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Aerostructure Materials Market Forecasts to 2034 – Global Analysis By Material Type (Composites, Metals, Alloys & Super Alloys, and Other Material Types), Component, Aircraft Type, Manufacturing Process, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Aerostructure Materials Market is accounted for $101.74 billion in 2026 and is expected to reach $177.12 billion by 2034 growing at a CAGR of 7.2% during the forecast period. Aerostructure materials are specialized engineering materials used in the design and manufacturing of primary and secondary aircraft structural components such as fuselage frames, wings, empennage, and landing gear systems. These materials are selected for their exceptional strength-to-weight ratio, durability, fatigue resistance, corrosion resistance, and thermal stability. Commonly used aerostructure materials include aluminum alloys, titanium alloys, advanced composites, and high-performance polymers, enabling enhanced fuel efficiency, structural integrity, safety, and long-term performance in aerospace applications.

Market Dynamics:

Driver:

Increasing demand for fuel-efficient aircraft

The shift toward next-generation narrow-body and wide-body aircraft necessitates the use of lightweight composites and advanced alloys to significantly reduce overall aircraft weight. Lighter aircraft consume less fuel, lower operating costs for airlines, and extend flight range. This focus on economic and environmental performance is compelling

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OEMs to replace traditional materials like aluminum with carbon fiber reinforced polymers (CFRP) and titanium alloys in primary structures, thereby fueling sustained demand for high-performance aerostructure materials.

Restraint:

High raw material and manufacturing costs

Carbon fiber composites and titanium alloys involve expensive raw material precursors and energy-intensive manufacturing processes, such as Automated Fiber Placement (AFP) and autoclave curing. The specialized tooling and complex quality control required further escalate production expenses. These high costs create a substantial barrier, particularly for price-sensitive segments like regional aviation and general aviation, and can slow down the replacement of conventional materials in legacy aircraft platforms where cost optimization is paramount.

Opportunity:

Growth of urban air mobility (UAM) and eVTOL aircraft

The emergence of the Urban Air Mobility (UAM) sector, particularly electric Vertical Takeoff and Landing (eVTOL) aircraft, presents a transformative growth for the aerostructure materials. These novel aircraft designs demand extreme lightweighting to maximize battery efficiency and flight endurance. Furthermore, they require high-volume, cost-effective manufacturing processes suitable for production scales unlike traditional aerospace. This creates a fertile ground for innovative materials like advanced thermoplastic composites, which offer faster processing times and recyclability, and for new manufacturing techniques like additive manufacturing, opening new revenue streams for material suppliers and processors.

Threat:

Supply chain volatility and raw material scarcity

Geopolitical tensions, trade disputes, and events like pandemics can severely impact the availability and cost of these critical raw materials. The aerospace industry's reliance on a limited number of qualified suppliers for high-grade materials creates a bottleneck. Any disruption, whether from energy shortages affecting production facilities or logistical delays, can halt manufacturing lines at major OEMs, leading to significant

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financial penalties and delaying aircraft delivery schedules globally.

Covid-19 Impact:

The COVID-19 pandemic severely disrupted the aerostructure materials market as global air travel came to a halt, leading to sharp declines in aircraft production rates and order backlogs. Supply chains were strained by factory shutdowns and logistical bottlenecks, delaying material deliveries. However, the downturn accelerated the retirement of older, less efficient aircraft, creating a long-term impetus for OEMs to prioritize newer, more fuel-efficient models that require advanced materials. This has reinforced the industry's focus on lightweight composites and sustainable technologies, positioning the market for recovery aligned with the resurgence in air travel and the push for net-zero aviation emissions.

The composites segment is expected to be the largest during the forecast period

The composites segment is expected to account for the largest market share during the forecast period, driven by its unparalleled adoption in primary airframe structures like fuselage and wings for modern commercial aircraft. The superior strength-to-weight ratio and corrosion resistance of carbon fiber composites offer significant fuel savings and design flexibility over traditional metals. With major programs like the Boeing 787 and Airbus A350 featuring composite-rich airframes, and this trend cascading to next-generation military and business jets, the demand for composites remains dominant.

The aftermarket (MRO) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the aftermarket (MRO) segment is predicted to witness the highest growth rate, driven by the expanding global aircraft fleet and aging in-service platforms requiring sustained maintenance. As airlines focus on extending the operational life of their existing fleets amidst production delays for new aircraft, demand for replacement aerostructure components like wing panels and fuselage sections intensifies. The shift toward predictive maintenance using digital twin technology is accelerating parts replacement cycles.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, underpinned by a strong rebound in commercial aircraft production and

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sustained high defense spending on next-generation platforms. The U.S., home to Boeing and leading defense contractors, is at the forefront of adopting advanced materials for programs like the B-21 Raider and futuristic UAM vehicles. Robust R&D investment in thermoplastics and automated manufacturing processes, coupled with a mature aftermarket (MRO) sector demanding replacement parts, fuels market growth.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by the presence of major aircraft manufacturers and a rapidly expanding domestic airline fleet. Countries like China, Japan, and South Korea are home to leading aerostructure suppliers and are investing heavily in indigenous commercial and military aircraft programs, such as the COMAC C919. The region's robust manufacturing ecosystem, supported by government initiatives for aerospace self-reliance, attracts global OEMs to establish joint ventures and supply chains.

Key players in the market

Some of the key players in Aerostructure Materials Market include Toray Industries, Inc., AMG Advanced Metallurgical Group N.V., Hexcel Corporation, Carpenter Technology Corporation, Solvay S.A., Kobe Steel, Ltd., Teijin Limited, VSMPO-AVISMA Corporation, SGL Carbon SE, Precision Castparts Corporation, Alcoa Corporation, Arconic Corporation, Constellium SE, ATI, and Kaiser Aluminum Corporation.

Key Developments:

In January 2026, Toray Industries, Inc., announced that it has started selling a high-efficiency separation membrane module for biopharmaceutical purification processes. This model delivers more than four times the filtration performance of counterparts with a module that is just one-fifth their volume, saving space and reducing buffer solution usage. Streamlining biopharmaceutical manufacturing lowers costs by boosting production facility utilization rates and yields.

In September 2025, Hexcel Corporation announced a strategic collaboration with A&P Technology to work with the AFRL-funded Modeling for Affordable, Sustainable Components (MASC) research program and Wichita State University’s National Institute for Aviation Research (NIAR) to develop a methodology for certification of overbraided structures using Hexcel’s IM7 24K fiber and 1078-1 resin system.

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Material Types Covered:

- Composites
- Metals
- Alloys & Super Alloys
- Other Material Types

Components Covered:

- Fuselage
- Wings
- Empennage
- Nacelles & Pylons
- Flight Control Surfaces
- Nose Section
- Landing Gear Structures

Aircraft Types Covered:

- Commercial Aircraft
- Military Aircraft
- Business & General Aviation
- Unmanned Aerial Vehicles (UAVs)
- Advanced Air Mobility (AAM)

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Manufacturing Processes Covered:

- Automated Fiber Placement (AFP)
- Automated Tape Laying (ATL)
- Resin Transfer Molding
- Additive Manufacturing
- Traditional Machining & Forging
- Filament Winding

End Users Covered:

- Original Equipment Manufacturers (OEMs)
- Aftermarket (MRO)

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany

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- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

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- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore

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- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel
  - Rest of Middle East
- Africa
  - South Africa
  - Egypt
  - Morocco

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Rest of Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- 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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Contents

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13 COMPANY PROFILES

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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