Global Textile Enzymes Market - Focused Insights 2021-2030

Market Report | 2025-06-03 | 113 pages | Arizton Advisory & Intelligence

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Report description:

The global textile enzymes market is expected to grow at a CAGR of 5.33% from 2024 to 2030.

RECENT VENDOR ACTIVITIES

-At EXINTEX 2024, one of Latin America's most significant textile trade fairs, Sunson Industry Group Co., Ltd. showcased its advanced textile enzyme solutions, reinforcing the growing role of enzymatic treatments in sustainable textile processing. The introduction of neutral cellulase for biopolishing and denim washing, along with pectinase for bioscouring, highlights the industry's shift towards eco-friendly alternatives that enhance fabric quality while minimizing chemical usage and water consumption.
-Kerry Group's acquisition of c-LEcta and Enmex in February 2022 strengthens its biotechnology capabilities, particularly in enzyme development and bioprocessing. c-LEcta's precision fermentation and bio-transformation expertise enhances Kerry's ability to create high-value targeted enzymes, while Enmex's manufacturing capabilities expand its reach in enzyme production. This development has implications for the global textile enzymes market, as it reflects the increasing investment in enzyme technology for various industrial applications, including textile processing.

KEY TAKEAWAYS

-By Source Type: The micro-organisms segment accounted for the largest market share, driven by their high efficiency, stability, and scalability, driving increased adoption in sustainable textile processing.
-By Applications: The bio-polishing segment shows the highest growth of 6.78%, driven by its ability to enhance smoothness, softness, and resistance to pilling.
-By Geography: APAC dominates the global textile enzymes market and shows the highest growth, driven by the strong presence of textile manufacturing hubs in China, India, Bangladesh, and Vietnam.
-Growth Factor: The global textile enzymes market is set to grow due to rising demand for natural fibers and stringent environmental regulations.

TEXTILE ENZYMES MARKET TRENDS

Shift Toward Sustainable & Bio-Based Enzymes

The growing emphasis on sustainability in the textile industry is driving the demand for bio-based enzymes, as companies seek to minimize their carbon footprint and comply with environmental regulations. This shift is expanding the global textile enzymes market, as manufacturers invest in enzymatic solutions for eco-friendly textile processing. Global sustainability initiatives, such as the UN Sustainable Development Goals (SDGs) and the European Green Deal, encourage the use of eco-friendly alternatives to traditional chemical treatments. This regulatory push is accelerating the adoption of textile enzymes, fueling growth in the global market as companies transition to sustainable production methods. Leading fashion brands, including H&M and Levi's, are incorporating enzyme-based solutions for fabric processing to reduce water and chemical consumption. This increased usage by major brands is strengthening demand for textile enzymes worldwide, driving market expansion.

Advancements in Enzyme Engineering & Biotechnology

Continuous innovation in enzyme biotechnology has led to the development of genetically modified enzymes with enhanced performance, allowing textile processing at lower temperatures and pH levels. This advancement is expanding the global textile enzymes market, as manufacturers seek efficient and eco-friendly alternatives to traditional chemicals. This shift reduces energy consumption by 30-40%, making enzymatic treatments more cost-effective while supporting net-zero carbon goals. The increasing cost savings and sustainability benefits are driving higher adoption of textile enzymes worldwide, boosting market growth. Companies like Novonesis and AB Enzymes are investing in enzyme engineering to create high-efficiency formulations specifically designed for textile applications. Their efforts are accelerating innovation in the global textile enzymes market, leading to the development of specialized solutions for various fabric treatments. The demand for enzyme-based fabric treatments in emerging economies such as India, China, and Brazil is rising due to increasing textile production and sustainability efforts. This growing adoption in key manufacturing hubs is fueling the expansion of the global textile enzymes market, reinforcing its role in sustainable textile processing.

