmaceutical Grade), Source (Shrimp, Crab, Squid, Krill, and Others), Application (Water Treatment, Food & Beverages, Cosmetics, Medical & Pharmaceuticals, Agrochemicals, and Others), and Region 2024-2032

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Abstracts

The global chitosan market size reached US\$ 2.5 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 6.6 Billion by 2032, exhibiting a growth rate (CAGR) of 10.8% during 2024-2032. The increasing demand for eco-friendly products among the masses, the subsidizing of the use of environmentally friendly materials, and advancements in technology, efficient and cost-effective methods of extracting the product are some of the major factors propelling the market.

Chitosan is a naturally occurring polysaccharide derived primarily from the shells of crustaceans, such as shrimp, crabs, and lobsters. It is produced by deacetylating chitin, a structural element in the exoskeleton of crustaceans. It has gained prominence in various industrial applications due to its unique properties such as biodegradability, biocompatibility, and non-toxicity. In the medical field, it is utilized for wound healing, drug delivery, and tissue engineering. In agriculture, it acts as a biopesticide, enhancing plant immunity against infections. Additionally, its ability to bind with fats and oils has led to its use in weight loss supplements. Its multifaceted applications, along with its sustainable and eco-friendly nature, contribute to its growing significance in various sectors.

The escalating demand for biodegradable and eco-friendly products among the masses majorly drives the global market. This can be supported by the growing concerns for

environmental sustainability. Its non-toxic and biodegradable nature makes chitosan an attractive alternative to synthetic materials in various industries, including textiles, agriculture, and water treatment. In various regions, government bodies are endorsing and subsidizing the use of environmentally friendly materials. These supportive policies are fostering the growth of biodegradable products including chitosan, offering incentives and creating favorable market conditions. An informed consumer base that is aware of the advantages of chitosan over synthetic materials is encouraging manufacturers to integrate chitosan into their products. Along with this, the increased consumer awareness and demand for natural, sustainable products are acting as catalysts for the growth of the chitosan market. In addition, ongoing research and development are leading to new applications and product innovations in the chitosan industry. These advancements are unlocking novel applications in various fields, further impacting the market. Apart from this, advancements in technology, efficient and cost-effective methods of extracting the product from various sources are contributing to the market. Moreover, collaborations between industries, research institutions, and governmental bodies are creating a positive market outlook.

Chitosan Market Trends/Drivers:

Increasing Demand in Medical and Pharmaceutical Industries

The growing application of the product in the medical and pharmaceutical sectors serves as a prominent driver for the overall market. As a biocompatible, biodegradable, and non-toxic material, chitosan has found extensive utilization in wound healing, drug delivery systems, and tissue engineering. Its unique ability to promote cell growth and adhere to biological tissues has facilitated its application in sutures, bandages, and other wound care products. In addition, the rise in chronic diseases, surgeries, and the focus on innovative healthcare solutions have only enhanced this demand.

Furthermore, governments and health organizations are investing in research and development, promoting the adoption of chitosan-based products. The global move towards more sustainable and environmentally friendly materials only enhances product's attractiveness, aligning it with contemporary healthcare goals and strategies.

The Rise in Product Demand in the Cosmetic Industry

The overall market is also significantly driven by its burgeoning demand in the cosmetic industry. Known for its moisturizing, anti-aging, and skin rejuvenation properties, chitosan is used in a wide variety of skincare and hair care products. As consumers become more conscious about the ingredients in personal care products, there is a growing preference for natural and organic components. In addition, it meets this

demand, offering a safe and natural alternative to synthetic chemicals. The rise in disposable income, coupled with a growing interest in premium beauty and personal care products, further fuels this trend. Moreover, cosmetic brands are increasingly incorporating the product into their product lines, aligning with consumer preferences for products that are not only effective but also environmentally responsible. This alignment with consumer trends and values amplifies the demand for the product in the cosmetic industry, thus driving the overall market growth.

