

TECAFIL PES natural - 1.75 mm - Filament

Chemical Designation

PES (Polyethersulfone)

Colour

amber transparent

Density

1.37 g/cm³ (*2)

Main features

- inherent flame retardant
- very good radiation resistance
- hydrolysis and superheated steam resistant

Target Industries

- electronics
- chemical technology
- mechanical engineering

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		143	m	-	3)

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	5mm/min, Orientation XY	84,0	MPa	DIN EN ISO 527-2	1) (1) (*5), (*6)
Tensile strength	5mm/min, Orientation XZ	86,2	MPa	DIN EN ISO 527-2	2) (2) (*5), (*6)
Tensile strength	5mm/min, Orientation ZX	86,1	MPa	DIN EN ISO 527-2	3) (3) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2421,0	MPa	DIN EN ISO 527-2	4) (4) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	2525,0	MPa	DIN EN ISO 527-2	5) (5) (*5), (*6)
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2599,2	MPa	DIN EN ISO 527-2	6) (6) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XY	6,2	%	DIN EN ISO 527-2	7) (7) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation XZ	6,1	%	DIN EN ISO 527-2	8) (8) (*5), (*6)
Elongation at yield (tensile test)	5mm/min, Orientation ZX	5,8	%	DIN EN ISO 527-2	9) (9) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XY	8,6	%	DIN EN ISO 527-2	10) (10) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation XZ	6,7	%	DIN EN ISO 527-2	11) (11) (*5), (*6)
Elongation at break (tensile test)	5mm/min, Orientation ZX	6,7	%	DIN EN ISO 527-2	12) (12) (*5), (*6)
Notched impact strength (Charpy)	max. 7,5J - 23°C	8,0	kJ/m ²	DIN EN ISO 179-1eA	13) (13) (*1)

Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		228	°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	220	°C	-	4) (4) (*2)
Service temperature	long term	180	°C	-	5) (5) (*2)
Thermal expansion (CLTE)		5,2	10 ⁻⁵ K ⁻¹	DIN EN ISO 11359-1:2	6) (6) (*2)

Other properties	parameter	value	unit	norm	comment
Moisture absorption		0,02	%	DIN EN ISO 62	1) (1) (*2)
MVR	360°C / 10kg	35	cm ³ /10 min	DIN EN ISO 1133	2) (2) (*2)

Processing parameter	parameter	value	unit	norm	comment
Nozzle temperature		380 - 430	°C	-	(1) required
Max. melt temperature		450	°C	-	
Print bed temperature		180 - 240	°C	-	
Build chamber temperature		180 - 220	°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 Kumovis R1

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

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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.

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