TECAFIL PEI 9085 natural - 1.75 mm - Filament

Chemical Designation
PEI (Polyetherimide)

Colour
beige opaque

Density
1.34 g/cm^3 (*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	parameter	value	unit	norm		comment
Diameter		1,75 +/- 0,05	mm	-		(1) standard spool body (2) do not dry spool >120°C (3) Ø 1,75mm
Spool measurements	holder	Ø 52	mm	-		
Spool measurements	width	55	mm	-		
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	parameter	value	unit	norm		comment
Tensile strength	5mm/min, Orientation ZX	49	MPa	DIN EN ISO 527-2	1)	(1) (*5) , (*6) (2) (*5) , (*6) (3) (*5) , (*6) (4) (*5) , (*6) (5) (*5) , (*6) (6) (*5) , (*6) (7) (*5) , (*6) (8) (*5) , (*6) (9) (*5) , (*6) (10) (*5) , (*6) (11) (*5) , (*6) (12) (*5) , (*6)
Tensile strength	5mm/min, Orientation XY	80	MPa	DIN EN ISO 527-2	2)	
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2450	MPa	DIN EN ISO 527-2	3)	
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2600	MPa	DIN EN ISO 527-2	4)	
Elongation at break (tensile test)	5mm/min, Orientation XY	9,3	%	DIN EN ISO 527-2	5)	
Elongation at break (tensile test)	5mm/min, Orientation ZX	2,6	%	DIN EN ISO 527-2	6)	
Flexural strength	2mm/min, Orientation XY	91	MPa	DIN EN ISO 178	7)	
Flexural strength	2mm/min, Orientation ZX	93	MPa	DIN EN ISO 178	8)	
Modulus of elasticity (flexural test)	2mm/min, Orientation XY	2120	MPa	DIN EN ISO 178	9)	
Modulus of elasticity (flexural test)	2mm/min, Orientation ZX	2500	MPa	DIN EN ISO 178	10)	
Elongation at break (flexural test)	2mm/min, Orientation XY	no break	%	DIN EN ISO 178	11)	
Elongation at break (flexural test)	2mm/min, Orientation ZX	4,1	%	DIN EN ISO 178	12)	

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

Other properties	parameter	value	unit	norm		comment
Moisture absorption		0,39	%	DIN EN ISO 62	1)	(1) (*2) (2) (*2) (3) (*5) , (*6) (4) (*5) , (*6) (5) (*5) , (*6) (6) (*5) , (*6) (7) (*5) , (*6) (8) (*5) , (*6) (9) (*2)
Flammability (UL94)	125x13x1,5mm	V0		DIN IEC 60695-11-10;	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)	
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)	
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)	
Flammability	Heat Release, as per FAR §25.853 (d) and Appendix F, Part IV	1,5	mm	FAR 25.853	6)	
Flammability	Smoke density, as per FAR §25.853 (d) and Appendix F, Part V	1,5	mm	FAR 25.853	7)	
Flammability	Gas Toxicity, as per Boeing BSS 7239	1,5	mm	-	8)	
Melt flow index (MFI)	295°C / 6,6kg	8,9	g/10 min	DIN EN ISO 1133	9)	

Processing parameter	parameter	value	unit	norm		comment
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	%	-		

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 Minifactory Ultra

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

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