Increased Application in the Food and Beverage Industry

Chitosan's market growth is further propelled by its expanding applications in the food and beverage industry. Recognized for its ability to bind with fats and oils, chitosan is utilized as a food additive to reduce calorie content and as a preservative to extend shelf life. Along with this, the rise in health-conscious consumers who are seeking low-calorie and nutritious options has heightened the demand for the product in this sector. Additionally, the trend toward natural and clean-label products has led to the increased use of the product as an alternative to artificial preservatives and additives. Furthermore, regulatory bodies are also supporting the use of natural and safe ingredients, which aligns with the utilization of the product. Its multifunctionality in food processing, packaging, and preservation coupled with consumer and regulatory support underscores chitosan's vital role in the food and beverage industry, contributing to its market momentum.

Chitosan Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global chitosan market report, along with forecasts at the global and regional levels from 2024-2032. Our report has categorized the market based on grade, source and application.

Breakup by Grade:

Industrial Grade

Food Grade

Pharmaceutical Grade

Industrial grade dominates the market

The report has provided a detailed breakup and analysis of the market based on the grade. This includes industrial grade, food grade, and pharmaceutical grade. According

to the report, industrial grade represented the largest segment.

The industrial grade segment is influenced by its inherent properties such as biocompatibility, antimicrobial attributes, and biodegradability. The expanding demand for eco-friendly and sustainable materials in industries, such as agriculture, water treatment, cosmetics, and pharmaceuticals has propelled the growth of the industrial-grade chitosan market. In addition, the increasing awareness about the adverse environmental impacts of synthetic chemicals has prompted industries to seek alternatives, thereby fostering the adoption of chitosan-based solutions. Apart from this, regulatory initiatives promoting the use of natural and renewable resources further enhance the market's trajectory. The rise of innovative manufacturing processes and advancements in the extraction techniques have also contributed to the expansion of the industrial-grade segment. As a result, the convergence of environmental consciousness, regulatory support, and technological advancements stands as the primary driving force behind the ascension of the market.

Breakup by Source:

- Shrimp
- Crab
- Squid
- Krill
- Others

Shrimp hold the largest share in the market

A detailed breakup and analysis of the market based on the source has also been provided in the report. This includes shrimp, crab, squid, krill, and others. According to the report, shrimp accounted for the largest market share.

The shrimp-derived chitosan segment within the chitosan industry due to the escalating demand for the product emanates from its acknowledged benefits, including biodegradability, non-toxicity, and biocompatibility. As industries progressively shift their focus towards sustainable and environmentally friendly materials, shrimp-sourced chitosan finds increased utility in sectors such as food preservation, pharmaceuticals, and agriculture. Along with this, the rising trend of utilizing natural resources for diverse applications aligns with consumer preferences for greener alternatives, thus bolstering the demand for shrimp-derived chitosan. Additionally, the availability of shrimp waste as a byproduct of seafood processing facilitates the sourcing of the product, further

propelling its prominence. In essence, the confluence of eco-conscious consumer choices, sustainable sourcing practices, and chitosan's versatile applications delineates the substantial market drivers propelling the growth of the shrimp source segment within the overall industry.

Breakup by Application:

Water Treatment

Food & Beverages

Cosmetics

Medical & Pharmaceuticals

Agrochemicals

Others

Water treatment hold the largest share in the market

The report has provided a detailed breakup and analysis of the market based on the application. This includes water treatment, food & beverages, cosmetics, medical & pharmaceuticals, agrochemicals, and others. According to the report, water treatment accounted for the largest market share.

The water treatment application within the overall industry is substantiated by the growing concerns about water pollution and the need for sustainable solutions. Chitosan-based products have emerged as a viable alternative for various water treatment processes. The drive towards reducing chemical usage in water treatment, coupled with chitosan's capacity to remove contaminants such as heavy metals and dyes, has propelled its adoption in this sector. In addition, regulatory mandates promoting eco-friendly and non-toxic water treatment methods further amplify the demand for the product. Additionally, the versatility of chitosan in addressing both industrial and municipal water treatment requirements contributes to its sustained growth. Thus, the emergence of environmental consciousness, regulatory impetus, and chitosan's intrinsic properties substantiates its role as a pivotal market driver within the water treatment application.

