

Biocatalyst Market By Source (Plant, Animal, Micro-organism), By Type (Oxidoreductases, Transferases, Hydrolases, Others), By End-use industry (Pharmaceutical, Food and beverage, Water Treatment, Biofuel, Others): Global Opportunity Analysis and Industry Forecast, 2023-2032

Market Report | 2023-06-01 | 372 pages | Allied Market Research

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Report description:

The Biocatalyst Market was valued at \$1.1 billion in 2022 and is estimated to reach \$2.0 billion by 2032, exhibiting a CAGR of 6.7% from 2023 to 2032.

The biocatalyst market can be defined as the sector that encompasses the production, distribution, and utilization of biologically derived catalysts or enzymes for various industrial processes. Biocatalysts are natural or modified enzymes that accelerate chemical reactions and facilitate the conversion of substrates into desired products. These catalysts are derived from living organisms such as bacteria, fungi, plants, and animals, or can be engineered through biotechnology techniques.

Biocatalysis provides a more environmentally friendly alternative to traditional chemical synthesis. Enzymes are derived from natural sources and can catalyze reactions under mild conditions, reducing the need for harsh chemicals and energy-intensive processes. This aligns with the pharmaceutical industry's growing emphasis on sustainability and reducing its ecological footprint.

Biocatalysts offer exquisite selectivity, enabling the production of specific enantiomers or regioisomers, which is crucial in pharmaceutical synthesis. This selectivity can lead to improved yields, reduced waste, and fewer purification steps.

Chemoenzymatic synthesis, combining chemical and enzymatic transformations, allows for more efficient and diverse molecule synthesis. In addition, biocatalysis enables the synthesis of complex molecules that are challenging or even impossible to produce using traditional chemical methods alone. Enzymes can perform reactions that are difficult to achieve with chemical catalysts, such as stereospecific or regioselective transformations, opening new possibilities for drug discovery and development.

One of the key drivers of the demand for plant-based biocatalysts is the increasing global focus on sustainability and reducing the environmental impact of industrial processes. Conventional chemical catalysts often rely on non-renewable resources and can generate harmful byproducts. In contrast, plant-based biocatalysts offer a renewable and eco-friendly alternative. They are

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derived from plant sources, which are abundantly available and can be grown sustainably. Plant-based biocatalysts have lower carbon footprints and can help reduce greenhouse gas emissions, making them highly attractive to industries seeking greener alternatives.

Consumer awareness and demand for sustainable products have also played a crucial role in driving the demand for plant-based biocatalysts. As consumers become more conscious of the environmental and health impacts of the products they use, they are actively seeking out plant-based alternatives. Whether it's plant-based foods, cosmetics, or personal care items, consumers are increasingly opting for products made using sustainable and plant-derived ingredients. This consumer demand has prompted manufacturers to explore the use of plant-based biocatalysts in their production processes to align with consumer preferences and capture a growing market share.

Regulatory pressures have been another significant driver for the adoption of plant-based biocatalysts. Governments and regulatory bodies around the world are implementing stricter regulations to minimize the use of hazardous chemicals and promote the use of sustainable alternatives. Plant-based biocatalysts offer a safer and more environmentally friendly option, enabling companies to comply with these regulations while also improving their sustainability credentials.

Biocatalysts play a crucial role in promoting green chemistry practices by replacing traditional chemical catalysts, which often involve hazardous substances and generate harmful waste. The increasing emphasis on sustainable and environmentally friendly processes creates a favorable environment for the biocatalyst market. The shift towards renewable energy sources and the need for sustainable chemicals have opened doors for biocatalysts in the biofuels and renewable chemicals sector. Biocatalysts can aid in the production of biofuels such as biodiesel and bioethanol and facilitate the conversion of biomass into valuable chemicals. The biocatalyst market is segmented into source, type, end-use industry, and region. On the basis of source, it is categorized into plant, animal, and microorganism. By type, the market is classified into oxidoreductases, transferases, hydrolases, and others. End-use industry covered in the report are pharmaceutical, food & beverage, water treatment, biofuel, and others. Region-wise, the market is studied across North America, Europe, Asia-Pacific, and LAMEA.

The major players operating in the global biocatalyst market include Novozymes, DuPont, DSM, Codexis, BASF SE, Lonza, Amano Enzyme Inc., Dyadic International Inc., Biocatalysts Limited and Piramal Pharma Solutions. Other players include AB Enzymes, Prozomix Limited, Chr Hansen Holding A/S and evovx technologies GmbH.

Key Benefits For Stakeholders

- This report provides a quantitative analysis of the market segments, current trends, estimations, and dynamics of the biocatalyst market analysis from 2022 to 2032 to identify the prevailing biocatalyst market opportunities.
- The market research is offered along with information related to key drivers, restraints, and opportunities.
- Porter's five forces analysis highlights the potency of buyers and suppliers to enable stakeholders make profit-oriented business decisions and strengthen their supplier-buyer network.
- In-depth analysis of the biocatalyst market segmentation assists to determine the prevailing market opportunities.
- Major countries in each region are mapped according to their revenue contribution to the global market.
- Market player positioning facilitates benchmarking and provides a clear understanding of the present position of the market players.
- The report includes the analysis of the regional as well as global biocatalyst market trends, key players, market segments, application areas, and market growth strategies.

Key Market Segments

By Source

- Plant
- Animal
- Micro-organism

By Type

- Oxidoreductases
- Transferases
- Hydrolases
- Others

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By End-use industry

- Pharmaceutical
- Food and beverage
- Water Treatment
- Biofuel
- Others

By Region

- North America
- U.S.
- Canada
- Mexico
- Europe
- Germany
- France
- UK
- Italy
- Spain
- Rest of Europe
- Asia-Pacific
- China
- India
- Japan
- South Korea
- Australia
- Rest of Asia-Pacific
- LAMEA
- Brazil
- Saudi Arabia
- South Africa
- Rest of LAMEA
- Key Market Players
- AB Enzymes
- Amano Enzyme Inc.
- BASF SE
- Biocatalysts
- Codexis, Inc.
- DSM
- DuPont de Nemours, Inc.
- Lonza
- Novozymes
- Prozomix Limited

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