ADVANCED COMPOSITES FOR DEMANDING APPLICATIONS



Fiber-reinforced polymer composites combine thermoset or thermoplastic resins with fiber reinforcement, the resulting product having substantially different properties than the individual components. They are used in many different industries, from automotive and aerospace to infrastructure and recreation.

\$10.6B

Value that the U.S. composite materials market is expected to reach by 2022

50%

Amount of weight reduction that advanced composites could bring to passenger cars, leading to 35% better fuel efficiency

7%

cAGR that analyst firm Technavio forecasts the global medical composite materials market will experience from 2016–2020

THERMOSET VS. THERMOPLASTIC

The matrix material of a composite can be a thermoset or a thermoplastic

THERMOSET

A thermoset is a cross-linked polymer that cannot be reshaped after it's formed, cured, and cooled.

Advantages

High temperature resistance, creep resistance, low viscosity, paintability, and fatigue resistance

THERMOPLASTIC

A thermoplastic is not cross-linked so it can be re-melted and reformed.

Advantages

Recyclability, enhanced toughness, chemical resistance, noise and vibration damping, post-formability, and lower density

DESIGN FLEXIBILITY

- Complex shapes less cos to produce than metal
- Ability to tailor strength and stiffness in specific areas
- Versatile aesthetic options for surface finish

WEIGHT REDUCTION

- Up to 75% lighter than steel; up to 25% lighter than aluminum
- Better fuel economy for transportation
- Simplified installation

PART

CONSOLIDATION

- Easier installation and assembly with fewer parts
- Simplified transport of finished goods
- Fewer parts = reduced chance of failure

ADVANCED COMPOSITES PERFORM

DURABILITY

- Corrosion resistance for marine and deep water applications
- Improved shock resistance with aramid fibers

STRENGTH

- Protection from shrapnel for military barriers
- Structural performance in aerospace and marine markets
- High tensile strength for industrial applications

For more information on advanced composites, visit avient.com or call +1.844.4AVIENT

