

# VICTREX™ PEEK POLYMER 650CA30

## General Information

### Product Description

High performance thermoplastic material, 30% carbon fibre reinforced PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding and extrusion, low 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)                   | 1.40          | g/cm <sup>3</sup> | ISO 1183        |
| Spiral Flow                             |               |                   | Internal Method |
| -- 1                                    | 8.00          | cm                |                 |
| -- 2                                    | 37.5          | cm                |                 |
| Molding Shrinkage <sup>3</sup>          |               |                   | ISO 294-4       |
| Across Flow                             | 0.50          | %                 |                 |
| Flow                                    | 0.10          | %                 |                 |
| Water Absorption (Saturation, 23°C)     | 0.30          | %                 | ISO 62          |
| