

# VICTREX™ PEEK POLYMER 450CA20

## General Information

### Product Description

High performance thermoplastic material, 20% carbon fibre reinforced PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding and extrusion, standard flow, colour black.

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.

## Material Properties

| Physical                                                 | Nominal Value | Unit              | Test Method     |
|----------------------------------------------------------|---------------|-------------------|-----------------|
| Density (Crystalline)                                    | 1.37          | g/cm <sup>3</sup> | ISO 1183        |
| Spiral Flow <sup>1</sup>                                 | 10.0          | cm                | Internal Method |
| Molding Shrinkage <sup>2</sup>                           |               |                   | ISO 294-4       |
| Across Flow                                              | 0.70          | %                 |                 |
| Flow                                                     | 0.20          | %                 |                 |
| Water Absorption (Saturation, 23°C)                      | 0.35          | %                 | ISO 62          |
| Water Absorption Saturation (100°C)                      | 0.50          | %                 | ISO 62          |
| Mechanical                                               | Nominal Value | Unit              | Test Method     |
| Tensile Modulus (23°C)                                   | 19500         | MPa               | ISO 527-1       |
| Tensile Stress (Break, 23°C)                             | 230           | MPa               | ISO 527-2       |
| Tensile Strain (Break, 23°C)                             | 2.1           | %                 | ISO 527-2       |
| Flexural Modulus (23°C)                                  | 16500         | MPa               | ISO 178         |
| Flexural Stress (23°C)                                   | 340           | MPa               | ISO 178         |
| Impact                                                   | Nominal Value | Unit              | Test Method     |
| Notched Izod Impact Strength (23°C)                      | 9.5           | kJ/m <sup>2</sup> | ISO 180/A       |
| Unnotched Izod Impact Strength (23°C)                    | 40.0          | kJ/m <sup>2</sup> | ISO 180         |
| Hardness                                                 | Nominal Value | Unit              | Test Method     |
| Shore Hardness (Shore D, 23°C)                           | 86.0          |                   | ISO 868         |
| Thermal                                                  | Nominal Value | Unit              | Test Method     |
| Deflection Temperature Under Load<br>1.8 MPa, Unannealed | 325           | °C                | ISO 75-2/Af     |
| 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                                                  | 8             | ppm/K             |                 |
| > 143°C                                                  | 8             | ppm/K             |                 |
| CLTE - Average                                           |               |                   | ISO 11359-2     |
| < 143°C                                                  | 45            | ppm/K             |                 |
| > 143°C                                                  | 110           | ppm/K             |                 |
| Electrical                                               | Nominal Value | Unit              | Test Method     |
| Volume Resistivity <sup>3</sup> (23°C)                   | 1.0E+7        | ohms·cm           | IEC 60093       |
| Flammability                                             | Nominal Value | Unit              | Test Method     |
| Glow Wire Flammability Index (2.0 mm)                    | 960           | °C                | IEC 60695-2-12  |

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| Fill Analysis          | Nominal Value | Unit | Test Method |
|------------------------|---------------|------|-------------|
| Melt Viscosity (400°C) | 525           | Pa·s | ISO 11443   |

Typical Processing Information

| Injection          | Nominal Value | Unit |
|--------------------|---------------|------|
| Drying Temperature | 120 to 150    | °C   |
| Drying Time        | 3.0 to 5.0    | hr   |
| Hopper Temperature | < 100         | °C   |
| Rear Temperature   | 375           | °C   |
| Middle Temperature | 380 to 385    | °C   |
| Front Temperature  | 390           | °C   |
| Nozzle Temperature | 395           | °C   |
| Mould Temperature  | 180 to 210    | °C   |

| Injection Notes                            |
|--------------------------------------------|
| Runner: Die / nozzle >3mm, manifold >3.5mm |
| Gate: >2mm or 0.5 x part thickness         |

Notes

|                                                                         |
|-------------------------------------------------------------------------|
| <sup>1</sup> Mould Temperature: 200°C, Melt Temperature: 395°C, 1.00 mm |
| <sup>2</sup> 395°C nozzle, 200°C tool                                   |
| <sup>3</sup> 1V                                                         |