

Global Whole-cell Chiral Catalysis Market Growth 2026-2032

<https://marketpublishers.com/r/G110397CF550EN.html>

Date: July 2026

Pages: 92

Price: US\$ 3,660.00 (Single User License)

ID: G110397CF550EN

Abstracts

The global Whole-cell Chiral Catalysis market size is predicted to grow from US\$ 138 million in 2025 to US\$ 422 million in 2032; it is expected to grow at a CAGR of 17.4% from 2026 to 2032.

Whole-cell chiral catalysis refers to the use of intact living or non-living cells, such as bacteria, yeast, or fungi, as catalytic systems to perform highly enantioselective transformations without isolating or purifying individual enzymes. The catalytic function relies not only on the stereoselectivity of intracellular enzymes but also on integrated cellular systems, including cofactor regeneration (e.g., NADH/NADPH cycling), membrane transport mechanisms, and multi-enzyme cascade pathways. As such, it represents a self-sustained catalytic platform with built-in energy and cofactor recycling. Compared to isolated enzyme catalysis, whole-cell systems offer advantages such as eliminating the need for external cofactors, enhanced operational stability, and suitability for large-scale fermentation processes, while facing challenges including substrate transport limitations, competing metabolic pathways, and reduced controllability of selectivity. It is therefore considered a scale-oriented and process-integrated branch of biocatalytic chiral synthesis.

Whole-cell chiral catalysis utilizes engineered microorganisms such as *E. coli* or yeast to perform enantioselective transformations through intracellular enzymes like ketoreductases (KREDs) and transaminases (TAs), relying on endogenous cofactor regeneration and multi-enzyme cascade systems, essentially functioning as a chiral reaction module embedded within fermentation processes. Structurally, bioreduction and transamination dominate with approximately 80% share, while dynamic resolution and multi-enzyme cascades account for about 20%. The cost structure is significantly lower than isolated enzymes, with an equivalent catalytic cost of approximately

\$80-200/kg (based on cell preparations), though it is not typically sold as a standardized product, resulting in a blended gross margin of around 40-50%. Applications are highly concentrated in pharmaceutical intermediates, accounting for about 80%, primarily for large-scale production of chiral alcohols and amines and process cost reduction, with agrochemicals accounting for about 20%. The upstream includes fermentation media and strain engineering, the midstream focuses on strain optimization and fermentation scale-up, and downstream integration is fully embedded within CDMO and pharmaceutical manufacturing processes. The industry exhibits a pattern of fragmented technology providers and highly concentrated process integrators, where companies such as Codexis provide strain engineering capabilities, while CDMOs like WuXi AppTec, Asymchem, and Lonza control implementation decisions. Overall, whole-cell catalysis is in a rapid penetration phase driven by cost pressures and green chemistry demands, offering clear economic advantages over isolated enzyme catalysis but constrained by substrate transport limitations, competing metabolic pathways, and selectivity control challenges, thereby remaining primarily at the intermediate stage rather than final API synthesis; key uncertainties lie in the advancement of metabolic engineering and process control to expand into more complex transformations.

LP Information, Inc. (LPI) ' newest research report, the "Whole-cell Chiral Catalysis Industry Forecast" looks at past sales and reviews total world Whole-cell Chiral Catalysis sales in 2025, providing a comprehensive analysis by region and market sector of projected Whole-cell Chiral Catalysis sales for 2026 through 2032. With Whole-cell Chiral Catalysis sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US\$ millions of the world Whole-cell Chiral Catalysis industry.

This Insight Report provides a comprehensive analysis of the global Whole-cell Chiral Catalysis landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Whole-cell Chiral Catalysis portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms' unique position in an accelerating global Whole-cell Chiral Catalysis market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Whole-cell Chiral Catalysis and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up

qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Whole-cell Chiral Catalysis.

This report presents a comprehensive overview, market shares, and growth opportunities of Whole-cell Chiral Catalysis market by product type, application, key manufacturers and key regions and countries.

