Technical Data Sheet

Siraya Tech Fibreheart ABS-CF Core

Black

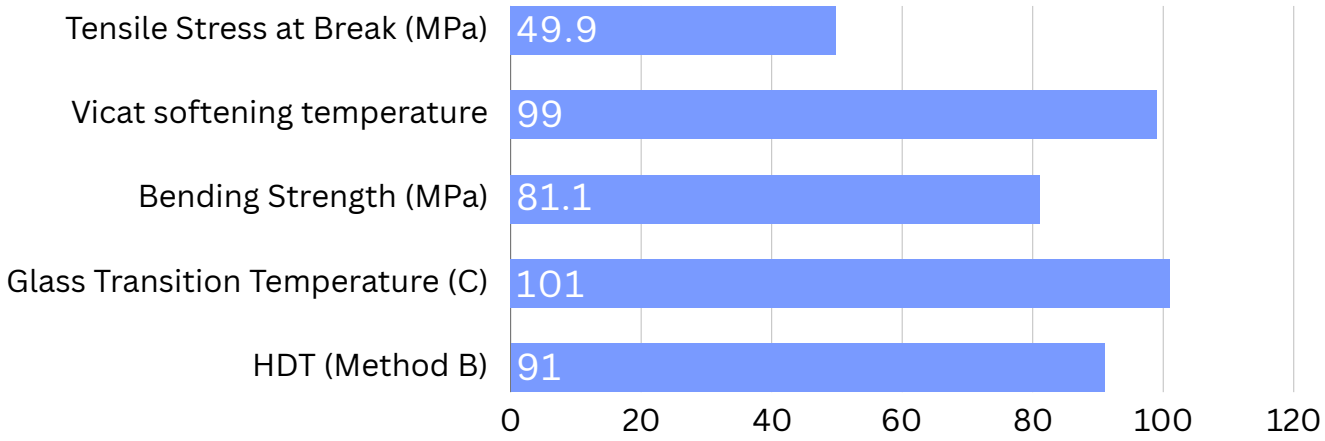
PRODUCT INTRODUCTION

- **Enhanced Strength:** 20% core-concentrated carbon fiber for superior rigidity.
- **Stronger Layer Adhesion:** Improved Z-axis strength and bonding.
- **Reduced Nozzle Wear:** Less fiber contact extends nozzle life.
- **Heat Resistance:** Withstands up to 90°C for high-temp applications.
- **Safer, Cleaner Printing:** Lower VOCs and reduced fiber exposure.

APPLICATIONS

- **Aerospace:** Lightweight, durable components for drones and UAVs.
- **Automotive:** Heat-resistant parts for under-hood applications.
- **Industrial:** Long-lasting tooling and jigs for heavy-duty use.
- **Robotics:** Precision, load-bearing parts for advanced robotics.
- **Engineering:** High-strength prototypes for rigorous testing.

Property Data



Mechanical Properties	Measure	Method	Processed
Tensile Stress at Break (MPa)	49.9	ASTM D638	Tested on X/Y axis
Young's Modulus (MPa)	4810	ASTM D638	Tested on X/Y axis
Elongation at Break(%)	1.5	ASTM D638	Tested on X/Y axis
Charpy impact strength (KJ/m^2)	8.2	ASTM D6110	Tested on X/Y axis
Bending Strength (MPa)	81.1	ASTM D790	Tested on X/Y axis
Bending Modulus (MPa)	4450	ASTM D790	Tested on X/Y axis

Other Properties	Measure	Method	Processed
Vicat softening temperature (℃)	99	ISO 306	
Glass Transition Temperature (℃)	101	DMA	
HDT (℃)	84	Method A	1.80 MPa
HDT (℃)	91	Method B	0.45 MPa
Filament Density g/cm³	1.06	ISO 1183	

SIRAYA Tech

Work Flow

Preparing for Printing

- Printer Compatibility: Siraya Tech ABS-CF Core is optimized for FDM printers equipped with direct drive extruders.

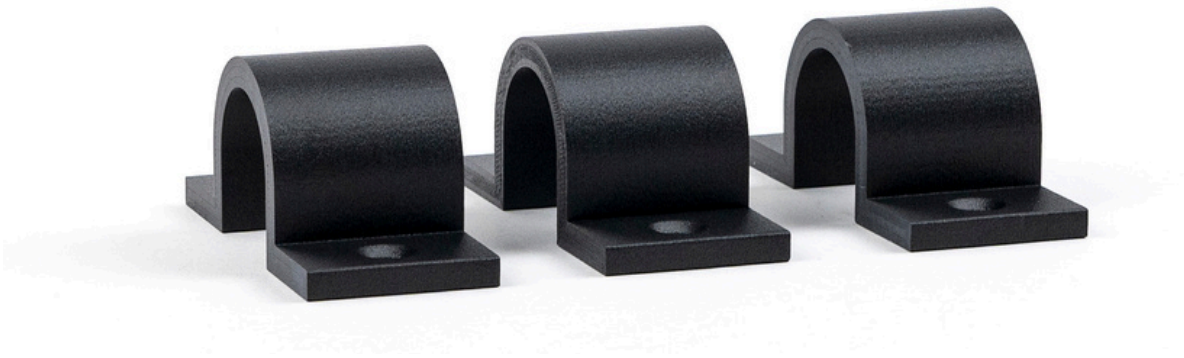
- Enclosure: An enclosure is highly recommended even as the core-shell technology provides improved dimensional stability. If your device has a heated chamber, maintain temperatures between 60-80°C to help release residual stress during printing and prevent warping and cracking.

Printing with Fibreheart ABS-CF Core

Nozzle Temperature	250-280°C
Nozzles Material	Hardened steel
Nozzle Diameter	0.4-1.0 mm
Build plate temperature	100-110°C
Build Platform Material	PEI film
Print Speed	30-200 mm/s
Retraction speed	1800-3600 mm/min
Minimum heating block thickness	12mm
Retraction distance	1-3 mm
Cooling Fan	Run at 0-20% speed

Note:
1. With optional Glue Stick or PVP glue coating for enhanced adhesion.
2. Very high speeds may affect the core-shell structure. If surface quality degrades, either increase temperature or reduce speed.

Work Flow



Moisture Management

Carbon fiber reinforced ABS filaments are susceptible to moisture absorption, which can affect print quality.

(1) Storage

Store the filament in its original moisture-resistant packaging when not in use. Using a dry box with desiccant is recommended for prolonged storage.

(2) Drying Filament

If print quality degradation is observed (bubbles, stringing), dry the filament at 60-70°C for 4-6 hours before printing. Only dry if the filament is damp.

Additional Recommendations

- The core-shell structure maintains stable layer adhesion even at higher printing speeds, but monitor surface quality as very high speeds can disrupt the core-shell structure.

- The Raft separation distance should be set to 0.18-0.2 mm when using support structures.

- For optimal results, use 100% infill with ±45° infill angles for functional parts requiring maximum strength.

Work Flow

Troubleshooting Common Issues

- Keep the printer in a well-ventilated area during printing, though this filament has loa wer odor compared to traditional ABS.

- The core-shell technology reduces nozzle wear compared to traditional carbon fiber filaments, but hardened steel nozzles are still recommended.