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Global Ketoreductases for Chiral Catalysis Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Ketoreductases for Chiral Catalysis market size is expected to reach $ 178 million by 2032, rising at a market growth of 6.9% CAGR during the forecast period (2026-2032).

Ketoreductases for chiral catalysis are oxidoreductase enzymes that selectively convert prochiral ketone substrates into chiral alcohols with defined stereochemical configurations through asymmetric reduction reactions. They typically operate with NAD(H)- or NADP(H)-based cofactor systems and are often integrated with cofactor regeneration technologies to support efficient catalytic turnover. Owing to their strong chemoselectivity, regioselectivity, and enantioselectivity, these enzymes can construct complex chiral centers under relatively mild reaction conditions, making them important tools in greener synthesis and industrial biocatalysis. Their upstream inputs mainly include enzyme gene resources, engineered microbial strains, fermentation media, expression systems, cofactors and cofactor-regeneration components, stabilizers, and purification materials, while downstream customers mainly include pharmaceutical intermediate manufacturers, API process developers, fine chemical producers, industrial biocatalysis solution providers, and research institutions. They are widely used in the preparation of chiral pharmaceutical building blocks, functionalized alcohol intermediates, and other high-value fine chemicals. The overall industry gross margin for ketoreductases used in chiral catalysis is conservatively estimated at approximately 45%–60%.

Ketoreductases for chiral catalysis have become one of the more representative high-value enzyme categories in industrial biocatalysis, with demand concentrated in the synthesis of chiral alcohols, pharmaceutical intermediates, and advanced fine chemicals. Compared with conventional metal-catalyzed or multi-step chemical

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reduction routes, ketoreductases offer clear advantages in enantioselectivity, milder reaction conditions, and by-product control. As a result, they are gaining continued relevance in processes requiring precise stereochemical construction. On the supply side, the market is evolving toward a more complete structure that includes screening kits, standardized enzyme preparations, engineered biocatalysts, and process scale-up services, indicating a gradual shift from enzyme discovery toward reproducible industrial application.

Future development will focus on broader substrate compatibility, stronger enzyme robustness, and improved industrial feasibility for more challenging asymmetric reductions. Advances in protein engineering, semi-rational design, and high-throughput screening are making ketoreductases more applicable to complex aromatic ketones, sterically hindered substrates, and high-value pharmaceutical precursors. Recent technical work also shows that engineered ketoreductases can support demanding transformations in the synthesis of sophisticated drug molecules, suggesting that the commercial boundary of this enzyme class is still expanding rather than approaching maturity.

The main growth drivers come from sustained demand for greener synthesis, higher process safety, and tighter stereochemical control in pharmaceuticals and fine chemicals. At the same time, progress in cofactor regeneration, enzyme immobilization, and continuous reaction systems is improving the economic viability of ketoreductase-based processes at larger scale. These developments are helping ketoreductases move beyond laboratory screening into pilot and commercial manufacturing environments. Suppliers with broad enzyme libraries, rapid screening platforms, cofactor-system design capability, and proven process-transfer experience are likely to gain stronger competitive positions over time.

Despite these opportunities, further market penetration still faces several constraints. Ketoreductase performance is often highly sensitive to substrate structure, cofactor system, solvent environment, and reaction equilibrium, which means many projects continue to require case-specific screening and enzyme engineering rather than straightforward standardization. Cofactor consumption and regeneration efficiency, enzyme stability under high substrate loading and complex reaction conditions, and overall process-cost control remain central issues for broader industrial substitution. Going forward, competition in this field will increasingly depend on integrated capabilities that combine enzyme-performance improvement with holistic process optimization.

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This report studies the global Ketoreductases for Chiral Catalysis demand, key companies, and key regions.

This report is a detailed and comprehensive analysis of the world market for Ketoreductases for Chiral Catalysis, and provides market size (US$ million) and Year-over-Year (YoY) growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Ketoreductases for Chiral Catalysis that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global Ketoreductases for Chiral Catalysis total market, 2021-2032, (USD Million)
Global Ketoreductases for Chiral Catalysis total market by region & country, CAGR, 2021-2032, (USD Million)
U.S. VS China: Ketoreductases for Chiral Catalysis total market, key domestic companies, and share, (USD Million)
Global Ketoreductases for Chiral Catalysis revenue by player, revenue and market share 2021-2026, (USD Million)
Global Ketoreductases for Chiral Catalysis total market by Type, CAGR, 2021-2032, (USD Million)
Global Ketoreductases for Chiral Catalysis total market by Application, CAGR, 2021-2032, (USD Million)

This report profiles major players in the global Ketoreductases for Chiral Catalysis market based on the following parameters - company overview, revenue, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Codexis, Almac Group, Prozomix, Johnson Matthey, Evoxx Technologies, Amano Enzyme, Zhejiang Syncozymes Bio-pharmaceutical, Asymchem, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the world Ketoreductases for Chiral Catalysis market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), by player, by regions, by Type, and by Application. Data is given for the years

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2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Ketoreductases for Chiral Catalysis Market, By Region:

- United States
- China
- Europe
- Japan
- South Korea
- ASEAN
- India
- Rest of World

Global Ketoreductases for Chiral Catalysis Market, Segmentation by Type:

- Enzyme Screening Kits
- Individual Enzyme Preparations
- Other

Global Ketoreductases for Chiral Catalysis Market, Segmentation by Cofactor Dependence:

- NAD-dependent Enzymes
- NADP-dependent Enzymes
- Other

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Global Ketoreductases for Chiral Catalysis Market, Segmentation by Application:

Pharmaceutical Intermediates

Fine Chemicals

Other

Companies Profiled:

Codexis

Almac Group

Prozomix

Johnson Matthey

Evoxx Technologies

Amano Enzyme

Zhejiang Syncozymes Bio-pharmaceutical

Asymchem

Key Questions Answered
1. How big is the global Ketoreductases for Chiral Catalysis market?
2. What is the demand of the global Ketoreductases for Chiral Catalysis market?
3. What is the year over year growth of the global Ketoreductases for Chiral Catalysis market?
4. What is the total value of the global Ketoreductases for Chiral Catalysis market?
5. Who are the Major Players in the global Ketoreductases for Chiral Catalysis market?
6. What are the growth factors driving the market demand?

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Contents

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5 MARKET ANALYSIS BY TYPE

6 MARKET ANALYSIS BY COFACTOR DEPENDENCE

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7 MARKET ANALYSIS BY APPLICATION

8 COMPANY PROFILES

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List Of Tables

LIST OF TABLES

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List Of Figures

LIST OF FIGURES

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