TEXTILE ENZYMES MARKET DRIVERS

Rising Demand for Natural Fibers

The rising consumer preference for organic and sustainable textiles is fueling demand for natural fibers such as cotton, wool, and silk, which require enzymatic treatments for efficient processing. This trend is driving expansion in the global textile enzymes market, as enzyme-based solutions become essential for processing eco-friendly fabrics. The global organic cotton market is expected to grow significantly, with brands like Patagonia and Stella McCartney promoting enzyme-treated natural fibers in their eco-friendly collections. This shift is increasing the demand for textile enzymes, reinforcing their role in sustainable fashion manufacturing. Enzymes such as pectinases, cellulases, and proteases enhance the softness, strength, and longevity of natural fiber textiles, making them ideal for premium and sustainable fashion. As more high-end brands adopt enzyme-based processing, the global textile enzymes market is witnessing strong growth.

Stringent Environmental Regulations

Governments worldwide are enforcing strict environmental laws to curb chemical pollution in textile manufacturing, accelerating the shift toward enzyme-based processing solutions. This regulatory push is expanding the global textile enzymes market, as industries seek sustainable alternatives to comply with new standards. Regulatory bodies such as the European Chemicals Agency (ECHA) and the U.S. Environmental Protection Agency (EPA) are imposing restrictions on hazardous chemicals, making enzymatic alternatives a necessity. As a result, the demand for textile enzymes is rising, reinforcing their role in eco-friendly textile

processing. The textile industry contributes nearly 20% of global wastewater pollution, pushing regulatory bodies to advocate for green chemistry solutions like enzymes to reduce toxic discharges. This has significantly boosted investments in biotechnology-driven enzyme innovations, strengthening the textile enzymes market. Countries like Germany, Sweden, and the Netherlands are leading in eco-friendly textile production, with enzyme technology playing a crucial role in meeting sustainability targets. The increasing adoption of enzyme-based processing in these regions is setting a benchmark for the global textile enzymes market, encouraging wider implementation across the industry.

INDUSTRY RESTRAINTS

Competition from Chemical Textile Processing Methods

The textile industry has historically relied on chemical-based processing methods due to their lower costs, faster reaction times, and established supply chains. Despite the push for sustainability, chemical methods such as caustic soda scouring and synthetic bleaching agents continue to dominate in cost-sensitive regions like South Asia (India, Bangladesh, Pakistan) and Southeast Asia (Vietnam, Indonesia, Cambodia), where low-cost textile manufacturing is a major industry driver. According to The Foreign Investors' Chamber of Commerce & Industry (FICCI), Bangladesh's textile sector, contributing 84.58% of export revenue and exceeding $43 billion in 2023-2024, is embracing enzyme-based processing to enhance fabric quality and sustainability. This shift aligns with the global textile enzymes market, as manufacturers adopt enzymatic solutions for eco-friendly and efficient textile production.

SEGMENTATION INSIGHTS

INSIGHTS BY SOURCE TYPE

The global textile enzymes market by source type is segmented into micro-organisms, animal tissues, and plants. In 2024, the micro-organisms segment accounted for the largest market share. Microbial enzymes, primarily derived from bacteria and fungi, dominate the global textile enzymes market due to their high efficiency, stability, and scalability, driving increased adoption of sustainable textile processing. Microbial enzymes offer superior performance in textile processing, functioning effectively under a wide range of pH and temperature conditions. This adaptability is fueling their integration into diverse textile applications, further strengthening their market position as essential processing agents. Advancements in genetic engineering and fermentation technology have enabled the development of more robust and cost-effective microbial enzymes, enhanced process efficiency, and reduced operational costs. This technological progress is driving investment in enzyme-based solutions, contributing to the market's rapid expansion.