Segmentation by Type:

E. coli

Yeast

Fungi

Others

Segmentation by Reaction:

Bioreduction

Transamination

Dynamic Resolution

Enzyme Cascade

Biocatalytic Oxidation

Segmentation by Application:

Pharmaceuticals

Agrochemicals

This report also splits the market by region:

Americas

United States

Canada

Mexico

Brazil

APAC

China

Japan

Korea

Southeast Asia

India

Australia

Europe

Germany

France

UK

Italy

Russia

Middle East & Africa

Egypt

South Africa

Israel

Turkey

GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

Codexis

Novozymes

DSM-Firmenich

WuXi AppTec

Asymchem

Lonza

Prozomix

Enzymaster

Key Questions Addressed in this Report

What is the 10-year outlook for the global Whole-cell Chiral Catalysis market?

What factors are driving Whole-cell Chiral Catalysis market growth, globally and by region?

Which technologies are poised for the fastest growth by market and region?

How do Whole-cell Chiral Catalysis market opportunities vary by end market size?

How does Whole-cell Chiral Catalysis break out by Type, by Application?

Contents

1 SCOPE OF THE REPORT

- 1.1 Market Introduction
- 1.2 Years Considered
- 1.3 Research Objectives
- 1.4 Market Research Methodology
- 1.5 Research Process and Data Source
- 1.6 Economic Indicators
- 1.7 Currency Considered
- 1.8 Market Estimation Caveats

2 EXECUTIVE SUMMARY

- 2.1 World Market Overview
 - 2.1.1 Global Whole-cell Chiral Catalysis Annual Sales 2021-2032
 - 2.1.2 World Current & Future Analysis for Whole-cell Chiral Catalysis by Geographic Region, 2021, 2025 & 2032
 - 2.1.3 World Current & Future Analysis for Whole-cell Chiral Catalysis by Country/Region, 2021, 2025 & 2032
- 2.2 Whole-cell Chiral Catalysis Segment by Type
 - 2.2.1 E. coli
 - 2.2.2 Yeast
 - 2.2.3 Fungi
 - 2.2.4 Others
 - 2.2.5 Whole-cell Chiral Catalysis Sales by Type
 - 2.2.5.1 Global Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)
 - 2.2.5.2 Global Whole-cell Chiral Catalysis Revenue and Market Share by Type (2021-2026)
 - 2.2.5.3 Global Whole-cell Chiral Catalysis Sale Price by Type (2021-2026)
- 2.3 Whole-cell Chiral Catalysis Segment by Reaction
 - 2.3.1 Bioreduction
 - 2.3.2 Transamination
 - 2.3.3 Dynamic Resolution
 - 2.3.4 Enzyme Cascade
 - 2.3.5 Biocatalytic Oxidation
 - 2.3.6 Whole-cell Chiral Catalysis Sales by Reaction
 - 2.3.6.1 Global Whole-cell Chiral Catalysis Sales Market Share by Reaction

(2021-2026)

2.3.6.2 Global Whole-cell Chiral Catalysis Revenue and Market Share by Reaction

(2021-2026)

2.3.6.3 Global Whole-cell Chiral Catalysis Sale Price by Reaction (2021-2026)

2.4 Whole-cell Chiral Catalysis Segment by Application

2.4.1 Pharmaceuticals

2.4.2 Agrochemicals

2.4.3 Whole-cell Chiral Catalysis Sales by Application

2.4.3.1 Global Whole-cell Chiral Catalysis Sale Market Share by Application

(2021-2026)

2.4.3.2 Global Whole-cell Chiral Catalysis Revenue and Market Share by Application

(2021-2026)

2.4.3.3 Global Whole-cell Chiral Catalysis Sale Price by Application (2021-2026)

3 GLOBAL BY COMPANY

3.1 Global Whole-cell Chiral Catalysis Breakdown Data by Company

3.1.1 Global Whole-cell Chiral Catalysis Annual Sales by Company (2021-2026)

3.1.2 Global Whole-cell Chiral Catalysis Sales Market Share by Company (2021-2026)

3.2 Global Whole-cell Chiral Catalysis Annual Revenue by Company (2021-2026)

3.2.1 Global Whole-cell Chiral Catalysis Revenue by Company (2021-2026)

3.2.2 Global Whole-cell Chiral Catalysis Revenue Market Share by Company

(2021-2026)

