

CF Textile in the Automotive Market Report: Trends, Forecast and Competitive Analysis to 2031

<https://marketpublishers.com/r/CDDC4B488340EN.html>

Date: November 2024

Pages: 150

Price: US\$ 4,850.00 (Single User License)

ID: CDDC4B488340EN

Abstracts

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CF Textile in the Automotive Trends and Forecast

The future of CF Textile in the global automotive market looks promising with opportunities in the battery casing, interior trim, leaf spring, trunk lid, and roof module markets. CF Textile in the global automotive market is expected to grow with a CAGR of 4.0% from 2025 to 2031. The major drivers for this market are the growing demand for lightweight and fuel-efficient vehicles, increasing regulatory pressures for emission reduction and sustainability, and advancements in carbon fiber textile technology.

Lucintel forecasts that, within the product type category, non-woven textiles are expected to witness a higher growth over the forecast period.

Within the application category, battery casing is expected to witness the highest growth.

In terms of regions, APAC is expected to witness the highest growth over the forecast period.

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Emerging Trends in CF Textile in the Automotive Market

The most awareness is seen in the CF textile market for the automotive market, where emerging trends can be characterized by the use of lightweight materials, sustainability, and innovative technology applications. These trends are changing the design and production processes of vehicles, as well as their performance, safety, and environmental aspects.

Lightweighting for Efficiency: The reduction of weight in vehicles, known as lightweighting, is one of the key trends in the automotive industry. To reduce weight, enhancing fuel economy and performance characteristics of CF textiles is increasingly common. The use of lightweight materials is crucial as automobile manufacturers seek to comply with tough emission standards, making carbon fiber a viable option for car makers.

Integration with Electric Vehicles: With the growing trend of electric vehicles (EVs), CF textiles have started to find applications in EV designs for better performance. The weight of such vehicles must be as low as possible to optimize battery usage, which increases the range and speed of the vehicle. This trend aligns with global efforts to encourage greener methods of transportation.

Advancements in Manufacturing Techniques: Developments in manufacturing techniques, such as automated fiber placement and 3D printing, are also making it more practical to adopt CF textiles in the automotive sector. These advancements make carbon fiber composites more accessible to manufacturers, as they allow more sophisticated configurations and reduce production costs. With the change in production methods, the application of carbon fiber in automotive design will scale up.

Sustainability Initiatives: Eco-friendliness is now a trend in the automobile industry, with CF textiles introducing green materials. Automobile manufacturers can embrace less harmful production methods because carbon fiber is non-depleting. This trend is further driven by an increasing desire among consumers to buy green vehicles.

Subsidization of Extraordinary Performance Features: The main selling strength of carbon fiber materials is performance-driven, especially in the safety industry. Automobile makers are utilizing carbon fiber in structural parts, thereby increasing crash safety and extending the average life of the engine. This trend is most pronounced in the segments of high-performance and luxury vehicles.

These emerging trends are giving new direction to CF textiles in the automotive market, with a focus on weight-saving, fitness for EVs, and environmentally friendly properties. The evolution of the market is driven by the need to adopt new trends, where carbon fiber has become indispensable in the quest for better performance, higher efficiency, and improved ecological care.

Recent Developments in CF Textile in the Automotive Market

CF textile in the automotive market has been predicted to keep pace with measure, grow economically, mitigate the prevailing technology challenges, and address the increasing focus on green concerns. These developments are the defining actions to propel the future of automobile design and manufacturing where carbon fiber will be paramount in the automotive industry.

Upgraded Production Techniques: The latest factory production techniques are changing the prospects of the use of CF textiles in various automobile applications. The introduction of automated fiber placement as well as advanced resin infusion processes is speeding up production, driving down costs and even improving the properties of materials. These advancements allow the mass production of carbon fiber parts integration into automotive-oriented designs.

Joint research with industry: Industry players such as automakers, research centers, and technology companies are promoting the development of CF textiles by working together. The research projects done together aim to develop new composite systems and uses which push the development of carbon fibers further. Such cooperation is important to allow the opportunities to develop advanced materials that can address the changes experienced in the automobile industry.

