Advanced Carbon Materials - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 120 pages | Mordor Intelligence

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Report description:

The Advanced Carbon Materials Market is expected to register a CAGR of 9.82% during the forecast period.

The COVID-19 pandemic negatively impacted the market. This was because of the shutdown of the manufacturing facilities and plants due to the lockdown and restrictions. Supply chain and transportation disruptions further created hindrances for the market. However, the industry witnessed a recovery in 2021, thus rebounding the demand for the market studied.

Key Highlights
- Over the short term, increasing demand for carbon fiber-reinforced plastic in the construction industry and increasing focus on lightweight composites in the automotive and aviation industries are some of the factors driving the growth of the market studied.
- On the flip side, the high cost of carbon fiber composites and wastage in the production of finished products is likely to hinder the growth of the market studied.
- However, the production of advanced carbon materials from bio-waste is anticipated to provide numerous opportunities over the forecast period.
- North America dominated the market with the largest consumption, followed closely by Asia-Pacific.

Advanced Carbon Materials Market Trends

Aerospace and Defense to Dominate the Market

- Aerospace and defense accounts for one of the largest shares in the market, based on the end-user industry. Over the past few years, there have been a number of new products added to this field. Advanced carbon materials are perfect choices for numerous aerospace and defense applications, as they provide strength, endurance, and stability, as required.
- Conventional metal structures are increasingly being replaced by carbon fibers, such as carbon fiber-reinforced plastics (CFRP) in aircraft, owing to their light yet stiff design structures. From the interior of an airplane or a jet to the rotor blades of a helicopter, composite materials are emerging as integral parts of the aerospace industry.
- In Asia-Pacific, the aerospace industry is growing at a fast rate, as many countries have increased their spending on defense platforms and technologies.
- The civil and military aviation industry in India emerged as one of the fastest-growing industries in the country in the past few years. According to the Indian government, the commercial aviation sector contributed USD 30 billion to India's GDP in 2021. With this growth, the domestic aviation market is projected to rank third globally by 2024. As air traffic has been growing rapidly in the country as compared to the global average. The air fleet number may rise from 600 (as of October 2022) to 1,200 during 2024. Therefore, increasing in the number of air fleet is expected to created an upside demand for advanced carbon materials market.
- Moreover, in April 2022, to transform Civil (Passenger) aircraft into Multi-Mission Tanker Transport (MMTT) aircraft in India, HAL and Israel Aerospace Industries (IAI) have signed a Memorandum of Understanding.
- With the e-commerce operations increasing rapidly since COVID-19, the air cargo market has increased, and thus the orders for freighter aircraft have increased in 2022. For instance, in October 2022, Luxembourg's Cargolux airlines placed an order with Boeing for 10 777-8 freighters along with options for 6 additional aircraft.
- China holds the position of second largest air freight market only next to the United States. According to Boeing's Commercial Market Outlook 2022, China's commercial airfleet is expected to grow from 3,900 to 9,600 by 2041.
- In February 2022, Boeing was awarded a contract worth USD 103.7 million by the US Department of Defense to deliver eight AH-6 light attack reconnaissance helicopters to Thailand under foreign military sale (FMS). The helicopters are planned to replace the aging AH-1F Cobra helicopters in service of the Royal Thai Army, and deliveries are expected to run through 2024.
- Furthermore, United Airlines has announced that it has started operating on new routes, describing it as its "largest transatlantic expansion." With everything returning to normal, new airlines have started operations. Akasa Air, a new Indian airline, has started its operations in August 2022, starting with one route with 28 flights a week and gradually adding two more routes. In October 2022, Alaska Airlines placed an order for 52 Boeing 737 MAX aircraft with a plan to expand its fleet. The airline announced plans to have an all-Boeing mainline fleet by the end of 2023.
- All factors above are likely to fuel the growth of the advanced carbon materials market over the forecast period.

North America Region to Dominate the Market

- The North American region is expected to dominate the market during the forecast period due to the presence of countries like the United States, Canada, and Mexico.
- The United States is the world's largest and most powerful economy. With the growing demand for various advanced materials such as (carbon fibers, carbon nanotubes, graphene, special graphite, carbon foams, nanocrystalline diamond (NCD), diamond-like-carbon (DLC), and fullerenes) in different end-user industries, including aerospace and defense, electronics, automotive, and energy, among others, is expected to propel the demand for advanced carbon materials at high rates through the forecast period.
- For instance, according to OICA, in 2022, automobile production in the United States amounted to 10.06 million units, which showed an increase of 10% compared to 2021 and 14% compared to 2020. Therefore, increasing automobile production is expected to create an upside demand for advanced carbon materials.
- Moreover, according to the Defence Expenditure of NATO Countries, in 2022, the United States spent an estimated USD 822 billion on defence. This makes their defence budget, by far, the biggest out of all the NATO members. Therefore, increasing expenditure on defense from the United States is expected to create an upside demand for advanced carbon materials in North

America region.
- Owing to the above-mentioned factors, the market for advanced carbon materials in North America region is projected to grow significantly during the forecast period.

Advanced Carbon Materials Industry Overview

The advanced carbon materials market is partially fragmented in nature. The major players in this market (not in a particular order) include TORAY INDUSTRIES INC., Toyo Tanso Co. Ltd, Global Graphene Group, SGL Carbon, and SHOWA DENKO K.K.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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