3.3 Global Whole-cell Chiral Catalysis Sale Price by Company

3.4 Key Manufacturers Whole-cell Chiral Catalysis Producing Area Distribution, Sales Area, Product Type

3.4.1 Key Manufacturers Whole-cell Chiral Catalysis Product Location Distribution

3.4.2 Players Whole-cell Chiral Catalysis Products Offered

3.5 Market Concentration Rate Analysis

3.5.1 Competition Landscape Analysis

3.5.2 Concentration Ratio (CR3, CR5 and CR10) & (2024-2026)

3.6 New Products and Potential Entrants

3.7 Market M&A Activity & Strategy

4 WORLD HISTORIC REVIEW FOR WHOLE-CELL CHIRAL CATALYSIS BY GEOGRAPHIC REGION

4.1 World Historic Whole-cell Chiral Catalysis Market Size by Geographic Region (2021-2026)

4.1.1 Global Whole-cell Chiral Catalysis Annual Sales by Geographic Region
(2021-2026)

4.1.2 Global Whole-cell Chiral Catalysis Annual Revenue by Geographic Region
(2021-2026)

4.2 World Historic Whole-cell Chiral Catalysis Market Size by Country/Region
(2021-2026)

4.2.1 Global Whole-cell Chiral Catalysis Annual Sales by Country/Region (2021-2026)

4.2.2 Global Whole-cell Chiral Catalysis Annual Revenue by Country/Region
(2021-2026)

4.3 Americas Whole-cell Chiral Catalysis Sales Growth

4.4 APAC Whole-cell Chiral Catalysis Sales Growth

4.5 Europe Whole-cell Chiral Catalysis Sales Growth

4.6 Middle East & Africa Whole-cell Chiral Catalysis Sales Growth

5 AMERICAS

5.1 Americas Whole-cell Chiral Catalysis Sales by Country

5.1.1 Americas Whole-cell Chiral Catalysis Sales by Country (2021-2026)

5.1.2 Americas Whole-cell Chiral Catalysis Revenue by Country (2021-2026)

5.2 Americas Whole-cell Chiral Catalysis Sales by Type (2021-2026)

5.3 Americas Whole-cell Chiral Catalysis Sales by Application (2021-2026)

5.4 United States

5.5 Canada

5.6 Mexico

5.7 Brazil

6 APAC

6.1 APAC Whole-cell Chiral Catalysis Sales by Region

6.1.1 APAC Whole-cell Chiral Catalysis Sales by Region (2021-2026)

6.1.2 APAC Whole-cell Chiral Catalysis Revenue by Region (2021-2026)

6.2 APAC Whole-cell Chiral Catalysis Sales by Type (2021-2026)

6.3 APAC Whole-cell Chiral Catalysis Sales by Application (2021-2026)

6.4 China

6.5 Japan

6.6 South Korea

6.7 Southeast Asia

6.8 India

6.9 Australia

6.10 China Taiwan

7 EUROPE

7.1 Europe Whole-cell Chiral Catalysis by Country

7.1.1 Europe Whole-cell Chiral Catalysis Sales by Country (2021-2026)

7.1.2 Europe Whole-cell Chiral Catalysis Revenue by Country (2021-2026)

7.2 Europe Whole-cell Chiral Catalysis Sales by Type (2021-2026)

7.3 Europe Whole-cell Chiral Catalysis Sales by Application (2021-2026)

7.4 Germany

7.5 France

7.6 UK

7.7 Italy

7.8 Russia

8 MIDDLE EAST & AFRICA

8.1 Middle East & Africa Whole-cell Chiral Catalysis by Country

8.1.1 Middle East & Africa Whole-cell Chiral Catalysis Sales by Country (2021-2026)

8.1.2 Middle East & Africa Whole-cell Chiral Catalysis Revenue by Country (2021-2026)

8.2 Middle East & Africa Whole-cell Chiral Catalysis Sales by Type (2021-2026)

8.3 Middle East & Africa Whole-cell Chiral Catalysis Sales by Application (2021-2026)

8.4 Egypt

8.5 South Africa

8.6 Israel

8.7 Turkey

8.8 GCC Countries

9 MARKET DRIVERS, CHALLENGES AND TRENDS

9.1 Market Drivers & Growth Opportunities

9.2 Market Challenges & Risks

9.3 Industry Trends

10 MANUFACTURING COST STRUCTURE ANALYSIS

10.1 Raw Material and Suppliers

10.2 Manufacturing Cost Structure Analysis of Whole-cell Chiral Catalysis

10.3 Manufacturing Process Analysis of Whole-cell Chiral Catalysis

10.4 Industry Chain Structure of Whole-cell Chiral Catalysis