INSIGHTS BY APPLICATION

The global textile enzymes market by application is categorized into bio-polishing, de-sizing, bio-sourcing, bleaching, and others. The bio-polishing segment shows significant growth, with the fastest-growing CAGR of 6.78% during the forecast period. Bio-polishing involves the use of cellulase enzymes to remove microfibrils from fabric surfaces, enhancing smoothness, softness, and resistance to pilling. It enhances fabric smoothness and softness while minimizing strength loss and shade change. This enzymatic treatment is widely applied in cotton and blended fabrics to improve the aesthetic appeal and durability of garments. Companies like BioGreen Technochem provide BIOPRIME LBAC CONC, a liquid hybrid cellulase enzyme used in fabric and garment bio-finishing processes like de-pilling, softening, and surface modifications. Compared to traditional chemical finishing, bio-polishing is an eco-friendly alternative that reduces water consumption and minimizes fiber damage. The demand for bio-polished textiles is growing, especially in high-end fashion and home textiles, due to their improved texture and longevity.

TEXTILE ENZYMES MARKET GEOGRAPHICAL ANALYSIS

APAC dominates the global textile enzymes market owing to APAC having a huge textile industry that is growing rapidly because of key countries involved like India, China, and Bangladesh, which are major textile producers and exporters in the world. The government in APAC has implemented favorable policies to support the growth of the textile industry. APAC countries also offer a cost advantage over other regions, which makes the production of textiles more cost-effective, and the demand for sustainable textiles is rapidly increasing in the APAC region, which eventually drives the textile enzymes market. Government initiatives promoting eco-friendly textile production in countries like Japan, South Korea, and Vietnam are accelerating the shift towards enzyme-based processing. The project ?Promoting Sustainability Standards in the Textile and Garment Industry in Asia? (FABRIC) supports the Asian textile industry in its transformation towards fair production for people and the environment.

TEXTILE ENZYMES MARKET COMPETITIVE INSIGHTS

The global textile enzymes market report consists of exclusive data on 25 vendors. The market is highly competitive, with key players focusing on innovation, sustainability, and efficiency to gain a competitive edge. Industry leaders like Novonesis, BASF, and AB Enzymes dominate the market with advanced enzyme formulations and strong R&D capabilities. Companies such as Kemin Industries, Sunson, and Kerry Group leverage their biotechnology expertise to expand enzyme applications in textile processing. Regional players like Tex Biosciences, itaita Biotech, and Zytex strengthen their market presence through cost-effective solutions tailored for local textile industries. The market is also witnessing strategic collaborations, product innovations, and sustainability-driven advancements as companies aim to differentiate their offerings and meet evolving industry demands.

Key Vendors

- Novonesis
- AB Enzymes
- BASF
- Sunson
- Kerry Group

Other Prominent Vendors

- Bestzyme (Nanjing) Bio-products
- Denykem
- Kemin Industries
- Advanced Enzyme Technologies
- Ultreze Enzymes
- Epygen Labs
- Greenwave Global
- Antozyme Biotech
- Nature BioScience
- Tex Biosciences
- Infinita Biotech
- Lumis Biotech
- Maps Enzymes
- Starco Arochem
- Genotek Biochem
- Zytex

-Aumgene Biosciences
-Creative Enzymes
-Sarex
-S&D Associates

SEGMENTATION & FORECASTS

-By Source Type
o Micro-organisms
o Animal Tissues
o Plants
-By Application
o Bio-polishing
o Desizing
o Bio-sourcing
o Bleaching
o Others
-By Geography
-APAC
o China
o India
o Bangladesh
o Vietnam
-Europe
o Germany
o Italy
o Spain
o France
-North America
o US
o Canada
-Latin America
o Brazil
o Mexico
-Middle East & Africa
o Turkey
o Egypt

KEY QUESTIONS ANSWERED:

1. How big is the global textile enzymes market?
2. Which application provides more business opportunities in the global textile enzymes market?
3. Who are the key players in the global textile enzymes market?
4. Which source type has the largest share in the global textile enzymes market?
5. What are the latest trends in the global textile enzymes market?

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