

Material Informatics Market Forecasts to 2030 – Global Analysis By Solution Type (Software, Services, Cloud-Based, On-Premise, Hybrid and Other Solution Types), Material Type, Data Type, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Material Informatics Market is accounted for \$158.1 million in 2024 and is expected to reach \$416.2 million by 2030 growing at a CAGR of 17.5% during the forecast period. Material Informatics is an interdisciplinary field that combines materials science, data science, and computational techniques to accelerate the discovery, design, and optimization of materials. By leveraging large datasets, machine learning, and artificial intelligence, it enables the prediction of material properties, performance, and behaviors. This approach enhances the ability to design novel materials with desired characteristics more efficiently than traditional trial-and-error methods. Material Informatics plays a crucial role in areas like energy storage, manufacturing, and electronics, facilitating the development of materials for a wide range of applications.

According to a study published in Nature Communications (2022), ML models can reduce the time required for material discovery by up to 90% compared to conventional approaches.

Market Dynamics:

Driver:

Growing popularity of cloud-based data analytics platforms

Cloud-based data analytics platforms are gaining popularity in the market due to their ability to store and process vast amounts of material data efficiently. These platforms offer scalability, flexibility, and cost-effectiveness, enabling faster data analysis and collaborative research. They facilitate the use of advanced machine learning and AI tools for materials discovery and optimization, making them essential for accelerating innovation and driving breakthroughs in industries like energy, electronics, and manufacturing.

Restraint:

Data quality and integration complexity

Data quality and integration complexity pose significant challenges in the market. Inconsistent, incomplete, or inaccurate data can lead to unreliable predictions, hindering material discovery and optimization. Additionally, integrating diverse datasets from various sources can be difficult, slowing down research progress. These issues increase the risk of errors, reduce the efficiency of analytics, and may lead to suboptimal material designs, ultimately impeding innovation and slowing the development of new, advanced materials.

Opportunity:

Focus on sustainability and green technologies

Sustainability and green technologies are becoming central to the market, as industries prioritize eco-friendly solutions. By leveraging data analytics and AI, researchers can design sustainable materials with reduced environmental impact, such as energy-efficient materials, recyclable components, and eco-friendly alternatives. This focus helps in advancing green technologies driving innovation while addressing global challenges related to climate change and resource conservation.

Threat:

Cost of implementation

The high cost of implementation in the market can deter smaller companies from adopting advanced technologies, limiting innovation. This financial barrier may slow down the widespread adoption of AI and data-driven tools, leading to reduced competitiveness. Additionally, the upfront expenses for infrastructure and training can

overwhelm resources, causing delays in project execution and hindering the market's growth potential, particularly in resource-constrained environments.

Covid-19 Impact:

The COVID-19 pandemic disrupted the market by slowing research and development activities, delaying projects, and causing supply chain challenges. Remote work and limited collaboration hindered innovation, while financial uncertainty led to reduced investments in new technologies. However, the pandemic also accelerated digital transformation, as companies increasingly turned to AI and data analytics to optimize materials development, creating long-term opportunities for growth in the market.

The polymers segment is expected to be the largest market share during the forecast period

The polymers segment is expected to account for the largest market share during the forecast period. By applying machine learning, artificial intelligence, and big data analytics, researchers can optimize polymer properties for various industries like automotive, healthcare, and electronics. This technology enhances R&D efficiency, reduces time-to-market, and enables the development of high-performance materials. It facilitates the rapid identification of promising polymer candidates, revolutionizing material design and innovation across multiple sectors.

The automotive segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the automotive segment is predicted to witness the highest growth rate. By leveraging computational tools, manufacturers can optimize material properties, reduce weight, improve safety, and increase fuel efficiency. This market supports faster innovation, helping automakers identify and develop new materials for electric vehicles, lightweight components, and sustainable designs, ultimately driving performance and sustainability in the automotive industry.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share. Companies are leveraging data science, artificial intelligence, and machine learning to accelerate material discovery, optimize properties, and reduce R&D costs across sectors like automotive, aerospace, and healthcare. North America's

robust research infrastructure, industry partnerships, and increasing demand for sustainable materials contribute to the region's leadership in material informatics.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. Countries like China, Japan, South Korea, and India have heavily invested in material research and technological innovations. These governments recognize the importance of material sciences in sectors like clean energy, electronics, and manufacturing. Additionally, AI and ML are being used to accelerate the material discovery process by analyzing vast datasets and predicting the properties of new materials.

Key players in the market

Some of the key players in Material Informatics market include Materials Project, Granta Design, Hitachi High-Tech Corporation, QuesTek Innovations, Thermo Fisher Scientific, Dassault Systemes, IBM, Accenture, Autodesk, DataRobot, Atomwise, BASF, Kebotix, InnoSense and Materialize Inc.

Key Developments:

In May 2024, Hitachi High-Tech Corporation and Hitachi, Ltd. initiated a collaborative project with Taiwan's Industrial Technology Research Institute (ITRI) to integrate Hitachi's Materials Informatics solutions with ITRI's AI-driven 'MACSiMUM' platform, aiming to enhance digital transformation in materials R&D.

In March 2024, Kebotix secured a significant investment to expand its AI capabilities, aiming to enhance its platform's ability to discover and design new materials. This development underscores Kebotix's commitment to advancing the field of material informatics through cutting-edge technology.

Solution Types Covered:

Software

Services

Cloud-Based

On-Premise

Hybrid

Other Solution Types

Material Types Covered:

Metals and Alloys

Polymers

Ceramics

Composites

Nanomaterials

Data Types Covered:

Experimental Data

Computational Data

AI-Generated Data

Applications Covered:

Packaging Materials

Advanced Coatings

Drug Delivery Systems

Energy Storage

Solar Energy

Battery Materials

Other Applications

End Users Covered:

Automotive

Aerospace and Defense

Electronics and Semiconductor

Energy

Healthcare

Construction

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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