11 MARKETING, DISTRIBUTORS AND CUSTOMER

11.1 Sales Channel

11.1.1 Direct Channels

11.1.2 Indirect Channels

11.2 Whole-cell Chiral Catalysis Distributors

11.3 Whole-cell Chiral Catalysis Customer

12 WORLD FORECAST REVIEW FOR WHOLE-CELL CHIRAL CATALYSIS BY GEOGRAPHIC REGION

12.1 Global Whole-cell Chiral Catalysis Market Size Forecast by Region

12.1.1 Global Whole-cell Chiral Catalysis Forecast by Region (2027-2032)

12.1.2 Global Whole-cell Chiral Catalysis Annual Revenue Forecast by Region (2027-2032)

12.2 Americas Forecast by Country (2027-2032)

12.3 APAC Forecast by Region (2027-2032)

12.4 Europe Forecast by Country (2027-2032)

12.5 Middle East & Africa Forecast by Country (2027-2032)

12.6 Global Whole-cell Chiral Catalysis Forecast by Type (2027-2032)

12.7 Global Whole-cell Chiral Catalysis Forecast by Application (2027-2032)

13 KEY PLAYERS ANALYSIS

13.1 Codexis

13.1.1 Codexis Company Information

13.1.2 Codexis Whole-cell Chiral Catalysis Product Portfolios and Specifications

13.1.3 Codexis Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)

13.1.4 Codexis Main Business Overview

13.1.5 Codexis Latest Developments

13.2 Novozymes

13.2.1 Novozymes Company Information

13.2.2 Novozymes Whole-cell Chiral Catalysis Product Portfolios and Specifications

13.2.3 Novozymes Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)

- 13.2.4 Novozymes Main Business Overview
- 13.2.5 Novozymes Latest Developments
- 13.3 DSM-Firmenich
 - 13.3.1 DSM-Firmenich Company Information
 - 13.3.2 DSM-Firmenich Whole-cell Chiral Catalysis Product Portfolios and Specifications
 - 13.3.3 DSM-Firmenich Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)
 - 13.3.4 DSM-Firmenich Main Business Overview
 - 13.3.5 DSM-Firmenich Latest Developments
- 13.4 WuXi AppTec
 - 13.4.1 WuXi AppTec Company Information
 - 13.4.2 WuXi AppTec Whole-cell Chiral Catalysis Product Portfolios and Specifications
 - 13.4.3 WuXi AppTec Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)
 - 13.4.4 WuXi AppTec Main Business Overview
 - 13.4.5 WuXi AppTec Latest Developments
- 13.5 Asymchem
 - 13.5.1 Asymchem Company Information
 - 13.5.2 Asymchem Whole-cell Chiral Catalysis Product Portfolios and Specifications
 - 13.5.3 Asymchem Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)
 - 13.5.4 Asymchem Main Business Overview
 - 13.5.5 Asymchem Latest Developments
- 13.6 Lonza
 - 13.6.1 Lonza Company Information
 - 13.6.2 Lonza Whole-cell Chiral Catalysis Product Portfolios and Specifications
 - 13.6.3 Lonza Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)
 - 13.6.4 Lonza Main Business Overview
 - 13.6.5 Lonza Latest Developments
- 13.7 Prozomix
 - 13.7.1 Prozomix Company Information
 - 13.7.2 Prozomix Whole-cell Chiral Catalysis Product Portfolios and Specifications
 - 13.7.3 Prozomix Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross Margin (2021-2026)
 - 13.7.4 Prozomix Main Business Overview
 - 13.7.5 Prozomix Latest Developments
- 13.8 Enzymaster

13.8.1 Enzymaster Company Information

13.8.2 Enzymaster Whole-cell Chiral Catalysis Product Portfolios and Specifications

13.8.3 Enzymaster Whole-cell Chiral Catalysis Sales, Revenue, Price and Gross
Margin (2021-2026)

13.8.4 Enzymaster Main Business Overview

13.8.5 Enzymaster Latest Developments

14 RESEARCH FINDINGS AND CONCLUSION

List Of Tables

LIST OF TABLES

Table 1. Whole-cell Chiral Catalysis Annual Sales CAGR by Geographic Region (2021, 2025 & 2032) & (\$ millions)

