

# VICTREX ST™ POLYMER G45

## General Information

### Product Description

High performance thermoplastic material, unreinforced PolyEtherKetoneEtherKetoneKetone (PEKEKK), semi crystalline, depth filtered granules for injection moulding, standard flow, colour natural/beige.

Applications for high strength and stiffness as well as good ductility at higher temperatures. Chemically resistant to aggressive environments.

## Material Properties

Physical	Nominal Value	Unit	Test Method
Density (Crystalline)	1.30	g/cm <sup>3</sup>	ISO 1183
Spiral Flow			Internal Method
-- 1	16.0	cm	
-- 2	68.0	cm	
-- 3	19.0	cm	
Molding Shrinkage			ISO 294-4
Across Flow <sup>4</sup>	1.6	%	
Across Flow <sup>5</sup>	1.2	%	
Flow <sup>4</sup>	1.4	%	
Flow <sup>5</sup>	1.1	%	
Water Absorption Saturation (100°C)	0.95	%	ISO 62
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (23°C)	4200	MPa	ISO 527-1
Tensile Stress (Yield, 23°C)	115	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	11	%	ISO 527-2
Flexural Modulus (23°C)	4000	MPa	ISO 178
Flexural Stress			ISO 178
3.5% Strain, 23°C	130	MPa	
23°C <sup>6</sup>	190	MPa	
125°C	110	MPa	
175°C	35.0	MPa	
275°C	20.0	MPa	
Compressive Stress			ISO 604
23°C	145	MPa	
120°C	90.0	MPa	
200°C	35.0	MPa	
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (23°C)	4.0	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	No Break		ISO 179/1U
Notched Izod Impact Strength (23°C)	4.5	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)	84.5		ISO 868

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<b>Thermal</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Deflection Temperature Under Load 1.8 MPa, Unannealed	172	°C	ISO 75-2/Af
Glass Transition Temperature			ISO 11357-2
Onset	162	°C	
Midpoint	169	°C	
Melting Temperature	387	°C	ISO 11357-3
CLTE - Flow			ISO 11359-2
< 162°C	45	ppm/K	
> 162°C	105	ppm/K	
CLTE - Average			ISO 11359-2
< 162°C	55	ppm/K	
> 162°C	130	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 (23°C)	1.0E+16	ohms·cm	IEC 60093
Dielectric Strength (2.00 mm)	23.0	kV/mm	IEC 60243-1
Dielectric Constant (23°C, 1 kHz)	3.00		IEC 60250
Dissipation Factor (23°C, 1 MHz)	4.0E-3		IEC 60250
Comparative Tracking Index	150	V	IEC 60112
<b>Fill Analysis</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Melt Viscosity (420°C)	225	Pa·s	ISO 11443

## Typical Processing Information

<b>Injection</b>	<b>Nominal Value</b>	<b>Unit</b>
Drying Temperature	150 to 180	°C
Drying Time	3.0 to 6.0	hr
Suggested Max Moisture	0.020	%
Hopper Temperature	< 100	°C
Rear Temperature	385	°C
Middle Temperature	395 to 400	°C
Front Temperature	405	°C
Nozzle Temperature	410	°C
Mould Temperature	200 to 220	°C

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## Injection Notes

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Drying Temperature / Time: 180°C / 3h or 150°C / 6h (residual moisture <0.02%)

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

Gate: >1mm 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: 200°C, Melt Temperature: 395°C, 1.00 mm

<sup>2</sup> Mould Temperature: 200°C, Melt Temperature: 395°C, 3.00 mm

<sup>3</sup> Mould Temperature: 220°C, Melt Temperature: 415°C, 1.00 mm

<sup>4</sup> 415°C nozzle, 220°C tool

<sup>5</sup> 395°C nozzle, 200°C tool

<sup>6</sup> At yield

<sup>7</sup> Average

<sup>8</sup> Along flow

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