

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	condition	value	unit	test method	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	condition	value	unit	test method	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	condition	value	unit	test method	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	condition	value	unit	test method	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	condition	value	unit	test method	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	condition	value	unit	test method	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	condition	value	unit	test method	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.

Our information and statements reflect to current state of our knowledge and shall inform about the products and their applications. They do not assure or guarantee chemical resistance, quality of products and their merchantability in a legally binding way. Our products are not defined for use in medical or dental implants. Existing commercial patents have to be observed. The customer is solely responsible for the quality and suitability of products for the application and has to test usage and processing prior to use. Data sheet values are subject to periodic review, the most recent update can be found at ensingerplastics.com. Technical changes reserved. European-made or imported varieties comply with REACH Regulation 1907/2006 / EC as amended Unless otherwise noted, these values were determined by tests on injection moulded samples, dry as moulded. The corresponding values and information are no minimum or maximum values, but guideline values that can be used primarily for comparison purposes for material selection. These values are within the normal tolerance range of product properties and do not represent guaranteed property values. Therefore they shall not be used for specification purposes. In order to achieve optimum mechanical properties, pre-drying of the material is recommended with the parameters mentioned above Filaments should preferably be stored in dry rooms at normal temperatures and be protected from direct sunlight.

Ensinger Inc. Headquarters 365 Meadowlands
Boulevard Washington, PA 15301, USA

Phone 800-243-3221 Sales Phone 800-869-4029 Date: 2024/07/19
Technical Fax 724-746-9209
sales@ensingerusa.com

Version: AH