VICTREX ST™ POLYMER 45CA30

General Information

Product Description

High performance thermoplastic material, 30% carbon fibre reinforced PolyEtherKetoneEtherKetoneKetone (PEKEKK), semi crystalline, granules for injection moulding, standard flow, colour black.

Applications for higher strength and stiffness at elevated temperatures in a static or dynamic system. Excellent wear resistance, low coefficient of friction, low coefficient of thermal expansion. Chemically resistant to aggressive environments.

Material Properties

Physical	Nominal Value	Unit	Test Method
Density (Crystalline)	1.41	g/cm³	ISO 1183
Spiral Flow			Internal Method
-- [1]	9.00	cm	
-- [2]	41.0	cm	
Molding Shrinkage [3]			ISO 294-4
Across Flow	0.70	%	
Flow	0.10	%	
Water Absorption Saturation (100°C)	0.80	%	ISO 62
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus (23°C)	28000	MPa	ISO 527-1
Tensile Stress			ISO 527-2
Break, 23°C	275	MPa	
Break, 125°C	180	MPa	
Break, 175°C	120	MPa	
Break, 275°C	70.0	MPa	
Tensile Strain (Break, 23°C)	1.7	%	ISO 527-2
Flexural Modulus (23°C)	23500	MPa	ISO 178
Flexural Stress			ISO 178
23°C	400	MPa	
125°C	290	MPa	
175°C	190	MPa	
275°C	100	MPa	
Compressive Stress			ISO 604
23°C	310	MPa	
120°C	210	MPa	
200°C	95.0	MPa	
250°C	65.0	MPa	
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy Notched Impact Strength (23°C)	7.0	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	50.0	kJ/m²	ISO 179/1U
Notched Izod Impact Strength (23°C)	10.0	kJ/m²	ISO 180/A
Unnotched Izod Impact Strength (23°C)	50.0	kJ/m²	ISO 180
Hardness	**Nominal Value**	**Unit**	**Test Method**
Shore Hardness (Shore D, 23°C)	88.0		ISO 868

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Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ISO 75-2/Af
1.8 MPa, Unannealed	383	°C	
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	10	ppm/K	
> 162°C	13	ppm/K	
CLTE - Average			ISO 11359-2
< 162°C	40	ppm/K	
> 162°C	95	ppm/K	
Thermal Conductivity			ISO 22007-4
23°C [4]	0.95	W/m/K	
23°C [5]	2.0	W/m/K	

Electrical	Nominal Value	Unit	Test Method
Volume Resistivity [6] (23°C)	1.0E+5	ohms·cm	ASTM D4496

Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (420°C)	650	Pa·s	ISO 11443

Typical Processing Information

Injection	Nominal Value	Unit
Drying Temperature	150 to 180	°C
Drying Time	3.0 to 6.0	hr
Hopper Temperature	< 100	°C
Rear Temperature	390	°C
Middle Temperature	400 to 405	°C
Front Temperature	410	°C
Nozzle Temperature	415	°C
Mould Temperature	200 to 230	°C

Injection Notes

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 or upon request.

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Notes

[1] Mould Temperature: 210°C, Melt Temperature: 415°C, 1.00 mm

[2] Mould Temperature: 210°C, Melt Temperature: 415°C, 3.00 mm

[3] 415°C nozzle, 210°C tool

[4] Average

[5] Along flow

[6] 1V

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