

# **VICTREX HT™ POLYMER 22CA30**

## **General Information**

#### **Product Description**

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

Higher temperature applications for higher strength and stiffness in a static or dynamic system. Excellent wear resistance, low coefficient of friction, low coefficient of thermal expansion. Chemically resistant to aggressive environments.

Physical	Nominal Value	Unit	Test Method
Density (Crystalline)	1.41	g/cm³	ISO 1183
Spiral Flow <sup>1</sup>	8.00	cm	Internal Method
Molding Shrinkage <sup>2</sup>			ISO 294-4
Across Flow	0.70	%	
Flow	0.10	%	
Water Absorption (Saturation, 23°C)	0.50	%	ISO 62
Water Absorption - Saturation (100°C)	0.60	%	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	170	MPa	
Break, 175°C	110	MPa	
Break, 225°C	80.0	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	265	MPa	
175°C		MPa	
275°C	100	MPa	
Compressive Stress			ISO 604
23℃	300	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)		kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)		kJ/m²	ISO 179/1U
Notched Izod Impact Strength (23°C)		kJ/m²	ISO 180/A
Unnotched Izod Impact Strength (23°C)	50.0	kJ/m²	ISO 180
Hardness	Nominal Value	Unit	Test Method

## VICTREX HT™ POLYMER 22CA30

Volume Resistivity <sup>5</sup> (23°C)  1.0E+5 ohms·cm ASTM D4496  Rammability  Nominal Value Unit  Test Method  Glow Wire Flammability Index (2.0 mm)  960 °C IEC 60695-2-12  Fill Analysis  Nominal Value Unit  Test Method  Melt Viscosity (400°C)  525 Pa·s ISO 11443	Thermal	Nominal Value	Unit	Test Method
Sol 1357-2	Deflection Temperature Under Load			ISO 75-2/Af
Onset Midpoint         152 °C           Midpoint         160 °C           Melting Temperature         373 °C         ISO 11357-3           CLTE - Flow         5 pm/K         ISO 11359-2           < 152°C         5 pm/K         5 pm/K           > 152°C         35 pm/K         152°C           CLTE - Average         35 pm/K         152°C           < 152°C         35 pm/K         152°C           152°C         35 pm/K         152°C           < 152°C         35 pm/K         152°C           152°C         90 pm/K         152°C           152°C         90 pm/K         152°C           152°C         35 pm/K         150 22007-4           23°C³         0.95 W/m/K         150 22007-4           23°C³         0.95 W/m/K         150 22007-4           23°C³         0.95 W/m/K         150 22007-4           24ctrical         Nominal Value         150 22007-4         150 22007-4           25ctrical         Nominal Value         160 Mission         <	1.8 MPa, Unannealed	368	°C	
Midpoint         160         °C           Melting Temperature         373         °C         ISO 11357-3           CLTE - Flow         5         ppm/K         SC 11359-2           < 152°C         5         ppm/K         SC 11359-2           CLTE - Average         5         ppm/K         SC 11359-2           CLTE - Average         35         ppm/K         SC 11359-2           * 152°C         30         ppm/K         Pm/K           Thermal Conductivity         90         ppm/K         Pm/K           23°C 3         0.95         W/m/K         W/m/K           23°C 4         0.95         W/m/K         M/m/K           Electrical         Nominal Value         Unit         Test Method           Volume Resistivity 5 (23°C)         1.0E+5         ohnscr         ASTM D4496           Stammability         Nominal Value         Unit         Test Method           Glow Wire Flammability Index (2.0 mm)         960 °C         15C 60695-2-12           Fill Analysis         Nominal Value         Unit         Test Method           Well Viscosity (400°C)         252 Pars         ISO 11443           Exprise         Nominal Value         Unit         Test Method	Glass Transition Temperature			ISO 11357-2
Melting Temperature	Onset	152	°C	
SO 11359-2	Midpoint	160	°C	
< 152°C	Melting Temperature	373	°C	ISO 11357-3
\$ 152°C         5 ppm/K           CLTE - Average         ISO 11359-2           \$ 152°C         35 ppm/K           \$ 152°C         90 ppm/K           Thermal Conductivity         ISO 22007-4           23°C 3         0.95 W/m/K           23°C 4         0.95 W/m/K           Electrical         Nominal Value         Unit         Test Method           Volume Resistivity 5 (23°C)         1.0E+5 ohms-cm         ASTM D4496           Flammability         Nominal Value         Unit         Test Method           Glow Wire Flammability Index (2.0 mm)         960 °C         IEC 60695-2-12           Fill Analysis         Nominal Value         Unit         Test Method           Melt Viscosity (400°C)         525 Pa·s         ISO 11443           Expiral Processing Information         Nominal Value         Unit         Unit           Propring Temperature         120 to 150 °C         C           Drying Temperature         3.0 to 5.0 hr         Hopper Temperature         4 100 °C           Rear Temperature         380 °C         C           Middle Temperature         390 to 395 °C         C	CLTE - Flow			ISO 11359-2
CLTE - Average	< 152°C	5	ppm/K	
< 152°C	> 152°C	5	ppm/K	
