

Smart Polymers Market - Forecasts from 2021 to 2026

<https://marketpublishers.com/r/S5BFC741DBC0EN.html>

Date: February 2021

Pages: 124

Price: US\$ 4,250.00 (Single User License)

ID: S5BFC741DBC0EN

Abstracts

The global smart polymers market is expected to grow at a compound annual growth rate of 17.82% over the forecast period to reach a market size of US\$5,290.684 million in 2026 from US\$1,977.843 million in 2020. The market is expected to be driven by the surging use of smart polymers in the textile industry, for 3D printing applications, increasing healthcare and biomedical expenditure, the need for efficient delivery systems, and the development of thermo responsive polymers. The market is also expected to be driven by the increasing demand for self-healing polymers, for different types of soft robots. With the rise in population and urbanization, the demand for smart materials is expected to surge. The United Nations estimates that the global population by the year 2050, would be around 9 billion people. Around 68% of the global population, are expected to live in urban areas, by the year 2050. There is expected to be around 43 megacities in the next decade, which would have more than 10 million people living in it. The rise in the manufacturing sector in developing nations such as India, China, Vietnam, Indonesia, Bangladesh, and other nations, are expected to drive the overall market growth. The United States and other developed nations will also have a major market share, because of the presence of major players and significant R&D investments.

Growth in the Textile Industry

The market is expected to be driven by the growth in the demand for smart polymers in the textile industry, during the forecast period. Smart polymers are used to achieve and enhance textile smart functionalities such as drug release, comfort, aesthetic appeal, smart wetting properties, wound monitoring, and protection against environmental variations. Developing nations are expected to drive market growth in the coming years. In India, the textile industry employs approx. 45 million people. According to the data given by the NITI Aayog, an Indian Government's think tank, India is the second biggest manufacturer of clothing and textiles in the world. The country is also a major

exporter of textiles, with a global trade share of approx. 5%. The government has been providing different schemes for the growth of textile industries. China is also a major player in the market, as it is the biggest exporter of textiles, with a massive share of approx. 38%, in global trade. According to China National Textile and Apparel Council, the country's textile industry had been planning to grow garment and textile exports by a significant annual rate of 7%, and an overall value of around USD 400 billion, by the year 2020. The textile industry contributes around 7% of the country's overall GDP. The United States is also expected to have a major share in the market, in the coming years. The nation's 2019 value of man-made filament and fiber and apparel shipments were at USD 75.8 billion, a major increase of 12% from the year 2009. The manufacturing was at around USD 1.7 billion, in the year 2018, according to the National Council of Textile Organization. The country exported worth USD 29.1 billion of textile-related products in the year 2019. Major companies and scientific organizations have been investing substantial capital into the development of novel smart polymer materials for the textile industry. In November 2020, the researchers from the Martin Luther University, and experts from Zurich, Nanchang, and Bayreuth announced the development of novel unique polymer fibres for the textile industry. The researchers stated that the new fibres were extremely lightweight and resilient. The researchers used a high-resolution device called ZEISS Xradia 810 Ultra, to develop 3D images of small fiber samples.

Increasing Applications in 3D Industry

The market is expected to be driven by the rising development of smart polymers in 3D printed machines and technology. In January 2021, Engineers from Rutgers University announced that they had created a smart gel, which changes its shape when it gets exposed to light. The research team presented changing cells and artificial color known as chromatophores, which would be used to alter the colour presence when exposed to light. Companies and users have been buying 3D Printers, to produce smart polymers. In January 2021, UpNano, a major player in the 3D printing market, announced that it had sold its novel NanoOne 2PP, to a major optic firm and three other universities. The company's 3D Printing system had been used to manufacture and fabricate polymeric microparts, of different sizes, especially from nano to centimetre range. There have been other major developments in the market, in recent times. In October 2020, Scientists and researchers from the GEMTEX research laboratory, in collaboration with China's Soochow University and Swedish University of Boras, announced the development of a novel range of smart polymers for printing directly into fabrics. The researchers and scientists designed a series of reinforced, customized, polymer blends consisting of Polypropylene, Carbon Nanotubes and Carbon Black. The novel plastic

combinations were 3D printed into the cloth, using an extrusion process. In June 2020, AM Polymers GmbH, a German-based novel materials start-up, and Mitsubishi Chemical Corporation announced the partnership and joint development agreement to develop polybutylene terephthalate powder product for 3D printing, for industrial additive manufacturing and applications.

Increasing Healthcare Expenditure

According to the data given by the World Health Organization, the worldwide spending on healthcare was approx. USD 7.8 trillion, in the financial year 2017, and was about 10% of the overall global GDP. The United States had a major share of the total expenditure and is planning to enhance its drug delivery systems. The country had been the most affected by the COVID-19 Pandemic, which would enhance and expand their overall healthcare spending on healthcare and infrastructure. According to the United States Department of Health and Human Services, the USA's healthcare spending grew by 4.6% from the year 2018, to reach approx. USD 3.8 trillion, in the year 2019. The total share of gross domestic's product on healthcare expenditure was at approx. 17.7% in the year 2019. Other countries have been investing a significant sum of capital into healthcare expenditure, in the last few years. China is also expected to invest significant capital in the coming years, to enhance and expand their healthcare expenditure, by spending more capital on the development of efficient drug delivery systems, and by planning more foreign direct investments. According to the OECD, China's healthcare spending had been at 5.04% of its total GDP, in the year 2019. Major European Nations have been investing substantial capital into their total healthcare expenditure. Germany, France, and Sweden had a share of 11.65%, 11.18%, and 10.88% of their overall GDP on healthcare expenditure in the year 2019. India has seen a surge in its healthcare expenditure in the last few years. According to the data given by the Indian Government, the total public expenditure on healthcare was around 1.8% of the nations' total GDP in the year 2020. The Indian Government had stated its goal to increase the public expenditure on healthcare to 2.5% of the country's GDP, by the year 2025. Major companies and research institutions have been developing novel smart polymer solutions for the healthcare industry. In September 2020, researchers at Rutgers University announced the development of a smart drug delivery system, which helped in the reduction of inflammation, and would help in the treatment of spinal cord injuries and other related neurological problems and disorders. The team's drug delivery system included sugar and smart polymers, and nanomaterials.

Segmentation:

By Type

Biological Stimuli-responsive

Chemical Stimuli-responsive

Physical Stimuli-responsive

Thermo-responsive Polymers

Photo-responsive Polymers

Electroactive and Magnetically Responsive Polymers

Shape Memory Polymers

Self-healing Polymers

Others

By End-User

Automotive

Textile

Electronics and Electrical

Healthcare and Biomedical

Others

By Geography

North America

USA

Canad?

Mexico

South America

Brazil

Argentina

Others

Europe

UK

Germany

France

Italy

Spain

Others

Middle East and Africa

Saudi Arabia

UAE

Israel

Others

Asia Pacific

Japan

China

India

Australia

Others

Note: The report will be delivered within 3 business days.

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