

Glass Fiber Textile in the Aerospace & Defense Market Report: Trends, Forecast and Competitive Analysis to 2031

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Abstracts

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Glass Fiber Textile in the Aerospace & Defense Trends and Forecast

The future of glass fiber textile in the global aerospace & defense market looks promising with opportunities in the aircraft interior, ducting, and rotor blade markets. Glass fiber textile in the global aerospace & defense market is expected to grow with a CAGR of 7.8% from 2025 to 2031. The major drivers for this market are the increasing demand for advanced composites for aircraft structures and armor applications, growing investments in defense and space exploration programs, and the lightweight and high-strength material requirements for improved fuel efficiency and performance.

Lucintel forecasts that, within the product type category, non-crimp is expected to witness the highest growth over the forecast period.

Within the application category, aircraft interiors are 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 Glass Fiber Textile in the Aerospace & Defense Market

The expansion of market absorbent glass fiber textile in the aerospace and defense market also influences the following characteristics in its usage:

Wide Application of Hybrid Composites: Hybrid composites, where glass fibers are reinforced with materials such as carbon fibers or within resin matrices, are increasingly used in the aerospace and defense industries. These composite materials offer superior performance characteristics, such as increased tensile strength and impact resistance. They are particularly relevant in aircraft structures, where the high-strength-to-weight ratio is crucial. The use of hybrid composites helps manufacturers improve resource utilization efficiency by increasing the performance of structures while reducing their weight.

Reducing Environmental Impact in Material Manufacturing: The aerospace and defense sector is also placing new emphasis on greener practices. Since glass fiber textiles can be recycled and are more environmentally friendly than traditional metals and plastics, they are preferred. Efforts have been made to introduce bio-based glass fibers and reuse waste composites, enabling manufacturers to meet heightened environmental regulatory requirements. This trend reflects global strides in promoting green manufacturing, with waste management and carbon emissions reduction becoming necessary undertakings.

3D Printing and Automation Driving Advancements: 3D printing and automated manufacturing processes are revolutionizing the production and incorporation of glass fiber textiles into aerospace and defense systems. Faster manufacturing expanded design possibilities, and lower material wastage are some of the benefits of these technologies. In aerospace, this is particularly useful for creating lightweight shells for aircraft, while in defense, there are advancements in the rapid prototyping of armor and other equipment. This is driving down costs and enhancing overall manufacturing productivity.

Increased Use of Lightweight Armor Systems: Glass fiber textiles are commonly used in the manufacture of military armoring systems due to their lightweight and durability. They are increasingly being used in civilian applications such as personal armor, vehicle armor, and ship hulls. The use of glass fiber composites offers better protection against impacts, cuts, thrusts, and compressions without the burden of heavy materials like steel or aluminum. This trend is particularly

important in the production of body armor and ballistic shields.

Improvements in Radar and Communication Technology: Styrene-acrylonitrile composites reinforced with glass fibers are being incorporated into radar and communication systems in the aerospace and defense industries. Due to their high dielectric constant, these materials are used in radomes and antenna enclosures, protecting underlying electronics and minimizing transmission loss. This trend is critical in the creation of next-generation communication systems for military aircraft, drones, and space applications, where secure data transmission is necessary for effective operations.

These changes are driven by the need for new glass fiber textiles to meet the advanced requirements of these aerospace and defense markets. It is believed that practices such as 'eco-sphering,' the synergy of hybrid materials, and advanced manufacturing technologies will help improve efficiency, lower costs, and increase the operational effectiveness of both commercial and military systems.

Recent Developments in Glass Fiber Textile in the Aerospace & Defense Market

The market for glass fiber textiles in the aerospace and defense market is also witnessing immense progress, thanks to the advances in technology, and the rising need for lightweight and strong materials. Among the five highlights are the following.

Adoption of Glass Fiber Composites in Aircraft Structures: The use of glass fiber composites in aircraft structures continues to grow due to the need for weight reduction and fuel economy by leading players in the aerospace industry. For instance, Boeing and Airbus have started replacing their aircraft parts such as wings, fuselage, and interiors with these materials. This phenomenon has been boosted by developments in manufacturing like automated fiber placement (AFP), which increases accuracy and reduces waste. The adoption of glass fiber composites further assists in environmental regulation compliance by promoting the reduction of emissions and operational shocks on aircraft.

