

THE TWO STEP PROCESS

Technical Data Sheet Revised 1/21/2025

PPS-CF Filament

PPS-CF is a high-performance 3D printing filament manufactured with LUVOCOM® polyphenylene sulfide containing 10% carbon fiber. This material exhibits exceptional temperature resistance, low moisture absorption, chemical resistance, and flame retardancy. Technically compatible with non-heated chamber 3D printers, it produces models with excellent rigidity and strength, featuring a heat deformation temperature of 245°C and long-term continuous use temperature of 220°C. The material's inherent flame retardancy and stability ensure minimal impact from humidity and temperature on both dimensional and electrical properties.

Main Features

- High stiffness
- High strength
- High temperature resistance
- Flame retardant

Main Specifications

Physical Properties (Test Method)

- Density (ISO 1183): 1.30-1.32 g/cm³
- MFR(3316°C/5Kg) (ISO 1133): 50-60 g/10min
- Moisture Absorption(23°C/24h) (ISO 62): <0.1%
- Flame retardancy (UL 94 1/16"): V-0

Mechanical Properties

- Tensile strength(X-Y) (ISO 527): 95-105 MPa
- Elongation at break(X-Y) (ISO 527): 4-6%

- Flexural Modulus(X-Y) (ISO 178): 8000-9000 MPa
- Flexural Strength(X-Y) (ISO178): 125-135 MPa
- Flexural Strength (Z): 50-52 MPa
- Flexural modulus (X-Y) (ISO178): 6000-6500 MPa
- Flexural modulus (Z): 2200-2260 MPa
- Impact Strength(X-Y) (ISO180): 7-8 KJ/m²
- Notched impact strength (Z): 2.5-3 KJ/m²

Thermodynamic Properties

- HDT@ 0.455 MPa(66 psi) (ISO75): 245°C
- Continuous Use Temperature (IEC 60216): 220°C

Electrical Characteristics

- Surface resistance (IEC 60093): $\leq 10^5 \Omega$

Recommended Printing Parameters

- Nozzle Temperature: 300-350°C (Recommend 320°C)
- Bed Temperature: 90-110°C (Recommend 100°C)
- Bed Materials: Tempered glass, BuildTak, Carbon fiber board, PEI with Adhesive
- Nozzle Diameter minimum: 0.4, 0.6 recommended
- Nozzle and Feeding Gear Material: Hardened/coated Steel
- Model Cooling Fan: 0-30%
- Layer Height: 0.2-0.4mm
- Printing Speed: 60-200mm/s (Recommend 150mm/s)
- Idle Speed: 60-500mm/s
- Printing Environmental Temperature: Room Temperature-80°C
- Retraction Distance: Nozzle Diameter
- Retraction Speed: 20-40mm/s

Usage Notes

1. Keep packaging sealed when not in use to prevent moisture absorption and contamination.
2. If material shows signs of moisture absorption, dry before use at 120°C for minimum 8 hours.
3. When using as support material, remove supports after model has completely cooled.

4. Post-processing recommendation:

1. Filament extruder recommends: Anneal printed models at 80-100°C for 1-3 hours to optimize strength.
2. Based on the work by Lovinger, Davis, & Padden, Kinetic analysis of the crystallization of poly(p-phenylene sulphide): [https://doi.org/10.1016/0032-3861\(85\)90270-8](https://doi.org/10.1016/0032-3861(85)90270-8) – The best temperature appears to be ~180c for optimal crystal growth, with down to ~120c for reasonable results. Adjust your annealing time based on temperature & thickness of part, with the higher temperature you anneal and hold in the part for the process resulting in a better part overall.

Disclaimer

The properties specified in this document are derived from testing under controlled conditions. Results may vary under different processing conditions. Users are responsible for evaluating this material's suitability for their specific application. No warranty, express or implied, is made regarding the information contained in this document or its use.