

TECAFIL PEI 9085 natural - 1.75 mm - Filament

Chemical Designation

PEI (Polyetherimide)

Colour

beige opaque

Density

1.34 g/cm³ (*2)

Main features

- inherent flame retardant
- high dimensional stability
- high thermal and mechanical capacity
- resistance against high energy radiation

Target Industries

- electronics
- automotive industry
- mechanical engineering
- 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		147	m	-	3)

Mechanical properties	condition	value	unit	test method	comment
Tensile strength	5mm/min, Orientation XY	83,7	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation XZ	88,1	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	49,3	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2512,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	2568,0	MPa	DIN EN ISO 527-2	5) (5) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2452,0	MPa	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	6,5	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XZ	6,9	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	2,6	%	DIN EN ISO 527-2	9) (9) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	9,7	%	DIN EN ISO 527-2	10) (10) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XZ	20,8	%	DIN EN ISO 527-2	11) (11) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	2,6	%	DIN EN ISO 527-2	12) (12) (*5), (*6)
Flexural strength	2mm/min, Orientation XY	91,0	MPa	DIN EN ISO 178	13) (13) (*5), (*6)
Flexural strength	2mm/min, Orientation ZX	93,0	MPa	DIN EN ISO 178	14) (14) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation XY	2120,0	MPa	DIN EN ISO 178	15) (15) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation ZX	2500,0	MPa	DIN EN ISO 178	16) (16) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation XY	no break	%	DIN EN ISO 178	17) (17) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation ZX	4,1	%	DIN EN ISO 178	18) (18) (*5), (*6)

Thermal properties	condition	value	unit	test method	comment
Glass transition temperature		180	°C	ASTM D 3418	1) (1) (*2)
Melting temperature		-	°C	DIN EN ISO 11357	2) (2) (*2)
Deflection temperature	HDT-A	153	°C	ISO-R 75 Method A	3) (3) (*2)
Service temperature	short term	170	°C	-	4) (4) (*2)
Service temperature	long term	150	°C	-	5) (5) (*2)
Thermal expansion (CLTE)		-	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	6) (6) (*2)

Other properties	condition	value	unit	test method	comment
Moisture absorption		0,39	%	DIN EN ISO 62	1) (1) (*2)
Flammability (UL94)	125x13x1,5mm	V0		DIN IEC 60695-11-10;	2) (2) (*2)
Flammability	60 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(i)	1,5	mm	FAR 25.853	3) (3) (*5), (*6)
Flammability	12 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(ii)	1,5	mm	FAR 25.853	4) (4) (*5), (*6)
Flammability	15 sec. Horizontal Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(iv)	1,5	mm	FAR 25.853	5) (5) (*5), (*6)
Flammability	Heat Release, as per FAR §25.853 (d) and Appendix F, Part IV	1,5	mm	FAR 25.853	6) (6) (*5), (*6)
Flammability	Smoke density, as per FAR §25.853 (d) and Appendix F, Part V	1,5	mm	FAR 25.853	7) (7) (*5), (*6)
Flammability	Gas Toxicity, as per Boeing BSS 7239	1,5	mm	-	8) (8) (*5), (*6)
Melt flow index (MFI)	295°C / 6,6kg	8,9	g/10 min	DIN EN ISO 1133	9) (9) (*2)

<i>Processing parameter</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</i>	<i>comment</i>
Nozzle temperature		360 - 390	°C	-	(1) required
Max. melt temperature		410	°C	-	
Print bed temperature		160 - 190	°C	-	
Build chamber temperature		150 - 170	°C	-	1)
Nozzle diameter		0,4	mm	-	
Print speed		30 - 40	mm/s	-	
Fan speed		0	%	-	

<i>Predrying</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</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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