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Carbon Fiber Market Forecasts to 2032 – Global Analysis By Product Type (Continuous Carbon Fiber, Short Fiber Carbon and Tow Size Segmentation), Raw Material, Fiber Type, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Carbon Fiber Market is accounted for $6.43 billion in 2025 and is expected to reach $14.13 billion by 2032 growing at a CAGR of 11.9% during the forecast period. Carbon fiber is a premium engineered material valued for its outstanding combination of low weight and high strength, making it essential in aerospace, automotive, sporting goods, and various industrial fields. Created through the carbonization of specialized fibers, it provides excellent stiffness, chemical resistance, and heat tolerance, supporting the development of durable and lightweight structures. Its contribution to improved fuel economy, enhanced mechanical reliability, and longer product life has boosted demand across innovation-driven industries. While costs were once a major barrier, technological progress and increased production are reducing expenses, enabling wider adoption. Carbon fiber remains central to advancing sustainable, efficient, and high-performance modern applications.

According to the American Composites Manufacturers Association (ACMA), the global composites industry contributes over $100 billion annually to the economy, with strong growth in automotive, aerospace, and construction applications.

Market Dynamics:

Driver:

Rising demand for lightweight materials

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The increasing global focus on lightweight engineering solutions continues to push carbon fiber market growth. Automakers, aerospace companies, and transport manufacturers depend on carbon fiber to minimize weight, cut fuel usage, and boost overall efficiency. Tight environmental rules are driving the automotive sector to replace heavier metal parts with lighter, stronger alternatives. In the aviation sector, weight reduction enhances aircraft range, payload flexibility, and operational economics. Even consumer electronics brands and sports equipment makers leverage carbon fiber's superior strength with minimal mass. With industries prioritizing sustainability, performance optimization, and energy savings, carbon fiber remains a critical lightweight material shaping future technological advancements.

Restraint:

High production cost

The high cost of producing carbon fiber continues to hinder its wider market presence, as its manufacturing relies on costly precursors, substantial energy consumption, and sophisticated processing technologies. These factors result in elevated final prices, making carbon fiber difficult to adopt in budget-sensitive sectors including construction, mainstream automotive, and general consumer products. Although demand is rising, the notable cost difference compared to common materials such as steel and aluminum remains a barrier. Additionally, the industry faces challenges in scaling up due to expensive facilities and limited low-cost production innovations. Without more economical technologies, high pricing will remain a major obstacle to expanding carbon fiber adoption.

Opportunity:

Expanding use in mass-production automotive applications

The automotive industry's transition toward lighter, more efficient vehicles presents a substantial opportunity for carbon fiber growth in high-volume manufacturing. As companies seek better fuel economy, enhanced EV range, and stronger safety performance, carbon fiber's lightweight strength becomes highly attractive. Advancements in automated processing, rapid curing methods, and lower production costs are allowing adoption beyond premium models. Applications such as exterior panels, structural frames, underbody systems, and battery casings are expected to expand significantly. With global emission standards tightening and demand for

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sustainable mobility increasing, carbon fiber is positioned to play a vital role in supporting mass-market vehicle innovation and long-term energy-efficient design strategies.

Threat:

Technological barriers and production challenges

The carbon fiber industry faces threats from the complexity of its manufacturing processes and dependence on advanced technology. Production includes several precise steps—stabilization, carbonization, surface modification, and composite fabrication—demanding strict quality control and skilled labor. Equipment failures or inefficiencies can compromise product quality, raise costs, and delay output. Smaller players may find it difficult to enter the market due to high capital requirements and technical barriers. Rapid technological evolution further necessitates ongoing investments in machinery and workforce training. Such challenges can deter new participants, limit competition, and slow adoption rates, posing a threat to the overall growth and market expansion of carbon fiber across industries.

Covid-19 Impact:

The COVID-19 outbreak significantly disrupted the carbon fiber industry, resulting in slowed production, supply chain interruptions, and diminished demand in major end-use sectors. Lockdowns, labor shortages, and factory shutdowns delayed the production of precursors, carbon fiber, and composite components. Critical markets such as aerospace, automotive, and renewable energy experienced project cancellations or deferments, reducing overall material consumption. International logistics challenges and import-export restrictions further constrained the distribution of finished carbon fiber products. Although the market is gradually recovering, the pandemic exposed weaknesses in supply chain resilience and underscored the importance of sourcing diversification, advanced manufacturing technologies, and digital solutions to ensure business continuity during future global disruptions.

