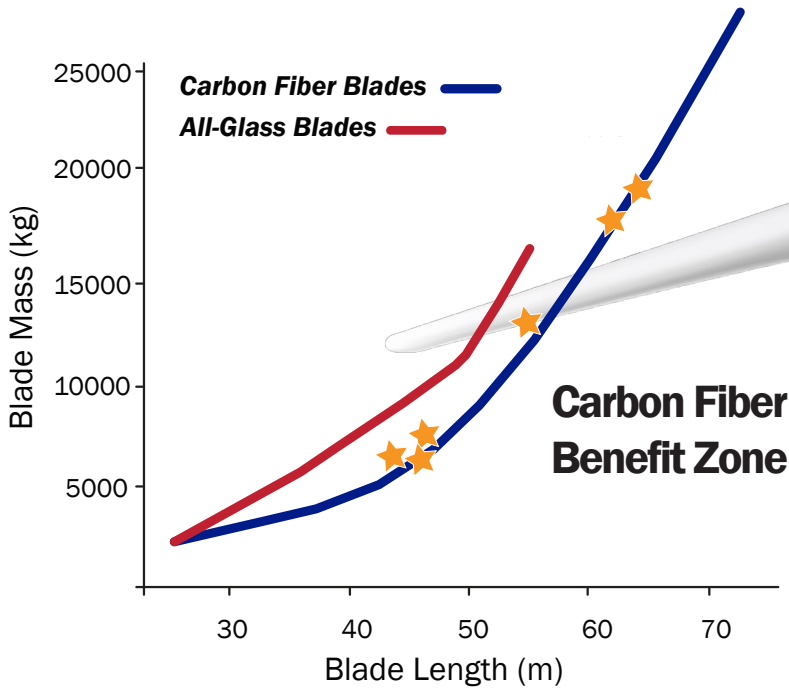


WIND ENERGY

ZOLTEK's Unidirectional Fabrics & Prepreg Tapes are pushing the wind energy industry to higher levels of performance. Longer and lighter turbine blades mean more energy output per revolution.

Carbon fiber is the critical enabling material for wind energy - by reducing weight and increasing stiffness and strength, turbine blades are now longer and more efficient than ever before.

And with over 40,000 tons of ZOLTEK™ carbon fiber installed in wind turbines worldwide, ZOLTEK PX35 has become the dominant carbon fiber in wind energy.



INTRODUCING PULTRUDED PROFILES FOR WIND ENERGY

Pultrusion is a cost-effective, continuous process for producing fiber-reinforced composite parts. ZOLTEK PX35 carbon fiber tows are fed into our proprietary impregnation and curing process that creates smooth carbon fiber laminates that provide efficient laydown when building thickness. The specific fiber alignment achieved with pultrusion delivers consistently better overall properties in laminates than any other composite manufacturing process.



BENEFITS OF ZOLTEK CARBON FIBER

- A Slender Blade Profile
- Lighter, Longer, Stiffer, & Stronger Wind Turbine Blades
- More Efficient Wind Turbines
- Reliable Carbon Fiber Supply at a Stable Price
- Design Assistance & Layup Tools

Pre-Cured Carbon Composites as the Structural Member of the Turbine Blade

WIND ENERGY PRODUCTS

PREPREG TAPES

ZOLTEK's uni-directional (UD) prepreg tapes are ideal for rapidly building part thickness with excellent composite properties, and allows for higher manufacturing throughput at a lower cost.

	SI	US
Tensile Strength	1850 MPa	268 ksi
Tensile Modulus	130 GPa	18.9 msi
Compressive Strength	1,320 MPa	191 ksi
Compressive Modulus	125 GPa	18.1 msi
Interlaminar Shear Strength	76 MPa	11 ksi



Fabric Weights from 150 - 600 g/m²
Designed for Rapid Build-Up of Part Thickness

Custom Formulations Available



Low Density
High Tensile Strength
Corrosion Resistant

PULTRUDED PROFILES

ZOLTEK™ PX35 pultruded profiles are pre-cured, corrosion resistant parts with high fiber volume, nearly zero void content, and locked-in filament alignment. Specifically manufactured to serve as the structural member of the turbine blade.

	PX35/EPOXY (65%Fiber Volume Fraction)
Tensile Strength (Mean)	1850 MPa
Tensile Modulus (Mean)	142 GPa
Flexural Strength (Characteristic)	1540 GPa
Flexural Modulus (Mean)	155 GPa

UNI-DIRECTIONAL FABRICS

ZOLTEK PX35 stitch-bonded uni-directional carbon fabrics are constructed for enhanced infusibility, and available in areal weights from 150 to 900 gsm.

	SI	US
Tensile Strength	1400 MPa	203 ksi
Tensile Modulus	119 GPa	17.2 msi
Compressive Strength	980 MPa	142 ksi
Compressive Modulus	118 GPa	17.5 msi



Fabric Weights from 150 - 900 gsm
Constructed for Enhanced Infusibility



DNV-GL Approved
ISO, AS, QS Certified
Processing Support and Design Assistance Available

CONTINUOUS TOW (50K)

ZOLTEK's Continuous Carbon Fiber Tow is the premier commercial carbon fiber on the market. It is a 50K filament fiber available in a range of sizings for optimal processing and compatibility with a variety of resin systems.

	SI	US
Tensile Strength	4137 MPa	600 ksi
Tensile Modulus	242 GPa	35 msi
Electrical Resistivity	0.00155 ohm-cm	0.00061 ohm-in
Density	1.81 g/cc	0.065 lb/in ³