

TECAFIL PPSU natural - 1.75 mm - Filament

Chemical Designation

PPSU (Polyphenylsulfone)

Colour

amber transparent

Density

1.29 g/cm³ (*2)

Main features

- high strength
- inherent flame retardant
- good chemical resistance
- good heat deflection temperature
- high thermal and mechanical capacity

Target Industries

- automotive industry
- chemical technology
- mechanical engineering
- aircraft and aerospace interiors
- aircraft and aerospace technology

General material information

parameter	value	unit	norm	comment
Diameter	1,75 +/- 0,05	mm	-	
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	152	m	-	3)

Mechanical properties

parameter	value	unit	norm	comment
Tensile strength 5mm/min, Orientation XY	65	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)
Tensile strength 5mm/min, Orientation ZX	59	MPa	DIN EN ISO 527-2	2) (7) (*5), (*6) (8) (*5), (*6) (9) (*5), (*6)
Modulus of elasticity (tensile test) 5mm/min, Orientation ZX	2060	MPa	DIN EN ISO 527-2	3) (10) (*5), (*6) (11) (*5), (*6)
Modulus of elasticity (tensile test) 5mm/min, Orientation XY	1920	MPa	DIN EN ISO 527-2	4) (12) (*5), (*6)
Elongation at break (tensile test) 5mm/min, Orientation XY	11,7	%	DIN EN ISO 527-2	5)
Elongation at break (tensile test) 5mm/min, Orientation ZX	5,0	%	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	85	MPa	DIN EN ISO 178	8)
Modulus of elasticity (flexural test) 2mm/min, Orientation XY	2050	MPa	DIN EN ISO 178	9)
Modulus of elasticity (flexural test) 2mm/min, Orientation ZX	1900	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	5,7	%	DIN EN ISO 178	12)

Thermal properties

parameter	value	unit	norm	comment
Glass transition temperature	220	°C	ASTM D 3418	1) (1) (*2) (2) (*2) (3) (*2)
Melting temperature	-	°C	DIN EN ISO 11357	2) (3) (*2)
Deflection temperature HDT-A	198	°C	ISO-R 75 Method A	3) (4) (*2) (5) (*2)
Service temperature short term	190	°C	-	4)
Service temperature long term	170	°C	-	5)
Thermal expansion (CLTE)	5,5	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1:2	6)

Other properties

parameter	value	unit	norm	comment
Moisture absorption	0,6	%	DIN EN ISO 62	1) (1) (*2) (2) (*2)
Flammability (UL94) 125x13x1,5mm	V0		DIN IEC 60695-11-10;	2) (3) (*2)
Flammability (UL94) 125x13x3mm	V0		DIN IEC 60695-11-10;	3) (4) (*5), (*6) (5) (*5), (*6)
Flammability 60 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(iv)	1,4	mm	FAR 25.853	4) (7) (*5), (*6) (8) (*5), (*6) (9) (*5), (*6) (10) (*2)
Flammability 12 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(iv)	1,5	mm	FAR 25.853	5)

Flammability

parameter	value	unit	norm	comment
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	6)

Flammability

parameter	value	unit	norm	comment
Heat Release, as per FAR §25.853 (d) and Appendix F, Part IV	1,5	mm	FAR 25.853	7)

Flammability

parameter	value	unit	norm	comment
Smoke density, as per FAR §25.853 (d) and Appendix F, Part V	1,5	mm	FAR 25.853	8)

Flammability

parameter	value	unit	norm	comment
Gas Toxicity, as per Boeing BSS 7239	1,5	mm	-	9)

MVR

parameter	value	unit	norm	comment
360°C / 10kg	35	cm ³ /10 min	DIN EN ISO 1133	10)

Processing parameter

parameter	value	unit	norm	comment
Nozzle temperature	360 - 400	°C	-	(1) required
Max. melt temperature	410	°C	-	
Print bed temperature	160 - 230	°C	-	
Build chamber temperature	190 - 210	°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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