The continuous carbon fiber segment is expected to be the largest during the forecast period

The continuous carbon fiber segment is expected to account for the largest market share during the forecast period due to its exceptional strength, stiffness, and adaptability for demanding applications. Its long fiber format ensures superior load-

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bearing performance, durability, and structural integrity, making it highly suitable for sectors like aerospace, automotive, renewable energy, and heavy industry. Continuous carbon fiber is widely used in critical components, composite reinforcement, and high-performance structural parts where reliability is crucial. Furthermore, its compatibility with advanced production techniques such as filament winding, pultrusion, and automated composite lay-up supports precise and efficient manufacturing. These attributes establish continuous carbon fiber as the dominant segment in the global market, driving technological progress and widespread adoption.

The PAN-based carbon fiber segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the PAN-based carbon fiber segment is predicted to witness the highest growth rate, driven by its combination of high strength, rigidity, and low weight. Its excellent mechanical properties make it ideal for aerospace, automotive, renewable energy, and heavy industrial applications that require long-lasting and reliable performance. Additionally, PAN-based fibers are compatible with advanced manufacturing processes, including prepreg layup, pultrusion, and filament winding, enabling precision and scalable production. With increasing demand for lightweight vehicles, durable industrial components, and energy-efficient structures, PAN-based carbon fiber is poised for rapid expansion, highlighting its strong growth rate and positioning it as a key growth segment within the global carbon fiber industry.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its robust industrial base, thriving aerospace and automotive sectors, and rising renewable energy projects. Key players in China, Japan, and South Korea operate advanced carbon fiber manufacturing facilities, supported by government support and innovation in production technologies. Rapid industrial expansion, increasing electric vehicle adoption, and heightened demand for lightweight, high-strength materials drive market growth. Additionally, investments in wind power and large-scale infrastructure development further enhance carbon fiber utilization. With abundant raw materials, skilled labor, and cost-effective production, Asia-Pacific continues to dominate the carbon fiber market and maintain its leading global position.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest

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CAGR due to advancements in technology, expanding aerospace and defense operations, and increased use of lightweight composites in automotive and industrial applications. The U.S. hosts numerous carbon fiber manufacturers and innovative research programs aimed at producing advanced, high-performance fibers. Rising demand for energy-efficient vehicles, modern aircraft and renewable energy infrastructure such as offshore and onshore wind projects, further fuels growth. Supportive government policies, continuous R&D investments, and partnerships between companies and academic institutions enhance market development. These factors collectively make North America the fastest-growing region for carbon fiber adoption worldwide, demonstrating robust growth potential over the forecast period.

Key players in the market

Some of the key players in Carbon Fiber Market include Toray Industries, Inc., Hexcel Corporation, Mitsubishi Chemical Group Corporation, SGL Carbon SE, Teijin Limited, Solvay, Jilin Chemical Fiber Group Co., Ltd., A&P Technology Inc., DowAksa USA LLC, Formosa Plastics Corporation, Nippon Graphite Fiber Co., Ltd., Hyosung Advanced Materials, Jiangsu Hengshen Co., Ltd., Zhongfu Shenying Carbon Fiber Co., Ltd. and Rock West Composites, Inc.

Key Developments:

In October 2025, Toray Industries, Inc. and Hyundai Motor Group signed a Strategic Joint Development Agreement to collaborate on advanced materials and components innovation, aiming to set new standards in future mobility. The signing ceremony took place on October 24 at Hyundai Motor Group’s.

In September 2025, Mitsubishi Chemical Corporation has officially announced that it has entered into an Agreement on Coordination and Cooperation for the Maintenance and Development of the Yokkaichi Industrial Complex. This agreement involves three parties—Mitsubishi Chemical, Mie Prefecture, and Yokkaichi City. The central objective of this partnership is to utilize the capabilities and resources of the Yokkaichi Industrial Complex to advance efforts toward establishing a carbon-neutral society.

In June 2025, Hexcel Corporation and Kongsberg Defence & Aerospace AS have signed a long$$- term partnership agreement at the Paris Air Show for the supply of HexWeb® engineered honeycombs and HexPly® prepregs for KONGSBERG’s strategic production programs over a five-year period. This partnership agreement is a reflection of HEXCEL and KONGSBERG’s strong relationship over many years and the

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company’s joint commitment to partnering for the future.

Product Types Covered:

- Continuous Carbon Fiber
- Short Fiber Carbon
- Tow Size Segmentation

Raw Materials Covered:

- PAN-based Carbon Fiber
- Pitch-based Carbon Fiber
- Rayon-based Carbon Fiber

Fiber Types Covered:

- Virgin Carbon Fiber (VCF)
- Recycled Carbon Fiber (RCF)

Applications Covered:

- Composites
- Textiles

End Users Covered:

- Aerospace & Defense
- Automotive

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- Wind Energy
- Sporting Goods
- Electrical & Electronics
- Civil Engineering
- Industrial
- Marine

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific

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- 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:

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- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- 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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