Table 2. Whole-cell Chiral Catalysis Annual Sales CAGR by Country/Region (2021, 2025 & 2032) & (\$ millions)

Table 3. Major Players of E. coli

Table 4. Major Players of Yeast

Table 5. Major Players of Fungi

Table 6. Major Players of Others

Table 7. Global Whole-cell Chiral Catalysis Sales by Type (2021-2026) & (kg)

Table 8. Global Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)

Table 9. Global Whole-cell Chiral Catalysis Revenue by Type (2021-2026) & (\$ million)

Table 10. Global Whole-cell Chiral Catalysis Revenue Market Share by Type (2021-2026)

Table 11. Global Whole-cell Chiral Catalysis Sale Price by Type (2021-2026) & (US\$/kg)

Table 12. Major Players of Bioreduction

Table 13. Major Players of Transamination

Table 14. Major Players of Dynamic Resolution

Table 15. Major Players of Enzyme Cascade

Table 16. Major Players of Biocatalytic Oxidation

Table 17. Global Whole-cell Chiral Catalysis Sales by Reaction (2021-2026) & (kg)

Table 18. Global Whole-cell Chiral Catalysis Sales Market Share by Reaction (2021-2026)

Table 19. Global Whole-cell Chiral Catalysis Revenue by Reaction (2021-2026) & (\$ million)

Table 20. Global Whole-cell Chiral Catalysis Revenue Market Share by Reaction (2021-2026)

Table 21. Global Whole-cell Chiral Catalysis Sale Price by Reaction (2021-2026) & (US\$/kg)

Table 22. Global Whole-cell Chiral Catalysis Sale by Application (2021-2026) & (kg)

Table 23. Global Whole-cell Chiral Catalysis Sale Market Share by Application (2021-2026)

Table 24. Global Whole-cell Chiral Catalysis Revenue by Application (2021-2026) & (\$ million)

Table 25. Global Whole-cell Chiral Catalysis Revenue Market Share by Application

(2021-2026)

Table 26. Global Whole-cell Chiral Catalysis Sale Price by Application (2021-2026) & (US\$/kg)

Table 27. Global Whole-cell Chiral Catalysis Sales by Company (2021-2026) & (kg)

Table 28. Global Whole-cell Chiral Catalysis Sales Market Share by Company (2021-2026)

Table 29. Global Whole-cell Chiral Catalysis Revenue by Company (2021-2026) & (\$ millions)

Table 30. Global Whole-cell Chiral Catalysis Revenue Market Share by Company (2021-2026)

Table 31. Global Whole-cell Chiral Catalysis Sale Price by Company (2021-2026) & (US\$/kg)

Table 32. Key Manufacturers Whole-cell Chiral Catalysis Producing Area Distribution and Sales Area

Table 33. Players Whole-cell Chiral Catalysis Products Offered

Table 34. Whole-cell Chiral Catalysis Concentration Ratio (CR3, CR5 and CR10) & (2024-2026)

Table 35. New Products and Potential Entrants

Table 36. Market M&A Activity & Strategy

Table 37. Global Whole-cell Chiral Catalysis Sales by Geographic Region (2021-2026) & (kg)

Table 38. Global Whole-cell Chiral Catalysis Sales Market Share Geographic Region (2021-2026)

Table 39. Global Whole-cell Chiral Catalysis Revenue by Geographic Region (2021-2026) & (\$ millions)

Table 40. Global Whole-cell Chiral Catalysis Revenue Market Share by Geographic Region (2021-2026)

Table 41. Global Whole-cell Chiral Catalysis Sales by Country/Region (2021-2026) & (kg)

Table 42. Global Whole-cell Chiral Catalysis Sales Market Share by Country/Region (2021-2026)

Table 43. Global Whole-cell Chiral Catalysis Revenue by Country/Region (2021-2026) & (\$ millions)

Table 44. Global Whole-cell Chiral Catalysis Revenue Market Share by Country/Region (2021-2026)

