

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	-	(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		152	m	-	3)
Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	5mm/min, Orientation XY	74,4	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	30,5	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2205,0	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	1591,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	7,8	%	DIN EN ISO 527-2	5) (5) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	2,6	%	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	54,0	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	2,6	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Flexural strength	2mm/min, Orientation XY	91,0	MPa	DIN EN ISO 178	9) (9) (*5), (*6)
Flexural strength	2mm/min, Orientation ZX	85,0	MPa	DIN EN ISO 178	10) (10) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation XY	2050,0	MPa	DIN EN ISO 178	11) (11) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation ZX	1900,0	MPa	DIN EN ISO 178	12) (12) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation XY	no break	%	DIN EN ISO 178	13) (13) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation ZX	5,7	%	DIN EN ISO 178	14) (14) (*5), (*6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		220	°C	ASTM D 3418	1) (1) (*2)
Melting temperature		-	°C	DIN EN ISO 11357	2) (2) (*2)
Deflection temperature	HDT-A	198	°C	ISO-R 75 Method A	3) (3) (*2)
Service temperature	short term	190	°C	-	4) (4) (*2)
Service temperature	long term	170	°C	-	5) (5) (*2)
Thermal expansion (CLTE)		5,5	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1;2	6) (6) (*2)
Other properties	parameter	value	unit	norm	comment
Moisture absorption		0,6	%	DIN EN ISO 62	1) (1) (*2)
Flammability (UL94)	125x13x1,5mm	V0		DIN IEC 60695-11-10;	2) (2) (*2)
Flammability (UL94)	125x13x3mm	V0		DIN IEC 60695-11-10;	3) (3) (*2)
Flammability	60 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(i)	1,4	mm	FAR 25.853	4) (4) (*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	5) (5) (*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	6) (6) (*5), (*6)
Flammability	Heat Release, as per FAR §25.853 (d) and Appendix F, Part IV	1,5	mm	FAR 25.853	7) (7) (*5), (*6)
Flammability	Smoke density, as per FAR §25.853 (d) and Appendix F, Part V	1,5	mm	FAR 25.853	8) (8) (*5), (*6)
Flammability	Gas Toxicity, as per Boeing BSS 7239	1,5	mm	-	9) (9) (*5), (*6)
MVR	360°C / 10kg	35	cm ³ /10 min	DIN EN ISO 1133	10) (10) (*2)
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	%	-	

<i>Predrying</i>	<i>parameter</i>	<i>value</i>	<i>unit</i>	<i>norm</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.

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 GmbH
Rudolf-Diesel Str. 8
71154 Nufringen - Deutschland

Tel +49 7032 819 0
Fax +49 7032 819 100
ensingerplastics.com

Date: 2024/06/26

Version: AF