

# VICTREX™ PEEK POLYMER 650G

## General Information

### Product Description

High performance thermoplastic material, unreinforced PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding and extrusion, low flow, colour natural/beige.

Applications for higher strength and stiffness as well as enhanced ductility. Chemically resistant to aggressive environments, suitable for sterilisation for medical and food contact applications.

## Material Properties

Physical	Nominal Value	Unit	Test Method
Density (Crystalline)	1.30	g/cm <sup>3</sup>	ISO 1183
Spiral Flow			Internal Method
-- 1	12.5	cm	
-- 2	63.0	cm	
-- 3	70.0	cm	
Molding Shrinkage <sup>4</sup>			ISO 294-4
Across Flow	1.3	%	
Flow	0.90	%	
Water Absorption (Saturation, 23°C)	0.45	%	ISO 62
Water Absorption Saturation (100°C)	0.55	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (23°C)	3900	MPa	ISO 527-1
Tensile Stress (Yield, 23°C)	95.0	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	32	%	ISO 527-2
Flexural Modulus (23°C)	3600	MPa	ISO 178
Flexural Stress			ISO 178
3.5% Strain, 23°C	120	MPa	
23°C <sup>5</sup>	155	MPa	
125°C	85.0	MPa	
175°C	16.0	MPa	
275°C	9.00	MPa	
Compressive Stress			ISO 604
23°C	120	MPa	
120°C	65.0	MPa	
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (23°C)	10.0	kJ/m <sup>2</sup>	ISO 179/eA
Charpy Unnotched Impact Strength (23°C)	No Break		ISO 179
Notched Izod Impact Strength (23°C)	7.2	kJ/m <sup>2</sup>	ISO 180/A
Unnotched Izod Impact Strength (23°C)	No Break		ISO 180
Hardness	Nominal Value	Unit	Test Method
Shore Hardness (Shore D, 23°C)	84.0		ISO 868
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ISO 75-2/Af
1.8 MPa, Unannealed	152	°C	
1.8 MPa, Annealed <sup>6</sup>	168	°C	

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<b>Thermal</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Glass Transition Temperature			ISO 11357-2
Onset	143	°C	
Midpoint	150	°C	
Melting Temperature	343	°C	ISO 11357-3
CLTE - Flow			ISO 11359-2
< 143°C	45	ppm/K	
> 143°C	125	ppm/K	
CLTE - Average			ISO 11359-2
< 143°C	65	ppm/K	
> 143°C	160	ppm/K	
Thermal Conductivity			ISO 22007-4
23°C <sup>7</sup>	0.29	W/m/K	
23°C <sup>8</sup>	0.32	W/m/K	
<b>Electrical</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Volume Resistivity			IEC 60093
23°C	1.0E+16	ohms·cm	
125°C	1.0E+15	ohms·cm	
275°C	1.0E+9	ohms·cm	
Dielectric Strength (2.00 mm)	23.0	kV/mm	IEC 60243-1
Dielectric Constant (23°C, 1 kHz)	3.10		IEC 60250
Dissipation Factor (23°C, 1 MHz)	5.0E-3		IEC 60250
Comparative Tracking Index	150	V	IEC 60112
<b>Flammability</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Glow Wire Flammability Index (2.0 mm)	960	°C	IEC 60695-2-12
<b>Fill Analysis</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Melt Viscosity (400°C)	475	Pa·s	ISO 11443

## Typical Processing Information

<b>Injection</b>	<b>Nominal Value</b>	<b>Unit</b>
Drying Temperature	120 to 150	°C
Drying Time	3.0 to 5.0	hr
Suggested Max Moisture	0.020	%
Hopper Temperature	< 100	°C
Rear Temperature	375	°C
Middle Temperature	380 to 385	°C
Front Temperature	390	°C
Nozzle Temperature	395	°C
Mould Temperature	170 to 200	°C

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## Injection Notes

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Drying Temperature / Time: 150°C / 3h or 120°C / 5h (residual moisture <0.02%)

Runner: Die / nozzle >3mm, manifold >3.5mm

Gate: >2mm or 0.5 x part thickness

Important notes:

1) Processing conditions quoted in our datasheets are typical of those used in our processing laboratories

- Data for mould shrinkage should be used for material comparison. Actual mould shrinkage values are highly dependent on part geometry, mould configuration, and processing conditions.
- Mould shrinkage differs for along flow and across flow directions. "Along flow" direction is taken as the direction the molten material is travelling when it exits the gate and enters the mould.
- Mould shrinkage is expressed as a percent change in dimension of a specimen in relation to mould dimensions.

2) 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, mould configuration and processing conditions. Properties may also differ for along flow and across flow directions.

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

## Notes

<sup>1</sup> Mould Temperature: 180°C, Melt Temperature: 395°C, 1.00 mm

<sup>2</sup> Mould Temperature: 180°C, Melt Temperature: 395°C, 3.00 mm

<sup>3</sup> Mould Temperature: 180°C, Melt Temperature: 415°C, 3.00 mm

<sup>4</sup> 395°C nozzle, 180°C tool

<sup>5</sup> At yield

<sup>6</sup> 200°C/4h

<sup>7</sup> Average

<sup>8</sup> Along flow

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