Table 45. Americas Whole-cell Chiral Catalysis Sales by Country (2021-2026) & (kg)

Table 46. Americas Whole-cell Chiral Catalysis Sales Market Share by Country (2021-2026)

Table 47. Americas Whole-cell Chiral Catalysis Revenue by Country (2021-2026) & (\$

millions)

Table 48. Americas Whole-cell Chiral Catalysis Sales by Type (2021-2026) & (kg)

Table 49. Americas Whole-cell Chiral Catalysis Sales by Application (2021-2026) & (kg)

Table 50. APAC Whole-cell Chiral Catalysis Sales by Region (2021-2026) & (kg)

Table 51. APAC Whole-cell Chiral Catalysis Sales Market Share by Region (2021-2026)

Table 52. APAC Whole-cell Chiral Catalysis Revenue by Region (2021-2026) & (\$ millions)

Table 53. APAC Whole-cell Chiral Catalysis Sales by Type (2021-2026) & (kg)

Table 54. APAC Whole-cell Chiral Catalysis Sales by Application (2021-2026) & (kg)

Table 55. Europe Whole-cell Chiral Catalysis Sales by Country (2021-2026) & (kg)

Table 56. Europe Whole-cell Chiral Catalysis Revenue by Country (2021-2026) & (\$ millions)

Table 57. Europe Whole-cell Chiral Catalysis Sales by Type (2021-2026) & (kg)

Table 58. Europe Whole-cell Chiral Catalysis Sales by Application (2021-2026) & (kg)

Table 59. Middle East & Africa Whole-cell Chiral Catalysis Sales by Country (2021-2026) & (kg)

Table 60. Middle East & Africa Whole-cell Chiral Catalysis Revenue Market Share by Country (2021-2026)

Table 61. Middle East & Africa Whole-cell Chiral Catalysis Sales by Type (2021-2026) & (kg)

Table 62. Middle East & Africa Whole-cell Chiral Catalysis Sales by Application (2021-2026) & (kg)

Table 63. Key Market Drivers & Growth Opportunities of Whole-cell Chiral Catalysis

Table 64. Key Market Challenges & Risks of Whole-cell Chiral Catalysis

Table 65. Key Industry Trends of Whole-cell Chiral Catalysis

Table 66. Whole-cell Chiral Catalysis Raw Material

Table 67. Key Suppliers of Raw Materials

Table 68. Whole-cell Chiral Catalysis Distributors List

Table 69. Whole-cell Chiral Catalysis Customer List

Table 70. Global Whole-cell Chiral Catalysis Sales Forecast by Region (2027-2032) & (kg)

Table 71. Global Whole-cell Chiral Catalysis Revenue Forecast by Region (2027-2032) & (\$ millions)

Table 72. Americas Whole-cell Chiral Catalysis Sales Forecast by Country (2027-2032) & (kg)

Table 73. Americas Whole-cell Chiral Catalysis Annual Revenue Forecast by Country (2027-2032) & (\$ millions)

Table 74. APAC Whole-cell Chiral Catalysis Sales Forecast by Region (2027-2032) & (kg)

Table 75. APAC Whole-cell Chiral Catalysis Annual Revenue Forecast by Region (2027-2032) & (\$ millions)

Table 76. Europe Whole-cell Chiral Catalysis Sales Forecast by Country (2027-2032) & (kg)

Table 77. Europe Whole-cell Chiral Catalysis Revenue Forecast by Country (2027-2032) & (\$ millions)

Table 78. Middle East & Africa Whole-cell Chiral Catalysis Sales Forecast by Country (2027-2032) & (kg)

Table 79. Middle East & Africa Whole-cell Chiral Catalysis Revenue Forecast by Country (2027-2032) & (\$ millions)

Table 80. Global Whole-cell Chiral Catalysis Sales Forecast by Type (2027-2032) & (kg)

Table 81. Global Whole-cell Chiral Catalysis Revenue Forecast by Type (2027-2032) & (\$ millions)

Table 82. Global Whole-cell Chiral Catalysis Sales Forecast by Application (2027-2032) & (kg)

Table 83. Global Whole-cell Chiral Catalysis Revenue Forecast by Application (2027-2032) & (\$ millions)

Table 84. Codexis Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 85. Codexis Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 86. Codexis Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 87. Codexis Main Business

