

## TECAFIL PEKK natural - 1.75 mm - Filament

### Chemical Designation

PEKK (Polyetherketoneketone)

### Colour

amber transparent

### Density

1.27 g/cm<sup>3</sup> (\*2)

### Main features

- inherent flame retardant
- good dimensional stability
- high heat deflection temperature
- high thermal and mechanical capacity

### Target Industries

- electronics
- automotive industry
- chemical technology
- mechanical engineering
- aircraft and aerospace technology

General material information	parameter	value	unit	norm	comment
Diameter		1,75 +/- 0,05	mm	-	(1) standard spool body
Spool measurements	holder	Ø 52	mm	-	(2) do not dry spool >120°C
Spool measurements	width	55	mm	-	(3) Ø 1,75mm
Spool measurements	outer diameter	Ø 200	mm	-	1)
Spool Material		Polycarbonate		-	2)
Filament Load per Spool		500	g	-	
Filament Length per Spool		155	m	-	3)

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	5mm/min, Orientation XY	86,3	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation XZ	89,5	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	92,7	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2921,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	3041,0	MPa	DIN EN ISO 527-2	5) (5) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2997,7	MPa	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	5,4	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XZ	5,4	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	4,6	%	DIN EN ISO 527-2	9) (9) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	95,6	%	DIN EN ISO 527-2	10) (10) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XZ	120,3	%	DIN EN ISO 527-2	11) (11) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	79,2	%	DIN EN ISO 527-2	12) (12) (*5), (*6)
Flexural strength	2 mm/min, 10 N	128,0	MPa	DIN EN ISO 178	13) (13) (*1)
Modulus of elasticity (flexural test)	2 mm/min, 10 N	3000,0	MPa	DIN EN ISO 178	14) (14) (*1)
Notched impact strength (Charpy)	max. 7,5J - 23°C	5,0	kJ/m <sup>2</sup>	DIN EN ISO 179-1eA	15) (15) (*1)

Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		160	°C	ASTM D 3418	1) (1) (*2)
Melting temperature		300	°C	DIN EN ISO 11357	2) (2) (*2)
Deflection temperature	HDT-A	139	°C	ISO-R 75 Method A	3) (3) (*2)
Service temperature	short term	230	°C	-	4) (4) (*2)
Service temperature	long term	200	°C	-	5) (5) (*2)
Thermal expansion (CLTE)		-	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1:2	6) (6) (*2)

Other properties	parameter	value	unit	norm	comment
Moisture absorption		0,6	%	DIN EN ISO 62	1) (1) (*2)
MVR	380°C / 5kg	35	cm <sup>3</sup> /10 min	DIN EN ISO 1133	2) (2) (*2)

Processing parameter	parameter	value	unit	norm	comment
Nozzle temperature		340 - 380	°C	-	(1) required
Max. melt temperature		410	°C	-	
Print bed temperature		140 - 160	°C	-	
Build chamber temperature		120 - 160	°C	-	1)
Nozzle diameter		0,4	mm	-	
Print speed		30 - 40	mm/s	-	
Fan speed		0	%	-	

Predrying	parameter	value	unit	norm	comment
Drying temperature		120	°C	-	1) (1) (*4)
Drying time		8	h	-	

→ To achieve optimum mechanical properties, it is recommended to pre-dry the material with the above mentioned parameters.

- (\*1) Values measured on injection moulded test specimens
- (\*2) Values measured on the raw material
- (\*3) The exact parameters depend on the printer used.
- (\*4) Do not exceed maximum drying temperature of 120°C
- (\*5) Properties tested on printed specimens
- (\*6) Specimens printed on Kumovis R1

→ The filament should preferably be stored in dry, normal temperature rooms and protected from direct sunlight.

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Date: 2024/07/15

Version: AF