Military applications of Glass Fibers Roha cell Sandwich Composites: Military uses of glass fiber reinforced materials, including ballistic vests and other types of armoring for personnel and armored vehicles, are on the rise. Both the U. S. Department of Defense as well as NATO forces are chiefly interested in “light but sturdy” body armoring systems and armored vehicles. As a result, regulation

is imposed on gear weight without increasing risks. Composite materials based on glass fiber allow soldiers to move more comfortably and freely without sacrificing ballistics protection.

Obtaining Glass Fiber for Radar Systems: Glass fibers are also being used in the manufacture of various radar systems and radars for military aircraft, drones, and space applications. Their high strength and good dielectric properties make them suitable for specific applications. The defense industrial base of Japan appears to be the most dynamic in this area, fabricating glass fiber-reinforced plastics for radar housing that are light and shock-resistant.

New Trends in Glass Fiber Textile Engineering: The improvement of manufacturing technologies, including 3D weaving and automated fiber lay-up systems, has boosted the production of glass fiber composites. Such ways help lower costs in the production of complicated parts such as the wings of the airplane and some defense equipment. The production of easy-to-make and high-quality glass fiber composites is fast-tracking their use in the defense and aerospace industries.

Efforts toward Sustainable Development in Glass Fiber Manufacturing: Aerospace and defense makers have begun to be concerned about the sustainability of material supply chains. The manufacture of glass fibers that are environmentally friendly as those from recycled and bio-based materials is also catching on. This change is in part due to increased regulation to comply with reduced carbon and waste outputs. The aerospace industry has begun investigating how to introduce recyclable glass fiber fabrics into aircraft production and back into the manufacturing cycle at end-of-life scenarios.

These recent developments have indicated that glass fiber textiles will increasingly be used in the aerospace and defense industries. From improving fuel efficiency in aircraft to better protection of military personnel, turning the transition to advanced radar development, these materials will assist in achieving the performance, sustainability, and cost targets for not only commercial applications but also defense activities.

Strategic Growth Opportunities for Glass Fiber Textile in the Aerospace & Defense Market

There are several growth opportunities in glass fiber textile in the aerospace and

defense market, as well as in the defense area, because, both industries are gradually shifting to composite materials. These are five of those growth opportunities that are the most promising:

High-End Aircraft Parts: To decrease total fuel production costs, the aircraft industry is now concentrating on lightening the weight of airplane structures without sacrificing their strength. In this regard, the recent inclusions of glass fiber textiles in the manufacture of airframe components such as wings, fuselages, and other structure parts are ideal. Concerning this issue, the need for advanced aircraft that are energy efficient is on the rise and the manufacturers are going full throttle on the use of glass fiber composites for their designs in the new generation of airplanes which include the commercial and military jets.

Lightweight Military Armor Solutions: Another application area in which glass fiber fabrics can be applied is in the development of lightweight military armor. Armies the world over are faced with the dual problem of trying to lessen the weight of their protective systems while increasing their level of protection. It is possible to acquire high levels of ballistic protection using glass fiber composites without the need for bulky protective armoring materials needed in conventional military consequences which are critical to enhancing the comfort and movement of the combatants in the battlefield.

Unmanned Aerial Systems (UAS): An industrial development that attracts attention in the present days is utilizing glass fiber composite materials and constructing unmanned aerial vehicles. These materials are especially noted in UAS airframes where a high strength-to-weight ratio contributes positively to flight time and available load weight. There is a growing demand for drones in the commercial sector as well as military barriers which makes glass fiber textiles a good piece of opportunity in this market.

Space Exploration and Satellite Technology: Glass fiber textiles are being used in various applications related to space exploration and satellites because they are light and strong. Satellite housings, antenna systems, and even space vehicles are increasingly being fabricated using glass fiber composites to survive extreme environments and decrease weight.

