technical datasheet

F3 PA ORTHO

Dezember 2024

www.fiberthree.com

General information

Properties

- *PA 6 based*
- *colorless, translucent, transparent*
- *high strength*
- *low distortion*
- *excellent adhesion to print bed*
- *resistant to oil, grease and many chemicals*
- *very smooth surfaces printable*
- *biocompatibility ISO 10993-5 is passed*

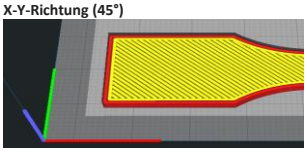
Mechanical properties	Test method	Unit	Typical value	Quality grade acc. VDI 3405 Part 7
Density	DIN EN ISO 1183	g/ cm³	1,2	
Modulus of Elasticity printed specimen x-y (0°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	2.522	6
Modulus of Elasticity printed specimen x-y (90°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	2.350	5
Tensile strength printed specimen x-y (0°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	49	5
Tensile strength printed specimen x-y (+ 45°/-45°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	47	4
Tensile strength printed specimen x-y (90°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	38	4
Tensile stress printed specimen x-y (0°)	DIN EN ISO 527-2 Typ 1A*	MPa (N/mm²)	--	--
Elongation printed specimen (0°)	DIN EN ISO 527-2 Typ 1A*	%	2	0
Flexural modulus Ef printed specimen (+ 45°/-45°)	DIN EN ISO 14125 (Method B)	GPa (kN/mm²)	--	
Impact strength printed specimen	DIN EN ISO 179eU	kJ/m²	--	
Impact strength printed specimen (notched)	DIN EN ISO 179eB	kJ/m²	--	

* Test specimen printed: 1.75mm filament; v=50 mm/s; Orientation layers in 0°/ 90°/ +-45°; conditioned 24h at 50% RF and 23° C
Test specimen polyamide Pro: Prusa MK3S+, E3D V6, nozzle 0.6mm, temp. nozzle 285°C, temp print bed 70°C; layer height 0.15mm

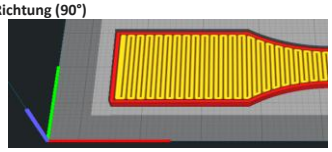
Tensile test PA with 1mm/min. These are target values for optimal print quality. Values might vary greatly with the same settings, depending on the system Nozzle - Printer - Gcode.

Orientation of printed specimen

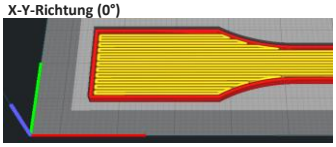
X-Y-Richtung (45°)



X-Y-Richtung (90°)



X-Y-Richtung (0°)



Thermal properties	Test method	Unit	Value
Glass transition temp.	ISO 11357	°C	72
Heat deflection temperature	Fiberthree GmbH	°C	120
Electrical properties	**Test method**	**Unit**	**Value**
Insulation resistance	IEC 60167	Ohm*m	$>10^{12}$
Surface resistance	IEC 60093	Ohm*m	$>10^{12}$
Other properties	**Test method**	**Unit**	**Value**
Water absorption (after 24h)	DIN ISO 62	%	>0,3
Recommendations	**Test method**	**Unit**	**Value**
Temperature nozzle	Fiberthree GmbH	°C	250 - 270
Temperature build plate	Fiberthree GmbH	°C	cold
Nozzle diameter	Fiberthree GmbH	mm	> 0,20
Fan cooling	Fiberthree GmbH	%	max 30%
Layer height	Fiberthree GmbH	mm	> 0,10
Recommended wall thickness to reduce significantly the impact of moisture	Fiberthree GmbH	mm	2,5
Printing speed	Fiberthree GmbH	mm/s	50
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, PEI
Recommended nozzle	Fiberthree GmbH		all nozzles suitable
Recommended parts	Fiberthree GmbH		High-strength components with a smooth surface and transparency

EU & REACH Conformity

SVHC > 0,1 % (List dated December 2023)	given	no substances included
Regulated substances acc. 2015/863/EU (RoHS 3)	given	no substances included

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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 charactaristics or duration of use, unless such information has been explicitly given as a guarantee.

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Technical filament made of polyamide modified for 3D printing.
The material exhibits good strength with a low tendency to warp and very good layer adhesion.
The material differs from other polyamides due to its high light transmission and good transparency.
It is therefore ideally suited for applications that require transparency and permanent strength above 70°C, such as for orthoses, light fixtures, displays etc.
Printed objects become translucent, but not clear due to the printing process. Depending on the light source, the printed material appears

- slightly yellowish in artificial light
- slightly bluish in daylight/sunlight.

The filament must be stored and printed dry for the best printing results.





