

Carbon Composites Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The global Carbon Composites Market is estimated to reach around 188 kilotons by the end of this year and is expected to grow at a CAGR of over 6% during the forecast period.

The market was negatively impacted by COVID-19 in 2020. Presently, the market has reached pre-pandemic levels.

Key Highlights

One of the major factors driving the market is the increasing demand from the aerospace and defense sectors. Another major driving factor in the market studied includes increasing demand from the wind energy sector.

However, the high cost associated with carbon composite manufacturing hinders the market's growth.

Nevertheless, the acceptance of technological advancements like 3D printing in the carbon composites market is expected to present an opportunity in the future.

Among the applications, aerospace and defense applications dominated the market studied and are expected to continue to dominate the market studied during the forecast period.

The Asia-Pacific region accounts for the highest market share and is expected to dominate the market during the forecast period.

Carbon Composites Market Trends

Aerospace and Defense Application to Dominate the Market

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In the aerospace industry, some of the key applications of carbon-fiber-based composites include their use in manufacturing aircraft parts such as clips, cleats, brackets, ribs, struts, stringers, chips, wing leading edges, and other special parts. Moreover, the aerospace industry is also exploring these composites' uses in larger structures, like wing torsion boxes and fuselage panels. In the defense industry, carbon composites are used in missile defense, ground defense, and military marine.

In recent years, owing to increasing preferences for properties like weight reduction, extreme resistance, insulation, and radar absorption, the usage of carbon composites in aerospace manufacturing has been growing rapidly. These composites consist of carbon fibers embedded in a carbon matrix. These composite materials also bring down the maintenance cost of the airplane, as the materials do not rust or corrode.

Aside from these advantages, the material reduces the overall weight of the aircraft, reducing aviation fuel consumption and allowing the aircraft to fly farther and carry more passengers due to its high strength-to-weight ratio compared to metals. The increasing investments in the research and development (R&D) of advanced composite materials by several aerospace incumbents, like the General Electric Company, the Boeing Company, and Airbus SE, among others, are also supporting the growth of the carbon composites market.

The United States has the largest aerospace industry in the world. According to the Federal Aviation Administration (FAA), the total commercial aircraft fleet is expected to reach 8,290 by 2038, up from 7,141 in 2017, with an average annual growth rate of 0.7% per year.

Due to increased aircraft fuel efficiency, tremendous growth has been witnessed in the aerospace sector, especially in civil aviation in emerging economies. For instance, according to the IBEF, the number of airplanes in India is expected to reach 1,100 by 2027. Additionally, the Ministry of Civil Aviation (MoCA) increased the capacity of domestic flights to 65%, from 50%, effective July 5, 2021.

Hence, the aerospace and defense sector is expected to dominate the studied market due to the above reasons.

Asia Pacific to Dominate the Market

Asia-Pacific accounts for the highest share of the global carbon composites market. Most of the demand for carbon composites comes from applications in aerospace and defense, construction, sports and leisure, etc.

In 2021, the automotive production in China reached 26.08 million vehicles, which increased by 3% compared to the 25.23 million vehicles produced in 2020. The increase in automotive production is estimated to drive the demand for carbon composites.

China is one of the largest aircraft manufacturers and one of the largest markets for domestic air passengers. Also, the country's industry for making aircraft parts and assemblies has been growing quickly, and there are now more than 200 small aircraft parts manufacturers.

Chinese airlines plan to buy about 7,690 new planes worth about USD 1.2 trillion over the next 20 years. This is expected to increase the demand for carbon composites even more.

The sports equipment market in China has witnessed growth owing to the 2022 Beijing Winter Olympic Games. The craze of the Olympics has accelerated the sports industry in the country. The makers of sports equipment and industry practitioners expect the sector to fuel consumers' increasing appetite for sports activities and consumption. Furthermore, by 2025, the sports industry is expected to be worth USD 773 billion.

In India, 43,99,112 vehicles were produced in 2021, which increased by 30% compared to the 33,94,446 units manufactured in 2020. The Indian automotive sector is optimistic about reaching pre-pandemic levels of production volume in 2022 after laying a solid foundation in 2021, despite manufacturing being hampered by a semiconductor shortage.

According to an IATA report, India is on track to become the world's third-largest aviation market by the end of the forecast period. According to the IATA, India is expected to overtake China and the United States as the world's third-largest air passenger market by 2030.

India is projected to have a demand for 2,100 aircraft over the next two decades, amounting to over USD 290 billion in sales. Due

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to these factors, the demand for carbon composites from the aerospace sector is expected to rise in the coming years.

All the above factors are expected to drive the market for carbon composites in the coming years. Asia Pacific will likely dominate the market studied during the forecast period.

Carbon Composites Market Competitor Analysis

The global carbon composites market is partially fragmented, where major players hold around 30% to 40% market share. Key players in the market include (not in any particular order) Toray Industries, Inc., Hexcel Corporation, SGL Carbon, Solvay, and TEIJIN LIMITED., among others.

Additional Benefits:

The market estimate (ME) sheet in Excel format

3 months of analyst support

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