

## TECAFIL PEEK LDS black - 1.75 mm - Filament

### Chemical Designation

PEEK (Polyetheretherketone)

### Colour

black opaque

### Density

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

### Fillers

mineral filler

### Main features

→ developed for the LPKF-LDS® process

### Target Industries

- electronics
- mechanical engineering
- semiconductor technology
- aircraft and aerospace interiors
- 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		118	m	-	3)
Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	5mm/min, Orientation XY	79,0	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	10,3	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	9694,0	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	3301,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	1,4	%	DIN EN ISO 527-2	5) (5) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	0,3	%	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	1,4	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	0,3	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Impact strength (Charpy)	max. 7,5J - 23°C	35	kJ/m <sup>2</sup>	DIN EN ISO 179-1eU	9) (9) (*1)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		143	°C	ASTM D 3418	1) (1) (*2)
Melting temperature		343	°C	DIN EN ISO 11357	2) (2) (*2)
Deflection temperature	HDT-A	218	°C	ISO-R 75 Method A	3) (3) (*2)
Service temperature	short term	300	°C	-	4) (4) (*2)
Service temperature	long term	260	°C	-	5) (5) (*2)
Thermal expansion (CLTE)	longitudinal (at 23 - 100 °C)	18	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	6) (6) (*2)
Thermal expansion (CLTE)	transverse (at 23 - 100 °C)	26	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	7) (7) (*2)
Thermal expansion (CLTE)	longitudinal (at 200 - 260 °C)	46	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	8) (8) (*2)
Thermal expansion (CLTE)	transverse (at 200 - 260 °C)	67	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	9) (9) (*2)
Thermal expansion (CLTE)	longitudinal (at 260 - 300 °C)	63	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	10) (10) (*2)
Thermal expansion (CLTE)	transverse (at 260 - 300 °C)	88	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	11) (11) (*2)
Thermal diffusivity	through-plane	0,29	mm <sup>2</sup> /s	DIN EN 821	12) (12) (*2)
Thermal diffusivity	in-plane	0,84	mm <sup>2</sup> /s	DIN EN 821	13) (13) (*2)
Electrical properties	parameter	value	unit	norm	comment
volume resistance		5,8 x 10 <sup>11</sup>	Ω	DIN EN 61340-2-3	1) (1) (*2)
Dielectric strength	70mm x 70mm x 3mm	17,5	kV/mm	ISO 60243-1	2) (2) (*2)
Dielectric loss factor	test frequency of 1 kHz	0,0066		DIN 53483-1	3) (3) (*2)
Dielectric constant	test frequency of 1 kHz	3,73		DIN 53483-1	4) (4) (*2)
Surface resistivity		5,8 x 10 <sup>12</sup>		DIN EN 61340-2-3	5) (5) (*2)
Resistance to tracking (CTI)		225	V	DIN EN 60112	6) (6) (*2)
Other properties	parameter	value	unit	norm	comment
Moisture absorption		0,1	%	DIN EN ISO 62	1) (1) (*2)
Melt flow index (MFI)	380°C / 10kg	77,0	g/10 min	DIN EN ISO 1133	2) (2) (*2)
Adhesive strength (metal path)		19,4	N/mm <sup>2</sup>	-	3) (3) (*2) / pull-off-test
Laser Marking Parameter	Power	2 - 8	W	-	4) (4) (*2)
Laser Marking Parameter	Frequency	120 - 180	kHz	-	5) (5) (*2)
Laser Marking Parameter	Forward movement	1,8 - 2,4	m/s	-	6) (6) (*2)
Processing parameter	parameter	value	unit	norm	comment
Nozzle temperature		390 - 420	°C	-	(1) required
Max. melt temperature		430	°C	-	

Print bed temperature	160 - 250	°C	-
Build chamber temperature	160 - 230	°C	- 1)
Nozzle diameter	0,4	mm	-
Print speed	20 - 30	mm/s	-
Fan speed	0	%	-

<i>Predrying</i>	<i>parameter</i>	<i>value</i>	<i>unit</i>	<i>norm</i>	<i>comment</i>
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 Minifactory Ultra

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

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Ensinger GmbH  
Rudolf-Diesel Str. 8  
71154 Nufringen - Deutschland

Tel +49 7032 819 0  
Fax +49 7032 819 100  
[ensingerplastics.com](http://ensingerplastics.com)

Date: 2024/06/24

Version: AF