

## General information

### Properties

- Filament for FFF-printers with major PA 12 content
- 15 weight.-% carbon fiber (ca. 150 µm)
- high tensile strength
- very low water absorption
- low warping effect
- excellent adhesion to epoxy based fiber plates
- chemical resistant to many oils, carburant and chemicals
- good hydrolysis resistance
- matte black surface finish
- good wear resistance

Mechanical properties	Test methode	Units	Typical value	Quality grade acc. VDI 3405 Part 7
Density	DIN EN ISO 1183	g/ cm <sup>3</sup>	1,24	
Modulus of Elasticity printed specimen x-y (0°) ***	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm <sup>2</sup> )	10000	10
Tensile strength printed specimen x-y (+ 45°/-45°) ***	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm <sup>2</sup> )	65	
Tensile strength printed specimen x-y (0°) ***	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm <sup>2</sup> )	90	9
Tensile strength printed specimen x-y (90°) ***	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm <sup>2</sup> )	50	5
Tensile stress printed specimen x-y (0°)	DIN EN ISO 527-2 Typ 1A*	MPa (N/mm <sup>2</sup> )	--	
Elongation printed specimen (0°)	DIN EN ISO 527-2 Typ 1A*	%	--	0
Flexural modulus E <sub>f</sub> printed specimen (+ 45°/-45°)	DIN EN ISO 14125 (Method B)*	GPa (kN/mm <sup>2</sup> )	4,12	
Impact strength printed specimen	DIN EN ISO 179eU	kJ/m <sup>2</sup>	35	
Impact strength printed specimen (notched)	DIN EN ISO 179eB	kJ/m <sup>2</sup>	4,03	

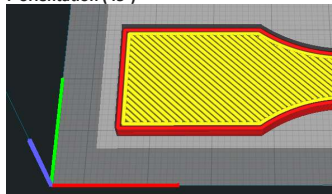
\* Testing specimen printed: E3D V6; 0,4mm nozzle; temp. nozzle 275°C Pro/ 285°C Lite ; build plate temp. 90°C; layer 0.2 mm; v=50 mm/s; conditioned 24h @ 50% rel. humidity / 23°C; layer orientation in °

\*\* Printed: E3D Volcano; 0,6 mm nozzle; temp. nozzle 255°C unfilled /260°C fiber; build plate temp. 75°C; layer 0.3 mm; v=45 mm/s; conditioned 24h @ 50% rel. humidity / 23°C; layer orientation in °

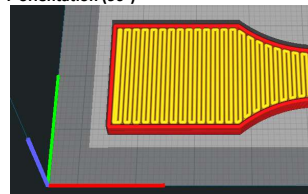
\*\*\* Target value for optimal print quality. Values might vary greatly with the same settings, depending on the system Nozzle - Printer - Gcode.

## Orientation of printed specimen

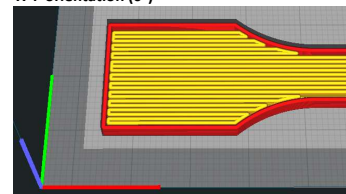
X-Y-orientation (45°)



X-Y-orientation (90°)



X-Y-orientation (0°)



Thermal properties	Test methode	Units	Typical value	notes
Glass transition temp.	DIN ISO 11357	°C	87	
Heat distortion temp. (HDT A@1,8 MPa)	DIN ISO 75	°C	90 °C ( Continuous service temp. 120°C - IEC 60216)	

Electrical properties	Test methode	Units	Typical value	notes
Insulation resistance	IEC 60167	Ohm*m	>10 <sup>10</sup>	
Surface resistance	IEC 60093	Ohm	>10 <sup>10</sup>	

Other properties	Test methode	Units	Typical value	notes
Water absorption (after 24h)	DIN ISO 62	%	< 0,3	

Recommendations	Test methode	Units	Typical value	notes
Temperature nozzle	Fiberthree GmbH	°C	260 - 300	
Temperature build plate	Fiberthree GmbH	°C	Max. 90	
Nozzle diameter	Fiberthree GmbH	mm	> 0,25	
Fan cooling	Fiberthree GmbH	%	not recommended	
Layer height	Fiberthree GmbH	mm	starting with 0,10	
Recommended wall thickness to reduce significantly the impact of moisture	Fiberthree GmbH	mm	2,5	
Printing speed	Fiberthree GmbH	mm/s	25	
Infill	Fiberthree GmbH	%	0 - 100	
Retraction (direct drive/ bowden system)	Fiberthree GmbH	mm (@ 50mm/sec)	direct drive min. 2mm / bowden system min. 6mm	
Material build plate	Fiberthree GmbH		carbon fiber, glass fiber or phenolic resins, glass	
Recommended nozzle	Fiberthree GmbH		wear resistant nozzles: hardened steel, tungsten, nozzles with industrial sapphire or ruby or ceramic	
Recommended parts	Fiberthree GmbH		Lightweight parts, parts with low electrical conductivity	

## EU & REACH Conformity

given

## Legal disclaimer

Technical properties or values are related to the thermoplastic base material for filament production if not mentioned differently.

Any recommendation made for use of seller's materials are made to the best knowledge and are based upon prior tests and experience of the seller. Seller does not guarantee the results to be obtained and all such recommendations are non-binding and do not constitute any representation and do not affect in any way buyer's obligation to examine and test the seller's goods with regard to their suitability for buyer's foreseen purposes.

No information given by the seller is to be construed in any way as a guarantee regarding characteristics or duration of use, unless such information has been explicitly given as a guarantee.