

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.

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.

**Manufactured by: Ensinger Group,
a German based plastic manufacturer**

63 Hillview Avenue #02-03
Lam Soon Industrial Building
Singapore 669569
Tel +65 65524177
Fax +65 65525177
www.ensingerplastics.com/en-sg/

Date: 2024/07/19

Version: AH

**Represented by:
Ensinger Asia Holding Pte Ltd.
(Singapore Branch)
for Asia Pacific other than Japan+China**