

# **Industrial Enzymes Market by Type (Carbohydrases, Proteases, Lipases, Polymerases & Nucleases), Application (Food & Beverages, Bioethanol, Feed, Detergents, Wastewater, Soil, and Oil Treatment), Source, Formulation and Region - Global Forecast to 2028**

<https://marketpublishers.com/r/I62DCA2CF6BEN.html>

Date: June 2023

Pages: 339

Price: US\$ 4,950.00 (Single User License)

ID: I62DCA2CF6BEN

## **Abstracts**

The industrial enzymes market is projected to grow from USD 7.4 billion in 2023 to USD 10.2 billion by 2028 growing at a CAGR of 6.6% during the forecast period. The increasing demand for industrial enzymes is driven by the growing emphasis on environmentally friendly practices among companies and consumers. Industrial enzymes offer notable environmental advantages over conventional chemical processes as they are biodegradable and operate under milder conditions, resulting in reduced energy consumption and waste generation. By adopting industrial enzymes, industries can align with sustainability goals and minimize their ecological impact. Furthermore, industrial enzymes play a pivotal role in enhancing product quality and operational efficiency across various sectors, including food and beverage production, textile processing, and biofuel manufacturing. They optimize reactions, improve yield, enhance texture, extend shelf life, and enable cost-effective production, thereby meeting the demand for enhanced product performance and operational efficiency.

“Proteases is the second largest segment among types of industrial enzymes in 2022. “

The demand for protease enzymes is witnessing significant growth, driven in part by the detergent industry. Proteases play a vital role in laundry and dishwashing detergents by effectively breaking down protein-based stains like blood, grass, and food residues. This enzymatic activity enhances stain removal, leading to cleaner fabrics. As consumers

increasingly seek powerful and efficient cleaning solutions, the utilization of protease enzymes in detergents is experiencing a notable increase. The demand for protease enzymes in the animal feed industry is on the rise. Proteases are incorporated into animal feed to optimize protein digestibility and improve its nutritional value, resulting in enhanced animal growth, feed efficiency, and overall health. With the livestock and aquaculture sectors expanding to meet the increasing demand for animal protein, the utilization of protease enzymes in animal feed formulations is gaining prominence. This growing trend aligns with the industry's objective of maximizing feed utilization and improving animal performance, driving the demand for protease enzymes as a valuable feed additive.

“The application of industrial enzymes in food & beverages is accounting for the largest share in the application segment.”

Industrial enzymes play a pivotal role in the food and beverage industry, offering significant value by enhancing the quality and sensory attributes of food products. These enzymes are utilized to optimize crucial processes such as fermentation, flavor development, and texture enhancement. For instance, proteases are employed to tenderize meat, while amylases facilitate the conversion of starches into sugars during brewing. Enzymes also contribute to the creation of specific flavors, enhance aroma, and elevate the overall taste and texture of food products. By leveraging enzymes, businesses can achieve exceptional product quality and elevate the sensory experience, thereby gaining a competitive edge in the market. Additionally, industrial enzymes help improve food safety and preservation. Enzymes are utilized in food processing to facilitate the breakdown of undesirable components, such as anti-nutritional factors or allergens, thereby reducing their presence in the final product. Enzymes also aid in the preservation of food by preventing spoilage and extending shelf life. For instance, enzymes can inhibit microbial growth or enhance the antimicrobial properties of certain food products, ensuring their safety and longevity.

“Asia Pacific is projected to witness substantial growth during the forecast period in the industrial enzymes market.”