Ballistic Protection for Armored Vehicles: Ballistic glass fiber textiles are also being integrated into other portions of military equipment, especially armored

vehicles in field combat operations. Glass fiber composite materials are also incorporated in vehicle hulls and componentry where lightweight armor for enhanced maneuverability without compromising protection is desired. Military objectives of increased protection without weighing vehicles down hence the need for light materials, also these materials are not left behind.

These strategic growth opportunities correspond to glass fiber textile development trends for the aerospace and defense markets. The adoption of glass fiber textiles is anticipated to be on the rise from advanced aircraft components, and lightweight armor to UAS and space exploration applications on the demand for the performance, sustainability as well as economic factors.

Glass Fiber Textile in the Aerospace & Defense Market Driver and Challenges

Glass fiber textile market in aerospace and defense has been influenced by advancements in technology, commercial forces, and policies. These drivers, along with the challenges mentioned, impact the growth and development of the sector:

The factors responsible for driving glass fiber textile market in aerospace & defense include:

Technological Advancements in Composite Materials: Innovation is consistently experienced in composite technologies, such as advanced weaving and automated production techniques, which increase the application of glass fiber textiles. More sophisticated techniques lead to increased efficiency in the manufacturing of precise and cost-effective high-performance aerospace and defense components, resulting in less material waste and shorter production periods.

Need for Lightweight Materials: As the aerospace and defense industries strive for greater efficiency and mobility, glass fiber composites have become increasingly important. The ability to reduce weight while maintaining strength and durability has led to the application of these materials in aircraft, vehicles, and military systems.

Sustainability Regulations: The aerospace and defense industries are also moving toward sustainability due to various eco-friendly regulations that have been enacted globally. In line with these trends, textiles made of glass fiber

composites require less energy, thereby reducing carbon emissions and helping industries meet regulatory requirements.

Increase in Defense Spending: The increase in defense expenditure in major markets like the U.S., China, and Europe is driving the demand for advanced materials, including glass fiber textiles. The need for improved military technologies, body armor, armored vehicles, surveillance, and reconnaissance systems has accelerated the demand for these materials.

Growth in Aerospace and Space Exploration: With advancements in commercial aviation and space exploration activities, the demand for lightweight, strong materials for the construction of airplanes and spacecraft is rising. Glass fiber composite materials are being introduced in strategic areas such as airframe structures, satellite protection, and spacecraft protective structures, contributing to the industry's growth.

Challenges in glass fiber textile market in aerospace & defense include:

High Production Costs: Advanced manufacturing processes and materials required for aerospace and defense projects involve high costs, especially for smaller enterprises. Although glass fiber textiles can be economical over time, in defense markets where budgets are limited, the initial expenditures may hinder the widespread use of these composites.

Competition from Alternative Materials: Other materials, especially carbon fiber composites and advanced polymers, are also competing for positions in the aerospace and defense industries. These materials offer lower costs than glass fiber textiles, while carbon fibers, though more expensive, may replace low-cost glass fiber-reinforced plastics due to their excellent strength-to-weight ratio.

Recycling Challenges: Although it is possible to recycle glass fiber textiles, the practice is less developed compared to other recycling technologies. The recycling of glass fiber composites remains underdeveloped due to a lack of services, which may limit the real growth of the material's benefits and its effective use in the aerospace and defense industries.

The market for glass fiber textiles in aerospace and defense is growing due to various

factors such as technological advancements, an increasing need for lightweight materials, sustainability policies, and rising defense budgets. Nonetheless, there are some challenges, such as high production costs, market substitution by other materials, and recycling limitations.

List of Glass Fiber Textile Companies in the Aerospace & Defense 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 glass fiber textile companies in the aerospace & defense industry cater increasing demand, ensure competitive effectiveness, develop innovative products & technologies, reduce production costs, and expand their customer base. Some of the glass fiber textile companies in the aerospace & defense industry profiled in this report include-

Owens Corning

Jushi Group

Chongqing Polycomp International Corporation

Taishan Fiberglass

Taiwan Glass Group

Nippon Electric Glass

Sichuan Weibo

3B the Fiber Glass Company (Goa Glass Fiber)

Johns Manville Corporation

Nitto Boseki

Glass Fiber Textile in the Aerospace & Defense Market by Segment

The study includes a forecast for glass fiber textile in the aerospace & defense market by product type, application, and region.