Growing Commitment to Sustainable Practices: The CF textiles market is changing due to funding in the sustainable ideals. Most if not all players in the automotive industry choose to obtain renewable carbon fibers and implement green technologies for production. Such measures not only minimize the ecologic consequences of such production but also allow us to satisfy the population's needs for more environmentally sound automobiles that widen the market potential.

Regulatory Impact of Material Adoption: Regulatory requirements of lowering vehicle emissions are also quickening the use of CF textiles in automotive engineering. Standard fuel consumption policies are getting tighter prompting producers to look for lightweight materials that will alleviate these standards. This trend encourages technology development and investment in carbon fiber.

Performance and Safety Attraction: Safety in vehicle headways and performance have been coming up faster in the automobile industry. CF textiles are taking part in the effectiveness of some of the vehicle core structural parts for crash safety and overall vehicle integrity. Many consumers want high performance – but that performance is now such that the vehicles themselves are safe as well as more reliable.

These changes are affecting the CF textile market in the automotive industry, promoting new ideas in an environmentally friendly manner. With the evolution of technology and increasing political pressure, carbon fiber is turning out to be one of the integral components of modern vehicles in terms of design and production.

Strategic Growth Opportunities for CF Textile in the Automotive Market

The strategic growth opportunities are offered by CF Textile in all areas of the automotive market, due to innovations and market requirements for lightweight composite materials. Knowing such opportunities will enhance the market position for the stakeholders by addressing emerging trends.

Electric vehicle (EV) applications as seen growing trends: Owing to these factors, the penetration of CF textiles into the auto supply chain is high for electric vehicles. As manufacturers compete for a better whisk range and performance, carbon fiber due to its lightweight advantages is preferred. Embedding more CF textiles into the design of the EVs and constructing more electric vehicles, will result in better energy efficiency of the batteries and better car dynamics and will hither manufacturers a competitive edge.

Structural Sectors: CF textiles also enhance their safety and performance in use as structural components. Uses in chassis, body panels, and crash structures enhance the durability of the vehicle and the protection of the occupants inside the vehicle. This corresponds to the increase in the base of consumer who demands safer cars and thus an opportunity for carbon fiber market growth.

Getting struck by interior car additions, use of CF textiles in automotive interior design: The automotive interior design packages make use of CF Textiles to enhance the visual appearance and or the functions of the parts used. Carbon fiber components may offer a rather luxurious touch and make it possible to lose weight in automobiles to please most performance seeking. This application presents itself with prospects for creative designs and alterations of the motor vehicle dashboards.

Personalization and Demand for Non-Original Parts: Taking advantage of globalization, most people prefer individualization of their vehicles, which creates a possibility for CF Textiles in aftermarket applications. Carbon fiber products can increase the operation and appearance features and therefore appeal to the potent vehicle exploiter. This segment of the market is expected to expand as the consumer's quest for individual customization for automotive solutions is on the rise.

Environment-Friendly Manufacturing Practices: With increased attention to sustainability, the possibility of adding recycled carbon fibers into automotive applications is increasing. Companies that maintain a green approach can comply with the legal and market needs for environment-friendly vehicles. This method has the bonus of improving brand image, while also bringing forth new markets that are concerned with sustainability.

These growth opportunities are redefining the position of CF Textile in the automotive market. It is clear that with the right strategies and simultaneously pursuing emerging trends, such as the growth of demand for lightweight, high-performance, environmentally friendly automotive solutions, stakeholders will successfully respond to the opportunities that are likely to arise.

CF Textile in the Automotive Market Driver and Challenges

There are many drivers and challenges, such as technological developments, economic factors, and regulatory influences, that impact the CF textile market within the automotive sector. Stakeholders must understand these dynamics as they relate to the ever-changing situation in the automotive materials market.

The factors responsible for driving CF textiles in the automotive market include:

Technological Advances: The CF textile industry, along with other sectors of the fabric manufacturing industry, is highly influenced by new developments in material science and manufacturing processes. Automating production and modifying composite structures are among the factors that make it possible to use carbon fiber in automobiles. These technologies improve performance, reduce costs, and enhance production efficiency. As a result, CF textiles are becoming increasingly appealing to manufacturers.