Table 88. Codexis Latest Developments

Table 89. Novozymes Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 90. Novozymes Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 91. Novozymes Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 92. Novozymes Main Business

Table 93. Novozymes Latest Developments

Table 94. DSM-Firmenich Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 95. DSM-Firmenich Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 96. DSM-Firmenich Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 97. DSM-Firmenich Main Business

Table 98. DSM-Firmenich Latest Developments

Table 99. WuXi AppTec Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 100. WuXi AppTec Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 101. WuXi AppTec Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 102. WuXi AppTec Main Business

Table 103. WuXi AppTec Latest Developments

Table 104. Asymchem Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 105. Asymchem Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 106. Asymchem Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 107. Asymchem Main Business

Table 108. Asymchem Latest Developments

Table 109. Lonza Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 110. Lonza Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 111. Lonza Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 112. Lonza Main Business

Table 113. Lonza Latest Developments

Table 114. Prozomix Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 115. Prozomix Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 116. Prozomix Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 117. Prozomix Main Business

Table 118. Prozomix Latest Developments

Table 119. Enzymaster Basic Information, Whole-cell Chiral Catalysis Manufacturing Base, Sales Area and Its Competitors

Table 120. Enzymaster Whole-cell Chiral Catalysis Product Portfolios and Specifications

Table 121. Enzymaster Whole-cell Chiral Catalysis Sales (kg), Revenue (\$ Million), Price (US\$/kg) and Gross Margin (2021-2026)

Table 122. Enzymaster Main Business

Table 123. Enzymaster Latest Developments

List Of Figures

LIST OF FIGURES

- Figure 1. Picture of Whole-cell Chiral Catalysis
- Figure 2. Whole-cell Chiral Catalysis Report Years Considered
- Figure 3. Research Objectives
- Figure 4. Research Methodology
- Figure 5. Research Process and Data Source
- Figure 6. Global Whole-cell Chiral Catalysis Sales Growth Rate 2021-2032 (kg)
- Figure 7. Global Whole-cell Chiral Catalysis Revenue Growth Rate 2021-2032 (\$ millions)
- Figure 8. Whole-cell Chiral Catalysis Sales by Geographic Region (2021, 2025 & 2032) & (\$ millions)
- Figure 9. Whole-cell Chiral Catalysis Sales Market Share by Country/Region (2025)
- Figure 10. Whole-cell Chiral Catalysis Sales Market Share by Country/Region (2021, 2025 & 2032)
- Figure 11. Product Picture of E. coli
- Figure 12. Product Picture of Yeast
- Figure 13. Product Picture of Fungi
- Figure 14. Product Picture of Others
- Figure 15. Global Whole-cell Chiral Catalysis Sales Market Share by Type in 2026
- Figure 16. Global Whole-cell Chiral Catalysis Revenue Market Share by Type (2021-2026)
- Figure 17. Product Picture of Bioreduction
- Figure 18. Product Picture of Transamination
- Figure 19. Product Picture of Dynamic Resolution
- Figure 20. Product Picture of Enzyme Cascade
- Figure 21. Product Picture of Biocatalytic Oxidation
- Figure 22. Global Whole-cell Chiral Catalysis Sales Market Share by Reaction in 2026
- Figure 23. Global Whole-cell Chiral Catalysis Revenue Market Share by Reaction (2021-2026)
- Figure 24. Whole-cell Chiral Catalysis Consumed in Pharmaceuticals
- Figure 25. Global Whole-cell Chiral Catalysis Market: Pharmaceuticals (2021-2026) & (kg)
- Figure 26. Whole-cell Chiral Catalysis Consumed in Agrochemicals
- Figure 27. Global Whole-cell Chiral Catalysis Market: Agrochemicals (2021-2026) & (kg)
- Figure 28. Global Whole-cell Chiral Catalysis Sale Market Share by Application (2025)
- Figure 29. Global Whole-cell Chiral Catalysis Revenue Market Share by Application in

2025

Figure 30. Whole-cell Chiral Catalysis Sales by Company in 2025 (kg)

Figure 31. Global Whole-cell Chiral Catalysis Sales Market Share by Company in 2025

Figure 32. Whole-cell Chiral Catalysis Revenue by Company in 2025 (\$ millions)

