

# Technical Data Sheet

## PPS-CF Filament

PPS-CF is an FFF 3D printing filament, which is produced using LUVOCOM® PPS-CF. It is a modified polyphenylene sulfide (PPS) containing 10% carbon fiber, offering high-temperature resistance, low moisture absorption, chemical resistance, and flame retardancy, with the ability to be printable on non-heated chamber FFF 3D printers. Models printed with PPS-CF exhibit excellent rigidity and strength and allow continuous use up to 220°C, with a heat deflection temperature of up to 245°C. Consequently, its dimensional stability and electrical properties are minimally affected by humidity and temperature variations, and it also possesses flame retardant properties.

## Features:

High rigidity/High strength/High-temperature resistance/Flame retardancy

## Properties:

Physical Properties	Test Method	Units	Typical Value
Density	ISO 1183	g/cm <sup>3</sup>	1.30~1.32
Melt Flow Rate (MFR) (316°C/5Kg)	ISO 1133	g/10min	50~60
Water Absorption (23°C/24h)	ISO 62	%	<0.1
Flame Retardancy	UL 94	1/16''	V-0
Mechanical Properties			
Tensile Strength (X-Y)	ISO 527	Mpa	95~105
Elongation at Break (X-Y)	ISO 527	%	4~6
Modulus of Elasticity (X-Y)	ISO 527	Mpa	8000~9000
Bending Strength (X-Y)	ISO178	Mpa	125~135
Bending Strength (Z)	ISO178	Mpa	50~52
Bending Modulus (X-Y)	ISO178	Mpa	6000~6500
Bending Modulus (Z)	ISO178	Mpa	2200~2260
Izod Impact Strength (X-Y)	ISO180	KJ/m <sup>2</sup>	7~8

Izod Impact Strength (Z)	ISO180	KJ/m <sup>2</sup>	2.5~3
<b>Thermal Properties</b>			
HDT@ 0.455 MPa (66 psi)	ISO75	°C	245
Continuous Service Temperature	IEC 60216	°C	220
<b>Electrical Properties</b>			
Surface Resistance	IEC 60093	Ω	≤10 <sup>5</sup>

### Testing Specimen Printing Conditions:

Test Equipment	Guider 3 Ultra (Flashforge)
Nozzle Diameter	0.4mm
Nozzle Temperature	320 °C
Printing Speed	150mm/s
Wall Thickness	0.4mm
Infill	100%
Standard Testing Specimen	Specific dimensions are shown in Attachment 1.

### Recommended Printing Conditions:

Parameter	
Nozzle Temperature	300~350°C (320°C recommended)
Build Platform Temperature	90~110°C (100°C recommended)
Build Surface Material	Tempered glass, BuildTak, Carbon fiber plate, PEI
Nozzle Diameter	φ0.4/0.6mm
Nozzle & Gear Material	Hardened steel
Cooling Fan	0~30%
Layer Thickness	0.2~0.4mm
Printing Speed	60~200mm/s (150mm/s recommended)
Travel Speed	60~500mm/s
Ambient Temperature for Printing	Room temperature~80°C
Retraction Distance	0.5~1.5mm
Retraction Speed	20~40mm/s



## **Cautions:**

In order to prevent moisture absorption and contamination, supplied packaging should be kept closed and undamaged. For the same reason, partially used filaments should be re-sealed before storage.

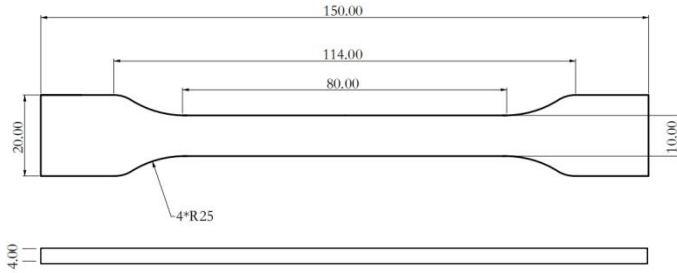
In case the filament has become wet, it should be dried before being used. Using a hot dry air oven at 120°C for at least 8 hours is recommended in order to ensure the print success rate and quality. If PPS-CF is used as the support material for itself, please remove the support structure as soon as the model cools down. Otherwise, the support structure can be bonded to the model, which will make the support hard to remove.

After the printing process, it is recommended to dry the model in the oven at 80-100°C for 1-3 hours to increase the strength of the model.

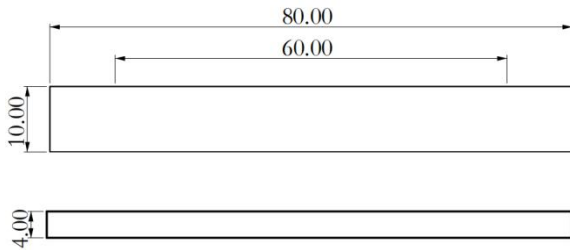
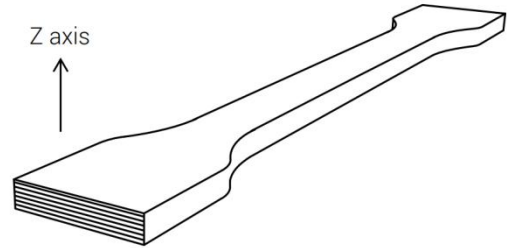
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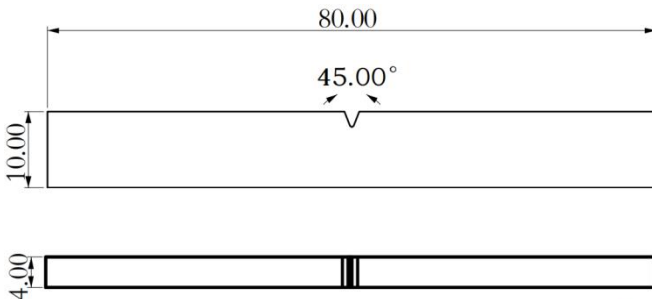
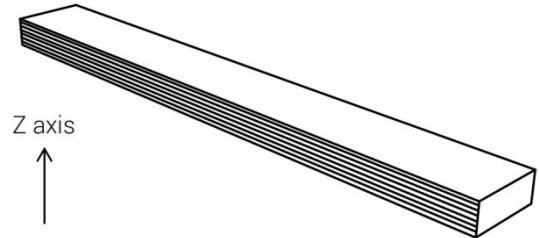
# Attachment 1: Testing Specimen Size and Printing Direction



Tensile testing specimen; ASTM D638 (ISO 527, GB/T 1040)



Flexural testing specimen; ASTM D790 (ISO 178, GB/T 9341)



Impact testing specimen; ASTM D256 (ISO 179, GB/T 1043)