Glass Fiber Textile in the Aerospace & Defense Market by Product Type [Analysis by Value from 2019 to 2031]:

Woven Roving

Non-Crimp

Woven Yarn

CFM/CSM

Glass Fiber Textile in the Aerospace & Defense Market by Application [Analysis by Value from 2019 to 2031]:

Aircraft Interior

Ducting

Rotor Blades

Others

Glass Fiber Textile in the Aerospace & Defense Market by Region [Analysis by Value from 2019 to 2031]:

North America

Europe

Asia Pacific

The Rest of the World

Country Wise Outlook for Glass Fiber Textile in the Aerospace & Defense Market

The aerospace and defense industry is becoming increasingly committed to materials such as glass fiber textiles because of their strength-to-weight ratio and the durability of the composite material. Recent developments show that more importance is being placed on reducing fuel consumption, and weight, and improving the performance of aircraft and defense systems. Glass fiber textiles are used in the manufacture of various structures, such as airframes, radomes, and ballistic shields.

United States: Investment in glass fiber textiles is a priority for the aerospace and defense industries in the United States, especially for military and civil aircraft. Lockheed Martin and Boeing are adopting glass fiber composites in aircraft components to reduce weight and improve fuel economy. Additionally, the research and development of advanced materials for military-specific applications, such as body armor and radar systems, which also utilize glass fiber textiles, are supported by the U.S. Department of Defense (DoD). The United States is also the first country to embrace innovative production methods, such as 3D weaving and structural fabrication in the form of automated lay-up, which have enhanced manufacturing efficiency and material performance.

China: China has made great strides in developing its aerospace and defense industries, which has, in turn, increased the demand for advanced materials like glass fiber textiles. The state-owned aerospace company, COMAC, seeks to reduce the weight of commercial aircraft using glass fiber composites and compete with other manufacturers, including Boeing and Airbus. Glass fiber textiles have found applications in radar systems, drones, and military vehicle armoring systems.

Germany: Germany is at the forefront of several industries, including the application of advanced materials in aerospace and defense. Leading firms like Airbus and Rheinmetall are experimenting with a higher proportion of glass fiber textiles. The country is furthering research into new, high-performance glass composite epoxy that will be used in the wings and fuselage parts of aircraft and UAVs. In defense applications, Germany is also utilizing the advantages of glass fiber fabrics in the ballistic protection of armored vehicles and personal armor.

India: India has been identified as an emerging nation in aerospace and defense, particularly in areas where glass fiber textiles are used for both civilian and military applications. The Indian Air Force, in cooperation with HAL,

increasingly uses glass fiber composites in the structural elements of aircraft and UAVs. These composite materials are implemented in airframe structures to enhance fuel economy by minimizing the weight of the airframe. India is also keen on incorporating fiber composites into local ballistic protection programs, expanding the use of glass fiber textiles in defense.

Japan: Japan has established itself as a leader in technology and is now seeking new ways to apply glass fiber textiles in aerospace and defense. Mitsubishi Heavy Industries, a leading Japanese company, has embraced these materials to reduce the weight and improve the characteristics of aircraft. It is no surprise that the use of glass fiber textiles in defense is also on the rise, with applications in military vehicles and personnel armor.

Features of Glass Fiber Textile in the Global Aerospace & Defense Market

Market Size Estimates: Glass fiber textile in the aerospace & defense 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: Glass fiber textile in the aerospace & defense market size by product type, application, and region in terms of value (\$B).

Regional Analysis: Glass fiber textile in the aerospace & defense 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 glass fiber textile in the aerospace & defense market.

Strategic Analysis: This includes M&A, new product development, and competitive landscape of the glass fiber textile in the aerospace & defense 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 glass fiber textile in the aerospace & defense market by product type (woven roving, non-crimp, woven yarn, and cfm/csm), application (aircraft interior, ducting, rotor blades, 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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- 7.8: 3B the Fiber Glass Company (Goa Glass Fiber)
- 7.9: Johns Manville Corporation
- 7.10: Nitto Boseki

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