

ESSENTIUM PP-CF

Essentium PP-CF is a 20% carbon fiber reinforced polypropylene filament made with Luvocon® 3F resin from Lehvoss. Polypropylene (PP) is a semicrystalline polymer commonly used in consumer goods and automotive parts when reinforced with a fiber filler. This material has excellent chemical resistance and low surface energy which makes it useful for silicone and urethane low pressure molding applications.



MECHANICAL PROPERTIES

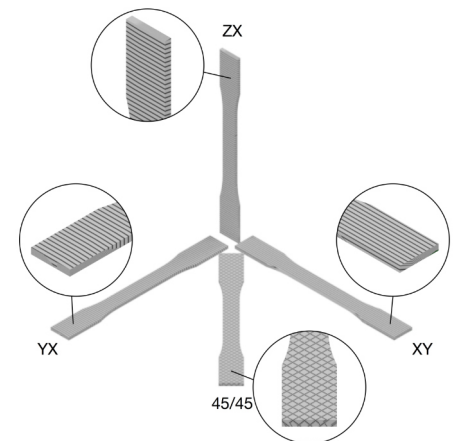
Metric	Test Method	Print Orientation		
		XY	45/45	ZX
Ultimate Tensile Strength, MPa	ISO 527-2	62.0 (0.4)	31.3 (0.7)	14.6 (0.2)
Tensile Modulus, GPa	ISO 527-2	7.28 (0.06)	2.50 (0.07)	1.17 (0.04)
Strain at Break, %	ISO 527-2	6.8 (0.3)	7.9 (1.1)	3.0 (0.2)
Flexural Strength, MPa	ISO 178	95.3 (1.8)	45.5 (0.5)	26.5 (1.0)
Flexural Modulus, GPa	ISO 178	5.13 (0.74)	1.97 (0.08)	1.06 (0.04)
Izod Impact Strength, Notched kJ/m ²	ISO 180	13.7 (0.5)-H	9.8 (0.3)-H	2.6 (0.2)-C

Standard deviations listed in parentheses

MATERIAL PROPERTIES

Property	Method	Value
Density ¹ , g/cm ³	ISO 1183	1.0
HDT @ 0.45 MPa, °C	ISO 75	148.8
HDT @ 1.8 MPa, °C	ISO 75	127.9
Continuous Use Temperature @20,000 hrs ¹ , °C	IEC 60216	100
Vicat Softening Temperature Rate A/10 ¹ , °C	ISO 306	80

¹ Values taken from raw material TDS



MATERIAL HANDLING, DRYING, AND SPECIAL NOTE ON PRINT BED

Essentium PP-CF is a hydrophobic thermoplastic and will absorb very little moisture from humid air. Keep the material in the vacuum sealed packaging until you are ready to print with it. PP-CF filament can be fed to the printer in a dry container and stored in a dry cabinet to minimize surface moisture. PP-CF is non-polar and will not adhere to typical build surfaces. Essentium recommends printing directly on a polypropylene build sheet with a thin layer of Magigoo PP applied to the surface to facilitate the removal of parts.

RECOMMENDED HSE PRINT SETTINGS

Contact Essentium for HSE Print Profiles or find our [Print Profiles online](#).

RECOMMENDED FFF PRINT SETTINGS

Nozzle Temperature, °C	220 – 260	Fan Speed, %	0 – 20
Bed Temperature, °C	40 – 60	Bed Material	Polypropylene
Print Speed, mm/s	20 – 40	Bed Adhesion Method	Magigoo® PP
First Layer Speed, mm/s	15 – 20	Infill Density, %	15 – 75

KEY FEATURES:

- Low surface energy
- Excellent intrinsic mold release
- Excellent chemical resistance
- Low density
- Lower abrasion than glass filled PP

APPLICATIONS INCLUDE:

- Low pressure resin casting molds
- Glue and adhesive bonding clamps
- Chemical processing parts
- Automotive parts