> 152°C         90 ppm/K           Thermal Conductivity         ISO 22007-4           23°C³         0.95 W/m/K           23°C⁴         2.0 W/m/K           Electrical         Nominal Value         Unit         Test Method           Volume Resistivity ⁵ (23°C)         1.0E+5 ohms-cm         ASTM D4496           Flammability         Nominal Value         Unit         Test Method           Glow Wire Flammability Index (2.0 mm)         960 °C         IEC 60695-2-12           Fill Analysis         Nominal Value         Unit         Test Method           Melt Viscosity (400°C)         525 Pa·s         ISO 11443           Typical Processing Information         Nominal Value         Unit           Transpection         Nominal Value         Unit           Typical Processing Information         Nominal Value         Unit           Electrical         Nominal Value         Unit         Test Method           Typical Processing	CLTE - Average			ISO 11359-2
Thermal Conductivity   23°C 3   0.95   W/m/K   23°C 4   2.0   W/m/K	< 152°C	35	ppm/K	
23°C 3	> 152°C	90	ppm/K	
23°C 4         2.0         W/m/K           Electrical         Nominal Value         Unit         Test Method           Volume Resistivity 5 (23°C)         1.0E+5         ohms-cm         ASTM D4496           Flammability         Nominal Value         Unit         Test Method           Glow Wire Flammability Index (2.0 mm)         960         °C         IEC 60695-2-12           Fill Analysis         Nominal Value         Unit         Test Method           Melt Viscosity (400°C)         525         Pa·s         ISO 11443           Typical Processing Information         Nominal Value         Unit           Drying Temperature         120 to 150         °C           Drying Time         3.0 to 5.0         hr           Hopper Temperature         4 100         °C           Rear Temperature         380         °C           Middle Temperature         390 to 395         °C	Thermal Conductivity			ISO 22007-4
Nominal Value   Unit   Test Method     Volume Resistivity 5 (23°C)   1.0E+5   ohms-cm   ASTM D4496     Immability   Nominal Value   Unit   Test Method     Glow Wire Flammability Index (2.0 mm)   960 °C   IEC 60695-2-12     IEI Analysis   Nominal Value   Unit   Test Method     Melt Viscosity (400°C)   525   Pa·s   ISO 11443     Importance   Nominal Value   Unit     Importance   Izo to 150 °C     Drying Temperature   120 to 150 °C     Importance   Izo to 150 °C     Izo to 150 °C	23°C³	0.95	W/m/K	
Volume Resistivity <sup>5</sup> (23°C)  1.0E+5 ohms·cm ASTM D4496  Flammability  Nominal Value Unit  Test Method  Glow Wire Flammability Index (2.0 mm)  Glow Wire Flammability Index (2.0 mm)  Melt Viscosity (400°C)  Nominal Value Unit  Test Method  Test Method  Nominal Value Unit  Test Method  Nominal Processing Information  Nominal Value Unit  Drying Temperature  120 to 150 °C  Drying Time  3.0 to 5.0 hr  Hopper Temperature  4 100 °C  Rear Temperature  380 °C  Middle Temperature  390 to 395 °C	23°C <sup>4</sup>	2.0	W/m/K	
Flammability Glow Wire Flammability Index (2.0 mm) Glow Wire Flammability Index (2.0 mm) Fill Analysis Nominal Value Melt Viscosity (400°C) Function Functio	Electrical	Nominal Value	Unit	Test Method
Glow Wire Flammability Index (2.0 mm)  Fill Analysis  Nominal Value  Melt Viscosity (400°C)  Typical Processing Information  njection  Nominal Value  Drying Temperature  Drying Time  120 to 150  Processing Information  Hopper Temperature  4 100  Rear Temperature  380  Middle Temperature  390 to 395  C  IEC 60695-2-12  IEC 60695-2-12	Volume Resistivity <sup>5</sup> (23°C)	1.0E+5	ohms·cm	ASTM D4496
Nominal Value Unit Test Method Melt Viscosity (400°C)  Typical Processing Information  Nominal Value Unit  Drying Temperature  120 to 150 °C  Drying Time  3.0 to 5.0 hr  Hopper Temperature  4 100 °C  Rear Temperature  380 °C  Middle Temperature  390 to 395 °C	Flammability	Nominal Value	Unit	Test Method
Melt Viscosity (400°C)  Typical Processing Information  Nominal Value Unit  Drying Temperature 120 to 150 °C  Drying Time 3.0 to 5.0 hr  Hopper Temperature < 100 °C  Rear Temperature 390 to 395 °C	Glow Wire Flammability Index (2.0 mm)	960	°C	IEC 60695-2-12
Typical Processing InformationnjectionNominal ValueUnitDrying Temperature120 to 150°CDrying Time3.0 to 5.0hrHopper Temperature< 100	Fill Analysis	Nominal Value	Unit	Test Method
njectionNominal ValueUnitDrying Temperature120 to 150°CDrying Time3.0 to 5.0hrHopper Temperature< 100	Melt Viscosity (400°C)	525	Pa∙s	ISO 11443
Drying Temperature 120 to 150 °C  Drying Time 3.0 to 5.0 hr  Hopper Temperature < 100 °C  Rear Temperature 380 °C  Middle Temperature 390 to 395 °C	Typical Processing Information			
Drying Time 3.0 to 5.0 hr Hopper Temperature < 100 °C Rear Temperature 380 °C Middle Temperature 390 to 395 °C	Injection	Nominal Value	Unit	
Hopper Temperature < 100 °C Rear Temperature 380 °C Middle Temperature 390 to 395 °C	Drying Temperature	120 to 150	°C	
Rear Temperature 380 °C Middle Temperature 390 to 395 °C	Drying Time	3.0 to 5.0	hr	
Middle Temperature 390 to 395 °C	Hopper Temperature	< 100	°C	
*** ** <b>F</b> *** ** **	Rear Temperature	380	°C	
Front Temperature 400 °C	Middle Temperature	390 to 395	°C	
	Front Temperature	400	°C	

Injection Notes
Important notes:

Nozzle Temperature

Mould Temperature

- 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.

405 °C

190 to 215 °C

- 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**

- <sup>1</sup> Mould Temperature: 200°C, Melt Temperature: 405°C, 1.00 mm
- <sup>2</sup> 405°C nozzle, 200°C tool
- <sup>3</sup> Average
- <sup>4</sup> Along flow
- <sup>5</sup> 1V

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