

Fibreheart PPA

TECHNICAL DATA SHEET (TDS)

High-performance PPA filament with high strength, low friction, improved moisture resistance, chemical resistance and elevated-temperature capability.

1. Product Introduction

- **Superior material properties:** High-temperature PPA with approximately 1.21 g/cm³ density and strong tensile and flexural performance.
- **Abrasion resistance:** Low-friction, self-lubricating characteristics make the material suitable for gears, bearings and components exposed to continuous wear.
- **Moisture resistance:** PPA offers substantially improved moisture handling compared with common nylon materials.
- **Chemical and heat resistance:** Intended for demanding automotive, aerospace and industrial applications.
- **Engineering applications:** Suitable for functional prototypes and high-stress parts requiring strength and dimensional precision.

2. Applications

- Automotive and aerospace components
- Industrial tooling and fixtures
- High-performance gears and bearings
- Chemical-resistant parts
- Functional prototypes requiring strength and precision

3. Property Data

Mechanical Property	Value	Method
Tensile Stress at Break	72 MPa	ASTM D638
Young's Modulus	3600 MPa	ASTM D638
Elongation at Break	10.5%	ASTM D638
Charpy Impact Strength	10.1 kJ/m ²	ISO 179
Bending Strength	115 MPa	ISO 178
Bending Modulus	3350 MPa	ISO 178

Other Property	Value	Method
Vicat Softening Temperature	230 °C	ISO 306
Glass Transition Temperature	80 °C	ASTM D3418
Melting Point	231 °C	ASTM D3418

Other Property	Value	Method
HDT - Dry (Method A / B)	73.5 °C / 81 °C	1.80 / 0.45 MPa
HDT - Wet (Method A / B)	48.5 °C / 61 °C	1.80 / 0.45 MPa
Biocompatibility	Not tested	-
Water Absorption Rate	2.59%	ISO 62
Filament Density	1.21 g/cm ³	ISO 1183

4. Preparing for Printing

- Use a PEI build surface with glue stick or PVP glue coating to improve bed adhesion and reduce warping.
- Use an enclosure to maintain a more consistent printing environment, particularly for larger parts.
- Adjust part-cooling fan speed according to part geometry and size.
- For complex geometries, consider compatible quick-release or high-temperature support materials.
- Handle freshly printed parts carefully; surfaces and edges may be hot or sharp.

Annealing note: The source page contains conflicting guidance: it first states that annealing may enhance properties, but later states that annealing is not recommended because it can warp the print. This TDS preserves that inconsistency rather than resolving it.

5. Recommended Print Settings

Parameter	Recommended Setting
Nozzle	High-quality metal nozzle; hardened steel not required
Nozzle Diameter	0.4 - 1.0 mm
Bed Surface	PEI with glue stick or PVP glue coating
Nozzle Temperature	280 - 300 °C
Bed Temperature	70 - 80 °C
Cooling Fan	20 - 60%
Print Speed	30 - 120 mm/s
Layer Height	0.2 mm recommended
Retraction Distance	1 - 3 mm
Retraction Speed	1800 - 3600 mm/min
Raft Separation	0.12 - 0.16 mm
Support Material	Compatible with quick-release support materials

6. Moisture Management

- **Storage:** Store in a dry box at relative humidity below 15%.
- **Drying:** If moisture symptoms are present, dry at 80 - 100 °C for 4 - 6 hours.
- **Moisture indicators:** Oozing, bubbles or a rough surface finish may indicate moisture contamination.
- Siraya Tech recommends drying only when moisture symptoms are present.

7. Manufacturer Contact

Siraya Tech

Technical support: support@siraya.tech

Source: Siraya Tech Fibreheart PPA Technical Data Sheet webpage.

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