CF & CFRP Market by Precursor Type (PAN, Pitch), Source, Resin Type, Manufacturing Process (Lay-Up, Compression Molding, Resin Transfer Molding, Filament Winding, Injection Molding, Pultrusion), End-use Industry, and Region - Forecast to 2030

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Report description:

The CFRP market is estimated at USD 22.48 billion in 2025 and is projected to reach USD 35.55 billion by 2030, at a CAGR of 9.6% from 2025 to 2030. Pitch precursor accounted for the second-largest share due to its unique combination of properties and the growing demand in high-performance industries. While polyacrylonitrile (PAN) remains the dominant precursor, pitch-based carbon fibers derived from petroleum-based pitch offer superior mechanical properties and high thermal stability. They possess excellent tensile strength, exceeding 5 GPa, which is comparable to steel. Moreover, their specific stiffness is twice that of aluminum, making them ideal for lightweight applications. Pitch carbon fibers exhibit exceptional resistance to corrosion, chemicals, and extreme temperatures, enabling their use in demanding environments. Their high thermal conductivity ensures efficient heat dissipation, making them suitable for heat-sensitive applications.

https://www.marketsandmarkets.com/Images/carbon-fiber-composites-market-Overview.webp

''In terms of value, virgin carbon fiber accounted for the largest share of the overall CF market.''
The virgin segment accounted for the largest market share due to its exceptional properties, including its lightweight structure, stiffness, and chemical resistance, which make it indispensable in end-use industries like aerospace & defense, automotive, wind energy, and sporting goods. These industries rely on lightweight materials for improved fuel performance in aircraft and vehicles. The use of virgin carbon fiber is preferred due to its established manufacturing processes and consistent quality, which are critical

for high-performance applications. While recycled carbon fiber is gaining traction as a sustainable alternative, virgin carbon fiber remains dominant because of its outstanding mechanical properties and versatile use in structural components.

''In terms of value, thermoplastic accounted for the second-largest share of the overall CFRP market.''

Thermoplastic resin accounted for the second-largest market share in the overall CFRP market. Thermoplastic CFRPs offer high impact resistance, shorter processing times, recyclability, and easier storage, which makes them increasingly attractive for industries seeking cost-effective and sustainable solutions. These properties are particularly beneficial in end-use industries like automotive and aerospace & defense, where rapid production, lightweighting, and environmental considerations are critical. Advancements in thermoplastic resin technology have further improved their mechanical performance, allowing them to compete more closely with thermosetting CFRPs and driving their adoption in various applications.

''In terms of value, filament winding process accounted for the second-largest share of the overall CFRP market.''

Filament winding accounted for the second-largest share of the overall CF & CFRP market. In the filament winding process, a rotating mandrel serves as a mold to create an inner surface and a laminate surface outside the product. This process achieves a high degree of fiber loading, resulting in laminates with a high strength-to-weight ratio. It manufactures hollow or circular components such as compressed air tanks, high-pressure CO2 tanks & bottles, water softener systems, rescue air tanks, sailboat masts, CNG tanks, light poles, and other construction materials. This automated method is utilized to produce highly engineered structures, ensuring uniformity, precision, and efficient production with minimal waste.

"The Sporting Goods industry is projected to be the second-fastest-growing end-use industry during the forecast period."
The sporting goods industry is expected to register the second-fastest growth in the CFRP market during the forecast period. As demand for lightweight, high-performance equipment enhances athletic performance and user experience, the need for CFRP is increasing. The excellent strength-to-weight ratio of CFRP enables manufacturers to create products such as bicycles, tennis racquets, golf clubs, skis, and hockey sticks that are both lightweight and stronger than those made from traditional materials. The rise in professional sports, increasing consumer interest in fitness, and expanding sponsorships and media coverage have further fueled this demand, prompting manufacturers to continuously innovate and adopt CFRP technologies. Advancements in CFRP production technology have improved product durability and made these materials more accessible to a broader range of sporting activities goods.

