

Global AI-based Chemical Manufacturing Market Study by AI Technology (Machine Learning, Deep Learning, Natural Language Processing, Predictive Analytics, Optimization Algorithm, Regulatory Compliance Software, and Others) By Application (Process Optimization, Product Development, Quality Control, Supply Chain Management, Safety and Regulatory Compliance), By End-use Industry and Regional Forecasts 2022-2032

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Abstracts

Global AI-based Chemical Manufacturing Market was valued at approximately USD 2.46 billion in 2023 and is projected to achieve a remarkable compound annual growth rate (CAGR) of 28.87% over the forecast period from 2024 to 2032. AI-based chemical manufacturing leverages artificial intelligence to optimize and innovate processes in the chemical industry. By integrating AI, manufacturers can enhance the efficiency, precision, and safety of chemical production. AI algorithms analyze vast amounts of data from various stages of production to predict outcomes, optimize reaction conditions, and improve yield. This technology can also identify potential issues before they arise, reducing downtime and maintenance costs. Additionally, AI aids in the discovery of new materials and chemicals by simulating molecular interactions and predicting their properties, significantly accelerating the research and development process.

The Global AI-based Chemical Manufacturing Market is driven by increasing focus on the development of advanced manufacturing processes is significantly driving the dynamics of the AI-based chemical manufacturing market. AI technology, leveraging

Machine Learning (ML) algorithms, has the capability to predict the properties and behaviors of chemicals, thereby enhancing manufacturing processes and expediting the development of optimized solutions in the chemical sector. Moreover, surge in funding directed toward AI-based chemistry foundation models is further propelling the advancement of the AI-based chemical manufacturing industry. These foundation models are adept at addressing a wide array of complex issues in chemical manufacturing, thus boosting industry growth. However, high initial investment costs and technical complexity and integration issues is going to impede the overall demand for the market during the forecast period 2024-2032.

The key regions considered for the Global AI-based Chemical Manufacturing Market study includes Asia Pacific, North America, Europe, Latin America, and Rest of the World. In 2023, North America dominated the market holding the largest share. This dominance is attributed to the early adoption of AI across various industries within the region. Numerous chemical companies, such as Dow, are employing ML and predictive analytics to develop customized polyurethane products tailored to individual customer needs. Additionally, the rapid growth in research activities within the chemical sector is bolstering the market share in North America, with AI playing a crucial role in accelerating innovation between process and product development stages. Furthermore, the market in Asia Pacific is anticipated to develop at the fastest rate over the forecast period 2024-2032.

Major market players included in this report are:

IBM Corporation

Cognex Corporation

Honeywell International Inc.

Emerson Electric Co.

Rockwell Automation, Inc.

Mitsubishi Electric Corporation

ABB

Google DeepMind

Siemens AG

BASF SE

The detailed segments and sub-segment of the market are explained below:

By AI Technology

Machine Learning

Deep Learning

Natural Language Processing

Predictive Analytics

Optimization Algorithm

Regulatory Compliance Software

Others

By Application

Process Optimization

Product Development

Quality Control

Supply Chain Management

Safety and Regulatory Compliance

By End-use Industry

Pharmaceuticals

Specialty Chemicals

Petrochemicals

Agrochemicals

Polymers and Plastics

Others

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

South Korea

RoAPAC

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

RoMEA

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market

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