VICTREX FG™ 100 Series

Product Description

High performance Food Grade thermoplastic material, unreinforced **P**oly**E**ther**E**ther**K**etone (PEEK), semi crystalline, granules for injection moulding and extrusion, colour natural/beige and black.

Regulatory

Food Contact compliance for EU 10/2011 (FG100 & FG120), FDA 21CFR 177.2415 (FG100, FG120 & FG140), China (FG100 & FG120) and South America (FG100 & FG120).
Drinking water compliance to WRAS (UK).

Typical Application Areas

The VICTREX FG™ 100 family of materials is intended for applications needing STRENGTH: mechanical properties at ambient and elevated temperatures along with long-term creep resistance, point and edge retention and low coefficient of thermal expansion for metal replacement. Chemically resistant to aggressive environments, suitable for sterilisation for food contact applications.

MATERIAL PROPERTIES						
	CONDITIONS	TEST METHOD	UNITS	FG100	FG120	FG140
Mechanical Data						
Tensile Strength	@yield, 23°C	ISO 527	MPa	105		
	@break, 23°C				180	270
Tensile Elongation	@break, 23°C	ISO 527	%	20	2.2	1.5
Flexural Strength	@ yield, 23°C	ISO 178	MPa	175		
	@ break, 23°C				275	380
	125°C			90	210	275
	175°C				115	130
	275°C				75	65
Flexural Modulus	23°C	ISO 178	GPa	3.9	11.5	24
Compressive Strength	23°C	ISO 604	MPa	130	250	300
	120°C			80	160	200
	200°C				55	70
Tensile Creep	23°C, 1000 hrs		%	0.16@30MPa	0.09@60MPa	0.07@80MPa
	120°C, 1000 hrs		%	0.76@30MPa	0.21@60MPa	0.12@80MPa
Izod Impact Strength	Notched, 23°C	ISO 180/A	$kJ\ m^{-2}$	5.0	8.0	7.5
	Unnotched, 23°C	ISO 180/U		n/b	40	40
Thermal Data						
Melting Point		ISO 11357	°C	343	343	343
Glass Transition (Tg)	Onset	ISO 11357	°C	143	143	143
Coefficient of Thermal Expansion	Along flow below Tg	ISO 11359	$ppm\ K^{-1}$	50	20	5
	Average below Tg			55	45	40
	Along flow above Tg			120	20	6
	Average above Tg			140	110	100
Heat Deflection Temperature	1.8 MPa	ISO 75A-f	°C	156	335	339
Thermal Conductivity	Average, 23°C	ISO 22007-4	$W\ m^{-1}\ K^{-1}$	0.29	0.30	0.95
Miscellaneous						
Density	Crystalline	ISO 1183	$g\ cm^{-3}$	1.30	1.52	1.40
Shore D hardness	23°C	ISO 868		85	87	87.5
Water Absorption by immersion	Saturation, 23°C	ISO 62-1	%	0.45	0.3	0.3
	Saturation, 100°C			0.55	0.45	0.45

Electrical Properties						
Volume Resistivity	23°C	IEC 60093	Ω cm	10^{16}	10^{16}	10^{5} *
Dielectric Strength	2mm thickness	IEC 60243-1	kV mm^{-1}	23	21.5	-

*This property provided for informational purposes only – resistivity is not controlled

Typical Processing			
Conditions	**FG100**	**FG120**	**FG140**
Drying Temperature / Time	150°C / 3h or 120°C / 5h (residual moisture <0.02%)		
Temperature settings	350 / 355 / 355 / 360 / 365°C (Nozzle)	355 / 360 /360 / 365 / 370°C (Nozzle)	365 / 370 / 375 / 380 / 385°C (Nozzle)
Hopper Temperature	Not greater than 100°C		
Mould Temperature	160°C - 200°C (max 250°C)	170°C - 200°C (max 250°C)	180°C - 210°C (max 250°C)
Runner	Die / nozzle >3mm, manifold >3.5mm		
Gate	>1mm or 0.5 x part thickness	>2mm or 0.5 x part thickness	

Mould Shrinkage + Spiral Flow						
Conditions		**Method**	**Units**	**FG100**	**FG120**	**FG140**
Nozzle Temperature			°C	365	370	385
Tool temperature			°C	160	180	200
Spiral Flow	1mm thick section	Victrex	mm	220	220	140
Mould Shrinkage	Along flow	ISO 294-4	%	1.0	0.3	0.1
	Across flow			1.3	0.9	0.5

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.