"North America is projected to register the highest growth rate in the CFRP market during the forecast period."
North America is projected to be the fastest-growing region in the CFRP market during the forecast period. The North American market will see significant growth in the coming years due to a rising demand for wind energy projects, which has driven the need for more efficient and durable CFRP materials for wind turbine blades. CFRP can help achieve these objectives by reducing weight, enhancing corrosion resistance, and improving performance. The region is continually investing in research & development to meet evolving market demands and regulatory requirements. For instance, there is a growing demand for CFRP products in US from automotive sector for manufacturing lightweight electric vehicles, thereby contributing to environmental sustainability while reducing carbon emissions. This has led to the development of new CFRP manufacturing processes and products, such as using recycled materials or producing lightweight materials that can enhance fuel efficiency in vehicles.
This study has been validated through primary interviews with industry experts globally. The primary sources have been divided into the following three categories:
- By Company Type: Tier 1 - 40%, Tier 2 - 33%, and Tier 3 - 27%
- By Designation: C-level - 50%, Director-level - 30%, and Managers - 20%
- By Region: North America - 15%, Europe - 50%, Asia Pacific - 20%, the Middle East & Africa - 5%, and Latin America - 10%
The report provides a comprehensive analysis of the following companies:
Prominent companies in this market include Toray Industries, Inc. (Japan), Teijin Limited (Japan), Mitsubishi Chemical Corporation

(Japan), Hexcel Corporation (US), Syensqo (Belgium), SGL Carbon (Germany), HS Hyosung Advanced Materials (South Korea), Zhongfu Shenying Carbon Fiber Co., Ltd. (China), Kureha Corporation (Japan), DowAksa (Turkey), Weihai Guangwei Composite Materials Co., Ltd. (China), UMATEX (Russia), Jilin Chemical Fiber Group Co., Ltd. (China), Jiangsu Hengshen Co., Ltd. (China), and China National Bluestar (Group) Co., Ltd. (China).
Research coverage

This research report categorizes the CF & CFRP market by precursor type (PAN and pitch), source (virgin and recycled), resin type (thermosetting and thermoplastic), manufacturing process (lay-up, compression molding, resin transfer molding, filament winding, injection molding, and pultrusion), end-use industry (aerospace & defense, automotive, wind energy, pipe & tank, sporting goods, civil engineering, medical, marine, and electrical & electronics), and region (North America, Europe, Asia Pacific, the Middle East & Africa, and Latin America). The scope of the report includes detailed information about the major factors influencing the growth of the CF & CFRP market, such as drivers, restraints, challenges, and opportunities. A thorough examination of the key industry players has been conducted in order to provide insights into their business overview, solutions and services, key strategies, and recent developments in the CF & CFRP market are all covered. This report includes a competitive analysis of upcoming startups in the CF & CFRP market ecosystem.
Reasons to buy this report:

The report will help market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall CF & CFRP market and the subsegments. It will also help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.
The report provides insights on the following pointers:

-Analysis of key drivers (growth in manufacturing of satellite parts, high demand from aerospace & defense industry, rising adoption in automobile applications due to stringent eco-friendly regulations, increased use in wind energy industry, and rising demand for regular tow carbon in pressure vessels), restraints (high production cost, lack of standardization in manufacturing technologies, and damage repair and compatibility issues), opportunities (increased investments in the development of low-cost coal-based carbon fibers, potential opportunities in new applications, increasing demand for fuel cell electric vehicles (FCEVs), increasing use in 3D printing, advancements in carbon fiber recycling technologies), and challenges (production of low-cost carbon fiber, capital-intensive production and complex manufacturing processes, and recyclability issues) influencing the growth of the CF & CFRP market.

-Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and service launches in the CF & CFRP market.

-Market Development: Comprehensive information about lucrative markets ? the report analyses the CF & CFRP market across varied regions.

-Market Diversification: Exhaustive information about services, untapped geographies, recent developments, and investments in the CF & CFRP market.

-Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like Toray Industries, Inc. (Japan), Teijin Limited (Japan), Mitsubishi Chemical Corporation (Japan), Hexcel Corporation (US), Syensqo (Belgium), SGL Carbon (Germany), HS Hyosung Advanced Materials (South Korea), Zhongfu Shenying Carbon Fiber Co., Ltd. (China), Kureha Corporation (Japan), DowAksa (Turkey), Weihai Guangwei Composite Materials Co., Ltd. (China), UMATEX (Russia), Jilin Chemical Fiber Group Co., Ltd. (China), Jiangsu Hengshen Co., Ltd. (China), and China National Bluestar (Group) Co., Ltd.

(China) in the CF & CFRP market.

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