technical datasheet

F3 PA ESD

Dezember 2024

www.fiberthree.com

General information

Properties

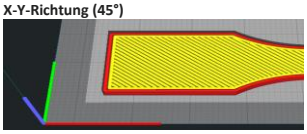
- ***PA 6 (modified) with ESD conductivity***
- *contains carbon fibers plus conductive particles*
- *very high strength*
- *low tendency to warp*
- *good adhesion to print bed*
- *resistant to oil, grease, fuels and many chemicals*
- *good hydrolysis resistance*
- *matte black finish*
- ***conductivity in printed part [S/cm]: 10^{-5} bis 10^{-9}***

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)	12.200	10
Modulus of Elasticity printed specimen x-y (90°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	4.800	7
Tensile strength printed specimen x-y (0°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	105	10
Tensile strength printed specimen x-y (+ 45°/-45°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	95	9
Tensile strength printed specimen x-y (90°) *	DIN EN ISO 527-2 Typ 1A *	MPa (N/mm²)	79	8
Tensile stress printed specimen x-y (0°)	DIN EN ISO 527-2 Typ 1A*	MPa (N/mm²)	105	0
Elongation printed specimen (0°)	DIN EN ISO 527-2 Typ 1A*	%	2,3	1
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	--	

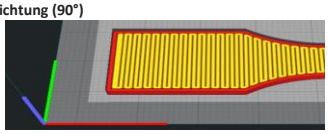
* Test specimen printed: 1.75mm filament; v=50 mm/s; Orientation layers in 0°/ 90°/ +-45°; conditioned 24h at 50% RF and 23° C
Test specimen polyamide Pro: Prusa MK3S+, E3D V6, nozzle 0.6mm, temp. nozzle 285°C, temp print bed 70°C; layer height 0.15mm
Tensile test PA with 1mm/min. These are target values for optimal print quality. Values might vary greatly with the same settings, depending on the system Nozzle - Printer - Gcode.

Orientation of printed specimen

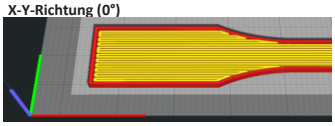
X-Y-Richtung (45°)



X-Y-Richtung (90°)



X-Y-Richtung (0°)



Thermal properties	Test method	Unit	Value
Glass transition temp.	ISO 11357	°C	70
Heat distortion temp. (HDT A@1,8 MPa)	ISO 75	°C	120
Electrical properties	**Test method**	**Unit**	**Typical value**
Insulation resistance	Fiberthree GmbH	Ω cm	$>10^5$
Surface resistance	Fiberthree GmbH	Ω cm	$>10^5$
Other properties	**Test method**	**Unit**	**Value**
Water absorption (after 24h)	DIN ISO 62	%	>0,3

Recommendations	Test method	Unit	Value	Comment
Temperature nozzle	Fiberthree GmbH	°C	280 - 310	
Temperature build plate	Fiberthree GmbH	°C	cold	
Temperature build chamber	Fiberthree GmbH	°C	RT - 60	60° considered for best adhesion
Nozzle diameter	Fiberthree GmbH	mm	> 0,25	
Fan cooling	Fiberthree GmbH	%	Not recommended	
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		wear resistant nozzles: hardened steel, tungsten, nozzles	
Recommended parts	Fiberthree GmbH		High-strength lightweight components, components with ESD conductivity	

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

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 thir 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.