Breakup by Region:

Asia Pacific

Europe

North America

Middle East and Africa
Latin America

Asia Pacific exhibits a clear dominance, accounting for the largest chitosan market share

The report has also provided a comprehensive analysis of all the major regional markets, which include Asia Pacific, Europe, North America, the Middle East and Africa, and Latin America. According to the report, Asia Pacific represented the largest market.

The industry in the Asia Pacific region is propelled by the region's substantial population, rapid urbanization, and growing industrial sectors. Along with this, the escalating emphasis on sustainable and eco-friendly products aligns with chitosan's inherent attributes, such as biodegradability and versatility, thereby fostering its adoption in various industries including agriculture, pharmaceuticals, and food processing. In addition, regulatory initiatives aimed at curbing environmental degradation further reinforce the prominence of chitosan-based solutions. Moreover, the rich availability of raw materials, particularly from seafood industries, enhances the feasibility of its production in the region. As technological advancements continue to optimize extraction processes, the cost-effectiveness and quality of chitosan products are being augmented. In essence, the interplay of demographic dynamics, sustainability imperatives, regulatory support, and technological innovations collectively drive the growth of the chitosan industry in the Asia Pacific, positioning the region as a key player in the global market landscape.

Competitive Landscape:

The global chitosan market is experiencing significant growth due to escalating investments in research and development to explore new applications and improve the properties of chitosan. This includes developing innovative extraction methods, enhancing chitosan's functional properties, and discovering novel applications in areas such as medicine, agriculture, and cosmetics. Along with this, chitosan manufacturers are diversifying their product portfolios to cater to different industries and applications. This involves creating specialized chitosan products with varying molecular weights, degrees of deacetylation, and functional modifications to suit specific needs. Therefore, this is positively influencing the market. In addition, companies are forming partnerships and collaborations with research institutions, universities, and other businesses to leverage expertise and resources for product development and market expansion. Collaborative efforts help accelerate innovation and widen the scope of chitosan applications. Apart from this, the widespread adoption of eco-friendly practices in

chitosan production and processing, including sourcing raw materials responsibly, reducing waste, and minimizing the environmental footprint of their operations is significantly supporting the market. Furthermore, key players are offering customized chitosan solutions to meet the specific needs of clients in various industries, contributing to the market.

The report has provided a comprehensive analysis of the competitive landscape in the global chitosan market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

Primex EHF
Heppe Medical Chitosan GmbH
Meron Group
KitoZyme SA
Golden-Shell Pharmaceutical Co. Ltd.
FMC Corporation
Agra Tech, Inc.
Axio Biosolutions Pvt Ltd
Marshall Marine Products

Recent Developments:

In July 2023, Axio Biosolutions Pvt Ltd acquired 510(k) clearance from the US Food and Drug Administration (FDA) for the AxioStat Gauze line of enhanced hemostatic gauze, which prevents severe traumatic bleeding. AxioStat in Z-fold Hemostatic gauze is based on a biomaterial technology that is 100% chitosan-based and has already achieved CE certification. It is utilised by several military forces across the world to minimise trauma bleeding.

In May 2023, FMC Corporation established a partnership with Syngenta Crop Protection to offer a ground-breaking weed control solution for rice. Tetflupyrolimet, the novel active component, was discovered and developed by FMC for use in rice with assistance from Syngenta.

In March 2023, Meron Group released new dessert premixes for HoReCA. The company's launch will concentrate on ready-to-use premixes and specialized blends.

Key Questions Answered in This Report

1. What was the size of the global chitosan market in 2023?
2. What is the expected growth rate of the global chitosan market during 2024-2032?
3. What has been the impact of COVID-19 on the global chitosan market?

4. What are the key factors driving the global chitosan market?
5. What is the breakup of the global chitosan market based on the grade?
6. What is the breakup of the global chitosan market based on the source?
7. What is the breakup of the global chitosan market based on the application?
8. What are the key regions in the global chitosan market?

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