Figure 33. Global Whole-cell Chiral Catalysis Revenue Market Share by Company in 2025

Figure 34. Global Whole-cell Chiral Catalysis Sales Market Share by Geographic Region (2021-2026)

Figure 35. Global Whole-cell Chiral Catalysis Revenue Market Share by Geographic Region in 2025

Figure 36. Americas Whole-cell Chiral Catalysis Sales 2021-2026 (kg)

Figure 37. Americas Whole-cell Chiral Catalysis Revenue 2021-2026 (\$ millions)

Figure 38. APAC Whole-cell Chiral Catalysis Sales 2021-2026 (kg)

Figure 39. APAC Whole-cell Chiral Catalysis Revenue 2021-2026 (\$ millions)

Figure 40. Europe Whole-cell Chiral Catalysis Sales 2021-2026 (kg)

Figure 41. Europe Whole-cell Chiral Catalysis Revenue 2021-2026 (\$ millions)

Figure 42. Middle East & Africa Whole-cell Chiral Catalysis Sales 2021-2026 (kg)

Figure 43. Middle East & Africa Whole-cell Chiral Catalysis Revenue 2021-2026 (\$ millions)

Figure 44. Americas Whole-cell Chiral Catalysis Sales Market Share by Country in 2025

Figure 45. Americas Whole-cell Chiral Catalysis Revenue Market Share by Country (2021-2026)

Figure 46. Americas Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)

Figure 47. Americas Whole-cell Chiral Catalysis Sales Market Share by Application (2021-2026)

Figure 48. United States Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 49. Canada Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 50. Mexico Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 51. Brazil Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 52. APAC Whole-cell Chiral Catalysis Sales Market Share by Region in 2025

Figure 53. APAC Whole-cell Chiral Catalysis Revenue Market Share by Region (2021-2026)

Figure 54. APAC Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)

Figure 55. APAC Whole-cell Chiral Catalysis Sales Market Share by Application (2021-2026)

Figure 56. China Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 57. Japan Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 58. South Korea Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 59. Southeast Asia Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 60. India Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 61. Australia Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 62. China Taiwan Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 63. Europe Whole-cell Chiral Catalysis Sales Market Share by Country in 2025

Figure 64. Europe Whole-cell Chiral Catalysis Revenue Market Share by Country (2021-2026)

Figure 65. Europe Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)

Figure 66. Europe Whole-cell Chiral Catalysis Sales Market Share by Application (2021-2026)

Figure 67. Germany Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 68. France Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 69. UK Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 70. Italy Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 71. Russia Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 72. Middle East & Africa Whole-cell Chiral Catalysis Sales Market Share by Country (2021-2026)

Figure 73. Middle East & Africa Whole-cell Chiral Catalysis Sales Market Share by Type (2021-2026)

Figure 74. Middle East & Africa Whole-cell Chiral Catalysis Sales Market Share by Application (2021-2026)

Figure 75. Egypt Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 76. South Africa Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 77. Israel Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 78. Turkey Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 79. GCC Countries Whole-cell Chiral Catalysis Revenue Growth 2021-2026 (\$ millions)

Figure 80. Manufacturing Cost Structure Analysis of Whole-cell Chiral Catalysis in 2026

Figure 81. Manufacturing Process Analysis of Whole-cell Chiral Catalysis

Figure 82. Industry Chain Structure of Whole-cell Chiral Catalysis

Figure 83. Channels of Distribution

Figure 84. Global Whole-cell Chiral Catalysis Sales Market Forecast by Region (2027-2032)

Figure 85. Global Whole-cell Chiral Catalysis Revenue Market Share Forecast by Region (2027-2032)

Figure 86. Global Whole-cell Chiral Catalysis Sales Market Share Forecast by Type (2027-2032)

Figure 87. Global Whole-cell Chiral Catalysis Revenue Market Share Forecast by Type (2027-2032)

Figure 88. Global Whole-cell Chiral Catalysis Sales Market Share Forecast by Application (2027-2032)

Figure 89. Global Whole-cell Chiral Catalysis Revenue Market Share Forecast by Application (2027-2032)

I would like to order

Product name: Global Whole-cell Chiral Catalysis Market Growth 2026-2032

Product link: <https://marketpublishers.com/r/G110397CF550EN.html>

Price: US\$ 3,660.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G110397CF550EN.html>