

PET-FR

Technical Data Sheet

PET-FR is a flame retardant material, which is easy to print and has good results, smooth surface and neat layers. It has excellent mechanical properties, which is very suitable for engineering parts printing, and has passed the flame retardant UL94 vertical combustion certification, which is safer to use, and can be used for concept models and engineering prototypes.

Basic Information

Characteristics	• High Strength • Good flame retardant effect • High forming accuracy	• Smooth surface and neat layer lines • Easy to print
Applications	• Prototyping • Design	• Decoration • Other mechanical parts
Forming Method	• Filament	
Processing Method	• 3D Printing	• FDM

Physical Properties	Testing Method	Data
Density	GB/T 1033	1.52g/cm ³
Melt Flow Index	GB/T 3682	18.6 (270°C/2.16kg)

Thermal Properties	Testing Method	Data
Heat Distortion Temperature	GB/T 1634	75°C(0.45Mpa)
Heat Distortion Temperature/annealing(100°C/4~8h)	GB/T 1634	130°C(0.45Mpa)
Glass Transition Temperature		N/A
Continuous Service Temperature	IEC 60216	N/A
Maximum (short term) Use Temperature		N/A

Electrical Properties	Testing Method	Data
Insulation Resistance	DIN IEC 60167	N/A
Surface Resistance	DIN IEC 60093	N/A

Flame retardant properties	Testing Method	Data
Flammability rating	UL94	V0

Mechanical Properties	Testing Method	Data
Tensile Strength (X-Y)	GB/T 1040	47.66 Mpa
Tensile Strength (Z)	GB/T 1040	20 MPa
Elongation at Break (X-Y)	GB/T 1040	3.94 %
Elongation at Break (Z)	GB/T 1040	2.38 %
Flexural Strength (X-Y)	GB/T 9341	76.4 MPa
Flexural Strength (Z)	GB/T 9341	26.8 Mpa
Flexural Modulus (X-Y)	GB/T 9341	3869.28 MPa
Flexural Modulus (Z)	GB/T 9341	1533.26 Mpa
IZOD Impact Strength (X-Y)	GB/T 1843	5.99 KJ/m ²
IZOD Impact Strength (Z)	GB/T 1843	2.2 KJ/m ²

Chemical Properties	Data
Acid and Alkali Resistance	NO
Grease Resistance	N/A
UV Resistance	NO
Water Repellency	N/A

Recommended Printing Parameters	Data
Drying Preparation	The factory has been dried, put it in the drying box within 15 minutes after unpacking, if the bag is broken, the wire needs to be put into the 100~120 °C oven to dry for 4~6h, dry and stored.
Nozzle Size	0.4,0.6,0.8mm
Nozzle Temperature	300~320°C
Build Platform Type	PEI
Build Platform Temperature	70°C
Floor temperature	No sealing is possible/The sealing temperature can be adjusted according to the condition of the model
Fan Speed	NO/The pendant and bridge fan can be adjusted according to the condition of the model

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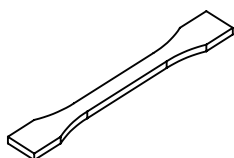
Printing Speed

≤200mm/s

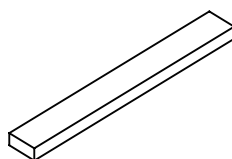
Printing Tips

When slicing, it is best to turn on the Z seam alignment and starting point alignment functions, turn off the Z-axis lift and exit, avoid passing through the shell when idling, optimize the slicing printing path, and appropriately reduce the printing speed to achieve the best printing effect.

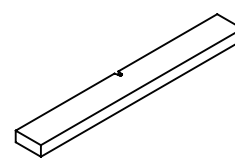
Test Conditions of Mechanical Properties



Tensile testing specimen GB/T 1040



Flexural testing specimen GB/T 9341



Impact testing specimen GB/T 1843

The performance of the filament is evaluated based on standard samples printed by eSUN, while the actual printing performance is influenced by various factors such as printer type, printing parameters, and print environment.

Printing Test Conditions:

Extruder Temperature	300~320°C
Build Platform Temperature	70°C
Outer Layer Number	2
Top/Bottom Layer Number	3
Infill Density	100%
Fan Speed	NO

*Based on Bambu P1S 0.4 mm nozzle and Orcaslicer 2.1.0 Beta.

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