

Global Automotive Carbon Thermoplastic Market Size, Growth, Industry Trends | Emergen Research

The CFRTTP composites have achieved significant success in the manufacturing of Formula 1 motorsport vehicles

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[/EINPresswire.com/](https://www.emergenresearch.com/) -- The global [automotive carbon thermoplastic market](#) is poised for substantial growth, expanding from an estimated USD 1.2 billion in 2024 to USD 3.5 billion by 2032, at a compound annual growth rate (CAGR) of 14.6%. This growth is driven by the increasing demand for lightweight materials in the automotive industry, the push for more fuel-efficient and environmentally friendly vehicles, and advancements in carbon thermoplastic technology.



Carbon thermoplastics are increasingly being used in automotive manufacturing due to their superior properties such as high strength, low weight, and excellent thermal stability. These materials help automakers meet stringent fuel efficiency standards and reduce the overall weight of vehicles, thereby improving performance and lowering emissions. With the growing trend towards electric vehicles (EVs) and autonomous driving technologies, carbon thermoplastics are becoming essential materials for producing lightweight components that contribute to better vehicle range and safety.

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Market Drivers

Several factors are contributing to the robust growth of the automotive carbon thermoplastic market. The demand for lightweight materials is one of the primary drivers, as reducing vehicle weight leads to improved fuel efficiency and extended battery life in electric vehicles. Carbon thermoplastics, being lighter and stronger than metals, are increasingly replacing traditional

materials in various vehicle parts, including body panels, interior components, and structural elements.

Technological advancements in carbon thermoplastic manufacturing are another major factor supporting market growth. Innovations such as injection molding, continuous fiber-reinforced thermoplastics, and 3D printing are enabling more cost-effective and efficient production processes, making these materials more accessible to automakers. Moreover, the automotive industry's growing focus on sustainability and reducing the carbon footprint is driving the demand for carbon thermoplastics, which are recyclable and have a smaller environmental impact compared to traditional materials.

The adoption of electric vehicles is also contributing to the demand for carbon thermoplastics. With EVs requiring lighter components to increase driving range and reduce power consumption, automakers are increasingly turning to carbon thermoplastics for key parts like battery enclosures, chassis, and body panels.

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Market Challenges

Despite the positive growth outlook, the automotive carbon thermoplastic market faces a number of challenges. One of the major hurdles is the high cost of carbon thermoplastics compared to conventional materials such as steel and aluminum. The advanced manufacturing processes required to produce carbon thermoplastics are often more expensive, which can impact the overall cost of the vehicle, particularly in mass-market applications.

Another challenge is the limited availability of raw materials. Carbon fiber, a key component in carbon thermoplastics, is still relatively expensive and is not as widely available as other materials. Although technological advancements are making the material more accessible, the high cost and limited supply remain significant barriers for widespread adoption in the automotive sector.

Additionally, the complexity of integrating carbon thermoplastic materials into existing automotive manufacturing processes can pose challenges for automakers. The development of new technologies and production techniques is necessary to ensure these materials can be incorporated efficiently and at scale.

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Segment Insights

The automotive carbon thermoplastic market is segmented by product type, application, and

end-user.

By Product Type:

Carbon Fiber Reinforced Thermoplastics (CFRTP): This segment is leading the market, owing to the superior mechanical properties and lightweight characteristics of CFRTP. These materials are widely used in high-performance automotive applications, including structural components, body panels, and chassis.

Short Carbon Fiber Thermoplastics: Short carbon fiber thermoplastics are gaining popularity in automotive applications due to their lower cost and ease of processing, making them suitable for mass-market vehicles and non-structural components.

By Application:

Exterior Components: Carbon thermoplastics are increasingly used for exterior parts such as bumpers, fenders, and hoods due to their excellent strength-to-weight ratio and resistance to environmental factors such as UV radiation and moisture.

Interior Components: Lightweight interior components such as dashboards, door panels, and seat structures benefit from the durability and low weight of carbon thermoplastics.

Structural Components: Carbon thermoplastics are used for critical structural elements in vehicles, including chassis, subframes, and crash structures, to enhance safety and reduce weight.

Battery Enclosures (for Electric Vehicles): In the rapidly growing electric vehicle market, carbon thermoplastics are used to manufacture lightweight and durable battery enclosures, which help improve overall vehicle performance and driving range.

By End-user:

OEMs (Original Equipment Manufacturers): OEMs are the primary consumers of automotive carbon thermoplastics, as they utilize these materials in the design and production of new vehicles, particularly in high-performance and electric vehicle segments.

Aftermarket: The aftermarket segment is also witnessing growth, with carbon thermoplastics being used in vehicle modifications and upgrades, including body kits, trim parts, and interior accessories.

Regional Outlook

The automotive carbon thermoplastic market is growing rapidly across regions, with significant developments in North America, Europe, and Asia-Pacific.

North America: The region is witnessing strong demand for carbon thermoplastics due to the growing adoption of electric vehicles and the presence of leading automotive manufacturers. The U.S. and Canada are key markets, with a focus on the use of lightweight materials to enhance EV performance and fuel efficiency in internal combustion engine (ICE) vehicles.

Europe: Europe is a major market for automotive carbon thermoplastics, with stringent environmental regulations and a strong focus on sustainability driving demand. The growing

production of electric vehicles and investments in automotive innovation are further bolstering the market.

Asia-Pacific: Asia-Pacific, led by countries like China, Japan, and South Korea, is expected to witness the fastest growth in the automotive carbon thermoplastic market. This growth is primarily driven by the large-scale production of vehicles, especially in China, and the growing shift towards electric mobility.

Latin America & Middle East and Africa: While these regions are expected to witness moderate growth, the increasing demand for fuel-efficient vehicles and the adoption of new technologies will contribute to the overall expansion of the market.

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Key Players in the Automotive Carbon Thermoplastic Market

Some of the key companies operating in the automotive carbon thermoplastic market include:

SGL Carbon
Toray Industries, Inc.
Teijin Limited
Solvay S.A.
Hexcel Corporation
Celanese Corporation
DSM Engineering Materials
Mitsubishi Chemical Advanced Materials
BASF SE
Forward Engineering

Automotive Carbon Thermoplastic Market Latest Industry Updates

In May 2024, Toray Industries announced the development of a new carbon thermoplastic composite that improves the efficiency and cost-effectiveness of automotive manufacturing while enhancing performance characteristics.

In August 2025, SGL Carbon partnered with a leading EV manufacturer to provide carbon thermoplastic materials for the production of lightweight vehicle components, including battery enclosures and chassis elements.

Automotive Carbon Thermoplastic Market Segmentation Analysis

By Product Type (Revenue, USD Million; 2024-2032)

Carbon Fiber Reinforced Thermoplastics (CFRTP)
Short Carbon Fiber Thermoplastics

By Application (Revenue, USD Million; 2024-2032)

Exterior Components

Interior Components

Structural Components

Battery Enclosures (for Electric Vehicles)

By End-user (Revenue, USD Million; 2024-2032)

OEMs (Original Equipment Manufacturers)

Aftermarket

By Regional Outlook (Revenue, USD Million; 2024-2032)

North America

Europe

Asia-Pacific

Latin America

Middle East and Africa

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