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CF & CFRP Market by Source (Virgin, Recycled), Precursor (PAN, Pitch, Rayon), Resin (Thermosetting, Thermoplastic), Manufacturing Process, End-use Industry, and Region - Global Forecast to 2025

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Abstracts

The global CF & CFRP market size is projected to grow from USD 17.5 billion in 2020 to USD 31.5 billion by 2025, at a CAGR of 12.4% during the same period. The CF & CFRP materials offer exceptional properties, such as low weight, stiffness, strength, tenacity, density, thermal & electrical conductivity, fatigue, and corrosion resistance. Owing to these outstanding properties, conventional materials, such as aluminum and steel, are less preferred in high-performance applications in various end-use industries, including aerospace & defense, wind energy, sporting goods, and among others. However, the global pandemic disease COVID-19 has forced the composite component manufacturers to shut down their operations partially, which is expected to decrease the demand for CF & CFRP in 2020.

“The virgin carbon fiber segment of Carbon Fiber to be the fastest-growing segment.”

The carbon fiber based on the source is segmented into virgin carbon fiber and recycled carbon fiber. Virgin is made from precursors such as PAN and pitch. These fibers find applications in various aerospace & defense, wind energy, sporting goods, and other industries. Virgin carbon fiber offers better thermal and mechanical properties than recycled carbon fiber. They are preferred over recycled carbon fiber in high-end aerospace applications.

“PAN carbon fiber to be the faster-growing precursor type, in terms of value.”

C PAN-based carbon fiber is a type of fiber produced by the carbonization of PAN

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precursor. Having high tensile strength and high elastic modulus, it is extensively used for structural material composites in aerospace & defense, automotive, and sporting goods industries. These properties are driving the use of PAN carbon fiber in various end-use industries.

Owing to the COVID-19 pandemic, the new aircraft deliveries and wind energy installations are expected to reduce in 2020, which will result in reduced demand for PAN carbon fiber from these industries. The demand is expected to recover after 2020.

“The thermoplastic segment to be the fastest-growing resin type, in terms of value, in the CF & CFRP market.”

The application of thermoplastic polymer as a matrix material in CFRP composites has grown significantly in recent years. The thermoplastic resin is used with continuous fiber to create structural composite products. The main advantage of thermoplastic resin as matrix material is that, unlike thermoset resin, the composite formed can be reshaped and reformed. The composite formed is also easily recyclable. These factors are expected to drive the thermoplastic resin in the CFRP market during the forecast period.

The demand for thermoplastic CFRP is expected to decline in 2020 due to the COVID-19 pandemic, as supply chain restrictions and lockdown scenario has created disruption in various industries. Thermoplastic CFRP finds major applications in automotive components and aircraft interior components. These industries are one of the most affected industries in the first two quarters of 2020, which has resulted in less demand for thermoplastic CFRP components.

“The filament winding to be the fastest-growing manufacturing process, in terms of value, in the CF & CFRP market.”

The filament winding process produces hollow or circular components such as compressed air tanks, high-pressure CO2 tanks & bottles, water softener systems, rescue air tanks, sailboat masts, CNG tanks, light poles, and other construction materials. This automated process is used to make highly engineered structures. The increased demand for CFRP from CNG and CHG tanks applications is expected to drive the filament winding CFRP market during the forecast period.

The COVID-19 pandemic has reduced the demand for CFRP tanks. Due to the lockdown situation, the demand for CFRP tanks has reduced from the gas transportation industry. The demand is expected to recover after the pandemic situation.

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“The pipe & tank to be the fastest-growing end-use industry, in terms of value, in the CF & CFRP market.”

