TECAFIL PEEK VX CF30 black - 1.75 mm - Filament

Chemical Designation
PEEK (Polyetheretherketone)

Colour
black opaque

Density
1.38 g/cm^3 (*2)

Fillers
carbon fibres, 30% carbon fibres

Main features
- very high stiffness
- inherent flame retardant
- high dimensional stability
- good chemical resistance
- hydrolysis and superheated steam resistant

Target Industries
- oil and gas industry
- automotive industry
- chemical technology
- mechanical engineering
- aircraft and aerospace technology

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		141	m	-	3)	

Mechanical properties	condition	value	unit	test method		comment
Tensile strength	5mm/min, Orientation XY	173,7	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	198,5	MPa	DIN EN ISO 527-2	2)	
Tensile strength	5mm/min, Orientation ZX	61,9	MPa	DIN EN ISO 527-2	3)	
Modulus of elasticity (tensile test)	5mm/min, Orientation XY	18116,0	MPa	DIN EN ISO 527-2	4)	
Modulus of elasticity (tensile test)	5mm/min, Orientation XZ	21392,0	MPa	DIN EN ISO 527-2	5)	
Modulus of elasticity (tensile test)	5mm/min, Orientation ZX	4005,5	MPa	DIN EN ISO 527-2	6)	
Elongation at yield (tensile test)	5mm/min, Orientation XY	2,4	%	DIN EN ISO 527-2	7)	
Elongation at yield (tensile test)	5mm/min, Orientation XZ	2,1	%	DIN EN ISO 527-2	8)	
Elongation at yield (tensile test)	5mm/min, Orientation ZX	3,3	%	DIN EN ISO 527-2	9)	
Elongation at break (tensile test)	5mm/min, Orientation XY	2,4	%	DIN EN ISO 527-2	10)	
Elongation at break (tensile test)	5mm/min, Orientation XZ	2,2	%	DIN EN ISO 527-2	11)	
Elongation at break (tensile test)	5mm/min, Orientation ZX	3,3	%	DIN EN ISO 527-2	12)	
Impact strength (Charpy)	max. 7,5J - 23°C	45,0	kJ/m^2	DIN EN ISO 179-1eU	13)	

Thermal properties	condition	value	unit	test method		comment
Glass transition temperature		143	°C	ASTM D 3418	1)	(1) (*2) (2) (*2) (3) (*2) (4) (*2) (5) (*2) (6) (*2)
Melting temperature		343	°C	DIN EN ISO 11357	2)	
Deflection temperature	HDT-A	162	°C	ISO-R 75 Method A	3)	
Service temperature	short term	300	°C	-	4)	
Service temperature	long term	260	°C	-	5)	
Thermal expansion (CLTE)		4	10^{-5} K^{-1}	DIN EN ISO 11359-1;2	6)	

Other properties	condition	value	unit	test method		comment
Moisture absorption		0,03	%	DIN EN ISO 62	1)	(1) (*2) (2) (*2) (3) (*5) , (*6) (4) (*5) , (*6) (5) (*5) , (*6) (6) (*5) , (*6) (7) (*5) , (*6) (8) (*5) , (*6) (9) (*2)
Flammability (UL94)	125x13x1,5mm	V0		DIN IEC 60695-11-10;	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	3)	
Flammability	12 sec. Vertical Bunsen Burner test, FAR §25.853 (a) and Appendix F, Part I, para. (a)(1)(ii)	1,4	mm	FAR 25.853	4)	
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	5)	
Flammability	Heat Release, as per FAR §25.853 (d) and Appendix F, Part IV	1,6	mm	FAR 25.853	6)	
Flammability	Smoke density, as per FAR §25.853 (d) and Appendix F, Part V	1,5	mm	FAR 25.853	7)	
Flammability	Gas Toxicity, as per Boeing BSS 7239	1,5	mm	-	8)	
Melt flow index (MFI)		-	g/10 min	DIN EN ISO 1133	9)	

Processing parameter	condition	value	unit	test method		comment
Nozzle temperature		420 - 460	°C	-		(1) required
Max. melt temperature		470	°C	-		
Print bed temperature		160 - 250	°C	-		
Build chamber temperature		160 - 230	°C	-	1)	

Nozzle diameter		0,4 - 0,6	mm	-
Print speed		20 - 30	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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