Technical Data Sheet

Siraya Tech Fibreheart PET-CF

Black

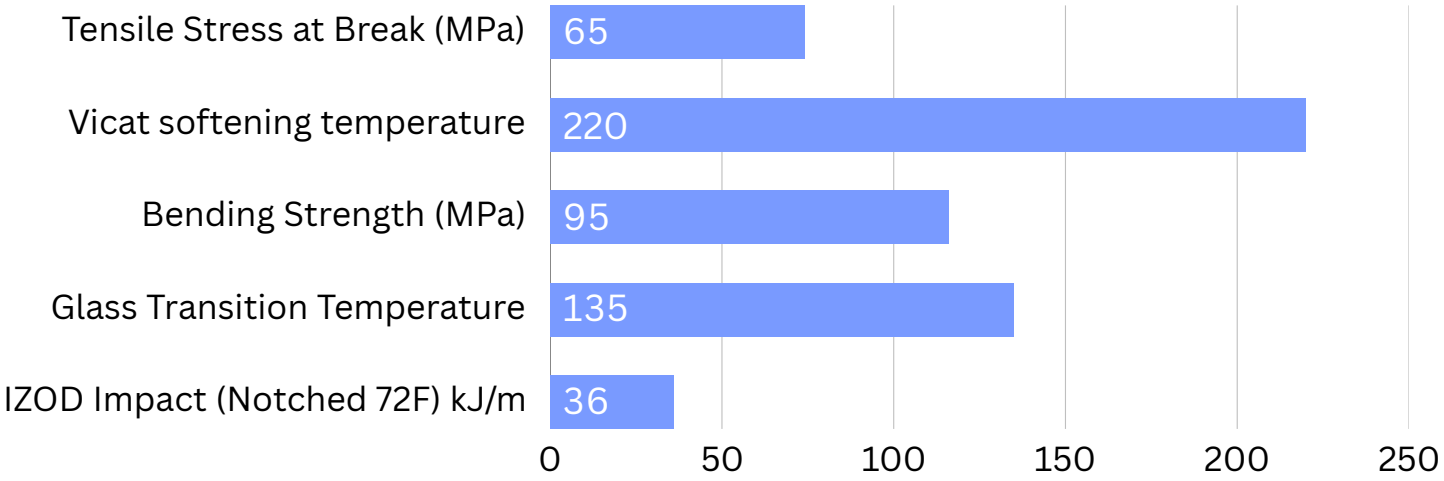
PRODUCT INTRODUCTION

- **Enhanced Performance & Reliability:** Expertly blending PET with carbon fiber for increased strength and stiffness.
- **Smart Fiber Reinforced Technology:** Carbon fibers form a mesh structure, enhancing mechanical properties and dimensional stability.
- **Superior Dimensional Stability:** Reduced warping and shrinkage, maintaining precise dimensions and shapes.
- **Lightweight Durability:** Balancing strength with a lightweight profile, ideal for durable yet lightweight components.

APPLICATIONS

- **Automotive industry, drones, Industrial machinery, Architecture and construction:** hoods, door panels, drone, robot parts, frames of precision instruments, etc.
- **Sports equipment:** bicycle frames, golf clubs, tennis rackets, snowboards, etc.
- **Consumer electronics:** Electronic product casing, providing a lightweight and strong protective structure.

Property Data



Mechanical Properties	Unannealed	Annealed	Method
Tensile Stress at Break (MPa)	74	73	ISO 527
Young's Modulus (MPa)	5950	6700	ASTM D638
Elongation at Break(%)	2.5	1.5	ASTM D638
Charpy impact strength (KJ/m^2)	9	4.8	-
Bending Strength (MPa)	116	115	-
Bending Modulus (MPa)	5600	5900	-

Other Properties	Unannealed	Annealed	Method
Vicat softening temperature ℃	220		ISO 306
Glass Transition Temperature	135		-
IZOD Impact (Notched 72F) kJ/m	36		-
Heat Deflection Values	76.6℃ / 86.7℃	118℃ / 176℃	Method A / B
Melting Point (C)	250		-
Filament Density g/cm³	1.3		ISO 1183

Work Flow

Preparing for Printing

Drying	Dry at 90°C for 4-6 hours
Bed Temperature	Range from 70°C to 90°C
First Layer Settings	Level the bed and slow down speed

***Note:**

- Only dry if filament shows signs of moisture.
- Drying is not required for the first unpacking unless the vacuum packing becomes damp.

Printing with Fibreheart PET-CF

Nozzle Temperature	280-320°C
Recommended Nozzle Diameter	0.4-1.0mm (hardened steel or higher grade)
Recommended Build Surface	PEI or coat with PVP glue stick
Build Plate Temperature	60-80°C
Raft Separation Distance	0.08-0.12mm
Cooling Fan Speed	Off
Print Speed	30-120mm/s
Max Extrusion Volumetric Speed	20mm³/s at 320°C
Retraction Distance	1-3mm
Retraction Speed	1800-3600mm/min

Work Flow

Moisture Management

Storage Tip	Recommendation
Sealed Packaging	Store in a sealed aluminum foil bag to prevent moisture.
Use Desiccants	Add desiccants to absorb moisture and keep the material dry.
Avoid Sunlight & Heat	Keep away from direct sunlight and high temperatures to prevent degradation.
Temperature Control	Store at room temperature; avoid extreme heat or cold.
Annealing	90-100°C for 4-6 hours for an enhanced hardness. It can also be used right off the spool without annealing.

Work Flow

Troubleshooting Common Issues

Issue	Stringing
Reason	1. Printing temperature is too high 2. Retraction setting is improper
Solution	1. Reduce the printing temperature by 5-10℃. 2. Increase the retraction distance and speed to effectively pull the filament away from the nozzle

Issue	Popping sounds and poor surface quality
Reason	Moisture influence. When the filament is damp, the high temperature during printing will cause the moisture to evaporate, forming bubbles or popping sounds during extrusion.
Solution	1. Dry PET-CF in oven set at 90°C for 4-6 hours 2. Store the filament in a sealed bag with desiccants