Focus on Lightweighting: An important factor driving the growth of CF textiles is the automotive industry's focus on lightweight structures. Reducing vehicle weight improves fuel efficiency, which is crucial in an era of increasing fuel economy regulations. This trend pushes manufacturers to turn to carbon fiber to comply with legislation and meet market demand.

Growing Market for Electric Cars: The rising demand for electric vehicles (EVs) has increased the need for lightweight materials like CF textiles. As manufacturers focus on improving battery efficiency and vehicle performance, carbon fiber remains an ideal material. Investments and innovations in carbon fiber technologies are being driven by alignment with the EV trend.

Sustainability Focus in Injection Molding: Plastic parts for automotive interiors are becoming more uniform in terms of aesthetics due to trends among car makers. Over the past decade, the automotive industry has shifted toward the use of high-performance composites for non-cosmetic purposes. The principles of green production are also being introduced in automotive, wood, and other industrial sectors, aligning with environmental progress.

Performance and Safety Improvements: Improved vehicle performance and safety are supporting the use of CF textiles in critical applications. Carbon fiber's high strength-to-weight ratio improves the integrity of automotive structures and crash performance, making it a popular choice for manufacturers of luxury automobiles.

Challenges in the CF textile automotive market include:

High Costs: The high adoption and production costs associated with CF textile technology are still major barriers to widespread adoption. The carbon fiber industry involves expensive raw materials and complex processes, which may

deter manufacturers, especially in cost-conscious segments. There is a clear need to reduce costs through new advances in manufacturing and construction techniques to make CF textiles more accessible.

Limited Awareness: Market penetration is hindered by the lack of awareness and knowledge among some stakeholders about the benefits of CF textiles. Many professionals in the automotive industry may not be familiar with the advantages of advanced materials and may doubt their benefits compared to conventional materials. It is crucial to invest in targeted communication and education to overcome this challenge.

Regulatory Complexities: The issue of regulatory compliance with standards in different countries is a primary concern for manufacturers and suppliers of CF textiles. The variations in standards and requirements across regions can create difficulties. Policymakers should work towards developing more uniform policies and import-export mechanisms to ease this barrier and foster wider acceptance of carbon fiber technologies.

The interplay of these drivers and challenges outlined above can significantly impact the CF textile automotive market. Growth will be achieved when new technologies and sustainable operations are implemented in manufacturing textiles. However, high costs and limited awareness remain obstacles that must be addressed. These factors are crucial for stakeholders who wish to capitalize on the potential of carbon fiber in the automotive industry.

List of CF Textile Companies in the Automotive Industry

Companies in the market compete on the basis of product quality offered. Major players in this market focus on expanding their manufacturing facilities, R&D investments, infrastructural development, and leverage integration opportunities across the value chain. Through these strategies CF Textile companies in the automotive industry cater increasing demand, ensure competitive effectiveness, develop innovative products & technologies, reduce production costs, and expand their customer base. Some of the CF Textile companies in the automotive industry profiled in this report include-

Toray Industries

Hexcel Corporation

Mitsubishi Chemical Corporation

Syensqo

SGL Carbon Group

Teijin Limited

Formosa Plastics Corporation

DowAksa

Hyosung Corporation

Nippon Graphite Fiber Corporation

CF Textile in the Automotive Market by Segment

The study includes a forecast for CF Textile in the automotive market by product type, application, and region.

CF Textile in the Automotive Market by Product Type [Analysis by Value from 2019 to 2031]:

Woven Textiles

Non-Woven Textiles

CF Textile in the Automotive Market by Application [Analysis by Value from 2019 to 2031]:

Battery Casing

Interior Trim

Leaf Spring

Trunk Lids

Roof Modules

Others

CF Textile in the Automotive Market by Region [Analysis by Value from 2019 to 2031]:

North America

Europe

Asia Pacific

The Rest of the World

Country Wise Outlook for CF Textile in the Automotive Market

The carbon fiber (CF) textile market in the automotive industry is on an upward trajectory due to improvements in material technologies and the demand for lightweight designs. The United States, China, Germany, India, and Japan are among the countries most affected by this shift as they seek to integrate carbon fiber textiles into vehicle designs. This not only improves vehicle performance and fuel economy but also supports the current push toward electrification and reducing the carbon footprint.

