

TECAFIL PEEK LDS black - 1.75 mm - Filament

Chemical Designation

PEEK (Polyetheretherketone)

Colour

black opaque

Density

1.67 g/cm³ (*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 XZ	81,3	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	8,8	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	9694,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	9896,0	MPa	DIN EN ISO 527-2	5) (5) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2317,3	MPa	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	1,4	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XZ	1,8	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	0,3	%	DIN EN ISO 527-2	9) (9) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	1,4	%	DIN EN ISO 527-2	10) (10) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XZ	1,9	%	DIN EN ISO 527-2	11) (11) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	0,3	%	DIN EN ISO 527-2	12) (12) (*5), (*6)
Impact strength (Charpy)	max. 7,5J - 23°C	35,0	kJ/m ²	DIN EN ISO 179-1eU	13) (13) (*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	204	°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 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	6) (6) (*2)
Thermal expansion (CLTE)	transverse (at 23 - 100 °C)	26	10 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	7) (7) (*2)
Thermal expansion (CLTE)	longitudinal (at 200 - 260 °C)	46	10 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	8) (8) (*2)
Thermal expansion (CLTE)	transverse (at 200 - 260 °C)	67	10 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	9) (9) (*2)
Thermal expansion (CLTE)	longitudinal (at 260 - 300 °C)	63	10 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	10) (10) (*2)
Thermal expansion (CLTE)	transverse (at 260 - 300 °C)	88	10 ⁻⁶ K ⁻¹	DIN EN ISO 11359-1;2	11) (11) (*2)
Thermal diffusivity	through-plane	0,29	mm ² /s	DIN EN 821	12) (12) (*2)
Thermal diffusivity	in-plane	0,84	mm ² /s	DIN EN 821	13) (13) (*2)

Electrical properties	parameter	value	unit	norm	comment
volume resistance		5,8 x 10 ¹¹	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 ¹²		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 ²	-	3) (3) (*2) / pull-off-test
Laser Marking Parameter	Power	2 - 8	W	-	4) (4) (*2)

Laser Marking Parameter	Frequency	120 - 180	kHz	-	5)
Laser Marking Parameter	Forward movement	1,8 - 2,4	m/s	-	6)
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	%	-	
Pre-drying	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 Minifactory Ultra

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

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