TECAFIL PSU natural - 1.75 mm - Filament

Chemical Designation
PSU (Polysulfone)

Colour
natural transparent

Density
1.23 g/cm^3 (*2)

Main features
- electrically insulating
- high dimensional stability
- good heat deflection temperature
- resistance against high energy radiation

Target Industries
- electronics
- food technology
- automotive industry
- chemical technology
- mechanical engineering

General material information	condition	value	unit	test method		comment
Diameter		1,75 +/- 0,05	mm	-		(1) standard spool body (2) do not dry spool >120°C (3) Ø 1,75mm
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		158	m	-	3)	

Mechanical properties	condition	value	unit	test method		comment
Tensile strength	5mm/min, Orientation XY	74,9	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) (7) (*5) , (*6) (8) (*5) , (*6) (9) (*5) , (*6) (10) (*5) , (*6) (11) (*5) , (*6) (12) (*5) , (*6) (13) (*1)
Tensile strength	5mm/min, Orientation XZ	76,3	MPa	DIN EN ISO 527-2	2)	
Tensile strength	5mm/min, Orientation ZX	78,3	MPa	DIN EN ISO 527-2	3)	
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	2374,0	MPa	DIN EN ISO 527-2	4)	
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	2497,0	MPa	DIN EN ISO 527-2	5)	
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	2566,3	MPa	DIN EN ISO 527-2	6)	
Elongation at yield (tensile test)	5mm/min, Orientation XY	5,6	%	DIN EN ISO 527-2	7)	
Elongation at yield (tensile test)	5mm/min, Orientation XZ	5,4	%	DIN EN ISO 527-2	8)	
Elongation at yield (tensile test)	5mm/min, Orientation ZX	5,0	%	DIN EN ISO 527-2	9)	
Elongation at break (tensile test)	5mm/min, Orientation XY	86,4	%	DIN EN ISO 527-2	10)	
Elongation at break (tensile test)	5mm/min, Orientation XZ	6,9	%	DIN EN ISO 527-2	11)	
Elongation at break (tensile test)	5mm/min, Orientation ZX	6,3	%	DIN EN ISO 527-2	12)	
Notched impact strength (Charpy)	max. 7,5J - 23°C	5,5	kJ/m^2	DIN EN ISO 179-1eA	13)	

Thermal properties	condition	value	unit	test method		comment
Glass transition temperature		187	°C	ASTM D 3418	1)	(1) (*2) (2) (*2) (3) (*2) (4) (*2) (5) (*2) (6) (*2)
Melting temperature		-	°C	DIN EN ISO 11357	2)	
Deflection temperature	HDT-A	177	°C	ISO-R 75 Method A	3)	
Service temperature	short term	180	°C	-	4)	
Service temperature	long term	160	°C	-	5)	
Thermal expansion (CLTE)		5,3	10^{-5} K^{-1}	DIN EN ISO 11359-1;2	6)	

Other properties	condition	value	unit	test method		comment
Moisture absorption		0,8	%	DIN EN ISO 62	1)	(1) (*2) (2) (*2)
MVR	360°C / 10kg	40	cm³/10 min	DIN EN ISO 1133	2)	

Processing parameter	condition	value	unit	test method		comment
Nozzle temperature		360 - 400	°C	-		(1) required
Max. melt temperature		420	°C	-		
Print bed temperature		160 - 200	°C	-		
Build chamber temperature		160 - 190	°C	-	1)	
Nozzle diameter		0,4	mm	-		
Print speed		30 - 40	mm/s	-		
Fan speed		0	%	-		

Predrying	condition	value	unit	test method		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.