

## TECAFIL PPSU MT XRO grey - 1.75 mm - Filament

### Chemical Designation

PPSU (Polyphenylsulfone)

### Colour

grey opaque

### Density

1.34 g/cm<sup>3</sup> (\*2)

### Fillers

barium sulfate

### Main features

- x-ray opaque
- very good sterilisable
- good chemical resistance
- high gamma radiation resistance
- good heat deflection temperature
- high thermal and mechanical capacity
- hydrolysis and superheated steam resistant

### Target Industries

- medical 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		146	m	-	3)

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	5mm/min, Orientation XY	67,7	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation XZ	69,7	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	69,2	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2215,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	2295,0	MPa	DIN EN ISO 527-2	5) (5) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2294,0	MPa	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	7,2	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XZ	7,6	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	6,7	%	DIN EN ISO 527-2	9) (9) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	35,1	%	DIN EN ISO 527-2	10) (10) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XZ	95,0	%	DIN EN ISO 527-2	11) (11) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	8,7	%	DIN EN ISO 527-2	12) (12) (*5), (*6)
Elongation at yield (flexural test)	2mm/min, Orientation XY	7,3	%	DIN EN ISO 178	13) (13) (*5), (*6)
Elongation at yield (flexural test)	2mm/min, Orientation ZX	7,4	%	DIN EN ISO 178	14) (14) (*5), (*6)
Flexural strength	2mm/min, Orientation XY	105,0	MPa	DIN EN ISO 178	15) (15) (*5), (*6)
Flexural strength	2mm/min, Orientation ZX	101,0	MPa	DIN EN ISO 178	16) (16) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation XY	2300,0	MPa	DIN EN ISO 178	17) (17) (*5), (*6)
Modulus of elasticity (flexural test)	2mm/min, Orientation ZX	2130,0	MPa	DIN EN ISO 178	18) (18) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation XY	no break	%	DIN EN ISO 178	19) (19) (*5), (*6)
Elongation at break (flexural test)	2mm/min, Orientation ZX	no break	%	DIN EN ISO 178	20) (20) (*5), (*6)

Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		218	°C	ASTM D 3418	1) (1) (*2)
Melting temperature		-	°C	DIN EN ISO 11357	2) (2) (*2)
Deflection temperature	HDT-A	207	°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)		5,6	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	6) (6) (*2)

Other properties	parameter	value	unit	norm	comment
Moisture absorption		0,37	%	DIN EN ISO 62	1) (1) (*2)
Melt flow index (MFI)	365°C / 5kg	12 - 17	g/10 min	DIN EN ISO 1133	2) (2) (*2)

Processing parameter	parameter	value	unit	norm	comment
Nozzle temperature		380 - 420	°C	-	(1) required
Max. melt temperature		450	°C	-	
Print bed temperature		160 - 230	°C	-	
Build chamber temperature		160 - 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 6 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 Kumovis R1

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

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