There is a significant rise in the use of CFRP in pressure vessels and cylinders due to their lightweight property. The use of such materials makes tank 20%–25% lighter in comparison to steel cylinders. Carbon fiber composites are used in pressure tanks where stiffness and weight considerations are critical. The superior mechanical properties of CFRP pipes such as anti-corrosion properties, low conductivity, and longer lifecycles are leading to the increase in CFRP use in the oil & gas, fuel, water & wastewater sewage, pulp & paper, chemical, and marine & offshore industries CNG-driven vehicles are using CNG tanks made of CFRP, which help to reduce the overall vehicle weight and improve mileage. The increasing applications of Type III and Type IV cylinders are driving the CFRP demand in the pipe & tank end-use industry.

Due to the pandemic, new infrastructural developments in desalination plants and water & wastewater sewage industries are expected to remain low. It will result in lower demand for composite materials from these industries.

“APAC is projected to be the fastest-growing CF & CFRP industry.”

APAC is projected to be the fastest-growing CF & CFRP market during the forecast period. The region comprises countries such as Japan, China, South Korea, and Taiwan, having significant potential owing to the presence of established raw material suppliers, product manufacturers, and increasing new aircraft deliveries and wind energy installations in the region. There is a high demand for CF & CFRP from the wind energy, sporting goods, and aerospace industry in the region. However, COVID-19 has negatively affected these industries in the APAC region. Japan, China, and Malaysia provide various components to aircraft manufacturers; China is the world's largest wind energy installer. The COVID-19 pandemic has resulted in less demand for the new aircraft and less wind energy installations, which are expected to reduce composite consumption in these countries in 2020.

This study has been validated through primaries conducted with various industry experts globally. These primary sources have been divided into the following three categories:

By Company Type- Tier 1- 40%, Tier 2- 33%, and Tier 3- 27%

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By Designation- C Level- 50%, Director Level- 20%, and Others- 30%

By Region- North America- 15%, Europe- 50%, APAC- 20%, Latin America-5%, MEA-10%,

The report provides a comprehensive analysis of company profiles listed below:

Toray Industries, Inc. (Japan)

Mitsubishi Chemical Holdings (Japan)

Hexcel Corporation (US)

Teijin Limited (Japan)

SGL Group (Germany)

Solvay (Belgium)

Hyosung (South Korea)

Formosa Plastic Corporation (Taiwan)

Dowaksa (Turkey)

Kureha Corporation (Japan)

Research Coverage

This report covers the global CF & CFRP and forecasts the market size until 2025. The report includes the market segmentation – By Source (Virgin, Recycled), Precursor Type (PAN, Pitch, and Rayon), Resin (Thermosetting and Thermoplastic), Manufacturing Process (Lay-up, Compression Molding, Resin Transfer Molding, Injection Molding, Filament Winding, Pultrusion, Others), End-Use Industry (Aerospace & defense, wind energy, automotive, sporting goods, marine, civil engineering, electrical & electronics, medical, and Others)) and Region (Europe, North America, APAC, Latin America, and MEA). Porter’s Five Forces analysis and the drivers, restraints,

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opportunities, and challenges, are discussed in the report. It also provides company profiles and competitive strategies adopted by the major players in the global CF & CFRP.

Key benefits of buying the report:

The report will help market leaders/new entrants in this market in the following ways:

1. This report segments the global CF & CFRP comprehensively. It provides the closest approximations of the revenues for the overall market and the sub-segments across different verticals and regions.
2. The report helps stakeholders understand the pulse of the CF & CFRP industry and provides them with information on key market drivers, restraints, challenges, and opportunities.
3. This report will help stakeholders to understand competitors better and gain more insights to better their position in their businesses. The competitive landscape section includes the competitor ecosystem and expansion.

Reasons to buy the report:

The report will help market leaders/new entrants in this market by providing them with the closest approximations of the revenues for the overall CF & CFRP and the sub-segments. It will help stakeholders to understand the competitive landscape and gain more insights to position their businesses and market strategies in a better way. The report will also help stakeholders understand the pulse of the market and provide them with information on key market drivers, restraints, opportunities, and challenges.

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14 COMPANY PROFILES

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*Details on Business Overview, Products Offered, Recent Developments, SWOT Analysis, MnM View might not be captured in case of unlisted companies.

15 APPENDIX

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