Asia Pacific is expected to experience significant growth in the industrial enzymes market during the forecast period. This growth can be attributed to several factors, including the increasing population and rising demand for food products, particularly in countries such as India and China. According to the UN (United Nation), by 2022, China's population had reached its highest point, reaching a size of 1.426 billion people. On the other hand, it is projected that India's population will reach a significant figure of

1,425,775,850 individuals. The Asia Pacific region is experiencing an increased demand for industrial enzymes due to the robust presence of key industries like textile, pulp and paper, and biofuels. Enzymes play a vital role in textile processing by facilitating activities such as de-sizing, bio-polishing, and bio-scouring. These enzymatic processes result in improved fabric quality and aesthetics, meeting the evolving demands of the industry. Similarly, in the pulp and paper sector, enzymes are utilized for fiber modification and waste treatment, enhancing operational efficiency and promoting environmental sustainability. Furthermore, the region's emphasis on renewable energy sources has stimulated the adoption of enzymes in biofuel production, further contributing to the growing demand. This trend highlights the significance of industrial enzymes in catering to the needs of these key industries in the Asia Pacific market.

#### The Break-up of Primaries:

By Value Chain: Tier 1 – 60.0%, Tier 2 – 25.0%, Tier 3 – 15.0%

By Designation: CXOs – 35.0%, Managers level – 45.0%, Executives – 20.0%

By Region: APAC – 45.0%, Europe – 25%, North America – 10.0%, South America -5% RoW - 15.0%

#### Leading players profiled in this report:

BASF (Germany),

Novozymes (Denmark),

DuPont (US),

DSM (Netherlands),

Associated British Foods plc (UK),

Kerry Group plc. (Ireland),

Advanced Enzyme Technologies. (India),

Chr. Hansen Holding A/S (Denmark),

Amano Enzyme Inc. (Japan),

Aumgene Biosciences Pvt. Ltd. (India).

Megazyme Ltd. (Ireland)

Enzyme Supplies (UK)

Creative Enzymes. (US)

Enzyme Solutions (US)

Enzymatic Deinking Technologies, LLC. (US)

Biocatalysts (UK)

Sunson Industry Group (China)

MetGen (Finland)

DENYKEM (UK)

Tex Biosciences (P) Ltd. (India)

#### Research Coverage:

The report segments the Industrial enzymes market based on formulation, type, source, application, and region. In terms of insights, this report has focused on various levels of analyses—the competitive landscape, end-use analysis, and company profiles, which together comprise and discuss views on the emerging & high-growth segments of the industrial enzymes market, high-growth regions, countries, government initiatives, drivers, restraints, opportunities, and challenges. A detailed analysis of the key industry players has been done to provide insights into their business overview, solutions, services; key strategies; Contracts, partnerships, and agreements. new product launches, mergers and acquisitions, and recent developments associated with the industrial enzymes market. Competitive analysis of upcoming startups in the industrial enzymes market ecosystem is covered in this report.

## Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall industrial enzymes market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities. The report provides insights on the following pointers:

Analysis of key drivers (The demand for food products, government initiatives, and increased application in various industries like textile & leather, and paper & pulp are driving the growth of the industrial enzymes market.), restraints (strict regulations from authorities, activity of enzymes is influenced by a range of external factors that can limit their effectiveness) opportunities ( producing enzymes with a longer shelf life, can replace with synthetic chemicals), and challenges (high cost of enzymes, In some countries, insufficient transparency in patent protection laws creates challenges for businesses seeking to safeguard their intellectual property rights).

**Product Development/Innovation:** Detailed insights on, research & development activities, and new product launches in the industrial enzymes market

**Market Development:** Comprehensive information about lucrative markets – the report analyses the industrial enzymes market across varied regions.

**Market Diversification:** Exhaustive information about new products, untapped geographies, recent developments, and investments in the industrial enzymes market

**Competitive Assessment:** In-depth assessment of market shares, growth strategies, and product offerings of leading players like BASF (Germany), Novozymes (Denmark), DuPont (US), DSM (Netherlands), Associated British Foods plc (UK), Kerry Group plc. (Ireland), Advanced Enzyme Technologies. (India), Chr. Hansen Holding A/S (Denmark), Amano Enzyme Inc. (Japan), Aumgene Biosciences Pvt. Ltd. (India), Megazyme Ltd. (Ireland), Enzyme Supplies (UK), Creative Enzymes. (US), Enzyme Solutions (US), Enzymatic

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