

# VICTREX AM™ 450 FIL



## Product Description

High performance thermoplastic material, PolyEtherEtherKetone (PEEK), semi crystalline, filament for Additive Manufacture by filament fusion and other melt extrusion 3D printing processes. Colour natural/beige.

## Typical Application Areas

Additive manufacturing processing. Filament Fusion printed parts. For use in high temperature applications and chemically aggressive environments. Low outgassing, suitable for sterilisation. Not suitable for medical implant applications. Product supplied vacuum packed with desiccant and dry when produced. Drying before use is recommended. This product is based on VICTREX™ PEEK 450G.

Dimension	Test Method	Units	Typical Value
Diameter	3 axis laser micrometer	mm	1.75
Linear density	Victrex test method VSH-STM-01	g/10000 m	31,000

Packaging	
Spool Dimensions	200mm diameter 70mm width
Spool Material	Heat-resistant Polycarbonate
Nominal Weight	1kg
Nominal Length	322m

Example Material Properties achieved via Injection Moulding				
	CONDITIONS	TEST METHOD	UNITS	TYPICAL VALUE
Tensile Strength	Yield, 23°C	ISO 527	MPa	98
Tensile Elongation	Break, 23°C	ISO 527	%	45
Tensile Modulus	23°C	ISO 527	GPa	4.0
Flexural Strength	At 3.5% strain, 23°C	ISO 178	MPa	125
	125°C			85
	175°C			19
	275°C			12.5
Flexural Modulus	23°C	ISO 178	GPa	3.8
Compressive Strength	23°C	ISO 604	MPa	125
	120°C			70
Charpy Impact Strength	Notched, 23°C	ISO 179/1eA	kJ m <sup>-2</sup>	6.0
	Unnotched, 23°C	ISO 179/1U		n.b.
Izod Impact Strength	Notched, 23°C	ISO 180/A	kJ m <sup>-2</sup>	7.0
	Unnotched, 23°C	ISO 180/U		n.b.

Thermal Data				
Melting Point	DSC	ISO 11357	°C	343
Glass Transition (Tg)	DSC (Onset)	ISO 11357	°C	143
	DSC (Midpoint)			150
Heat Deflection Temperature	1.8 MPa	ISO 75-f	°C	152
Thermal Conductivity	Along flow, 23°C	ISO 22007-4	W m <sup>-1</sup> K <sup>-1</sup>	0.32
	Average, 23°C			0.29
Relative Thermal Index	Electrical	UL 746B	°C	260
	Mechanical w/o impact			240
	Mechanical w/impact			180

Flow				
Melt Viscosity	400°C, 1000s <sup>-1</sup>	ISO 11443	Pa.s	350
Miscellaneous				
Density	Crystalline	ISO 1183	g cm <sup>-3</sup>	1.30
Shore D hardness	23°C	ISO 868		84.5
Water Absorption by immersion	Saturation, 23°C	ISO 62-1	%	0.45
	Saturation, 100°C			0.55
Electrical Properties				
Dielectric Strength	2mm thickness	IEC 60243-1	kV mm <sup>-1</sup>	23
Comparative Tracking Index		IEC 60112	V	150
Loss Tangent	23°C, 1 MHz	IEC 60250	n/a	0.004
Dielectric Constant	23°C, 1 kHz	IEC 60250	n/a	3.1
Volume Resistivity	23°C	IEC 60093	Ω cm	10 <sup>16</sup>
Fire Smoke Toxicity				
Glow Wire Test	2mm thickness	IEC 60695-2-12	°C	960

Example Processing Conditions	
Drying Temperature / Time	120°C / 5h (residual moisture <0.02%)
Extrusion Temperature	340-450°C
Chamber/Build-Space Temperature	Not less than 150°C
Bed Temperature	≥ 150°C

	Example Material Properties achieved via Filament Extrusion			Orientation	
	CONDITIONS	TEST METHOD	UNITS	Horizontal	Vertical
Tensile Strength	Yield, 23°C	ISO 527	MPa	60-80	20-85
Tensile Modulus	23°C	ISO 527	GPa	3-4	2-4
Tensile Elongation	Break, 23°C	ISO 527	%	2-95	1-10

**Notes**

Best results may be expected from elevated build-space temperatures and are machine specific. Results vary widely from machine to machine.

**Important notes:**

1. Example values only, not product specification.
2. Processing conditions quoted in our datasheets are typical of those used in our processing laboratories.
3. Data are generated in accordance with prevailing national, international and internal standards, and should be used for material comparison. Actual property values are highly dependent on part geometry, equipment configuration, extrusion deposition strategy and processing conditions. Properties may also differ for along flow and across flow directions and from different printers technologies and manufacturers.

Detailed data are available on our website [www.victrex.com](http://www.victrex.com) or upon request.

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