United States: In the U.S., automobile companies are increasingly using CF textiles to enhance vehicle performance and reduce weight. Companies often invest in the development of new and more cost-effective production techniques for their projects. Collaborations between automotive and IT companies have led to the creation of smart composites, some of which are designed for electric or high-performance vehicles. At the same time, the need to comply with regulations on fuel consumption and pollution levels is accelerating the use of composite materials like carbon fiber.

China: The Chinese automotive market is increasingly adopting CF textiles, driven largely by government-friendly policies focusing on electric vehicles (EVs)

and environmental sustainability. Major producers, such as Ford, are incorporating CF components into their designs to improve functionality and meet stringent emission control regulations. The availability of cheaper carbon fiber, due to new local production centers, has further fueled this trend, although it is not a new development, as carbon fiber has been used in various automobile products in China for some time.

Germany: Germany was one of the first countries to adopt CF textiles in automotive applications, particularly for luxury and high-performance vehicles. The drive to reduce vehicle weight and improve fuel efficiency is pushing the development of carbon fiber resources. German automotive engineers are working on advanced fabrication processes to enhance the effectiveness of CF textiles. Scientific and technological research, as well as projects for evaluating vehicle interior components, are also encouraged in the sector.

India: India is beginning to explore the potential of CF textiles in the automotive sector, particularly for weight reduction and performance enhancement. With rapid urbanization and an increase in vehicle manufacturing, Indian producers are turning to carbon fiber to improve fuel economy. Local players are expected to increase investment in R&D and production capabilities, enabling them to introduce innovative solutions and incorporate carbon fiber technologies into mass-market automotive applications.

Japan: Japan is integrating new and innovative uses of CF textiles in automotive applications, especially for electric and hybrid vehicles. Japanese manufacturers are focused on improving the properties of carbon fiber composites to enhance vehicle performance and safety. The outlook is positive, with ongoing research into advanced production techniques aimed at reducing costs and increasing the usability of carbon fiber across a wide range of automobiles. The market's progress is also supported by collaborative R&D efforts.

Features of CF Textile in the Global Automotive Market

Market Size Estimates: CF Textile in the automotive market size estimation in terms of value (\$B).

Trend and Forecast Analysis: Market trends (2019 to 2024) and forecast (2025 to 2031) by various segments and regions.

Segmentation Analysis: CF Textile in the automotive market size by product type, application, and region in terms of value (\$B).

Regional Analysis: CF Textile in the automotive market breakdown by North America, Europe, Asia Pacific, and Rest of the World.

Growth Opportunities: Analysis of growth opportunities in different product type, application, and regions for the CF Textile in the automotive market.

Strategic Analysis: This includes M&A, new product development, and competitive landscape of the CF Textile in the automotive market.

Analysis of competitive intensity of the industry based on Porter's Five Forces model.

If you are looking to expand your business in this or adjacent markets, then contact us. We have done hundreds of strategic consulting projects in market entry, opportunity screening, due diligence, supply chain analysis, M & A, and more.

This report answers following 11 key questions:

Q.1. What are some of the most promising, high-growth opportunities for CF Textile in the automotive market by product type (woven textiles and non-woven textiles), application (battery casing, interior trim, leaf spring, trunk lids, roof modules, and others), and region (North America, Europe, Asia Pacific, and the Rest of the World)?

Q.2. Which segments will grow at a faster pace and why?

Q.3. Which region will grow at a faster pace and why?

Q.4. What are the key factors affecting market dynamics? What are the key challenges and business risks in this market?

Q.5. What are the business risks and competitive threats in this market?

Q.6. What are the emerging trends in this market and the reasons behind them?

Q.7. What are some of the changing demands of customers in the market?

Q.8. What are the new developments in the market? Which companies are leading these developments?

Q.9. Who are the major players in this market? What strategic initiatives are key players pursuing for business growth?

Q.10. What are some of the competing products in this market and how big of a threat do they pose for loss of market share by material or product substitution?

Q.11. What M&A activity has occurred in the last 5 years and what has its impact been on the industry?

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7.10: Nippon Graphite Fiber Corporation

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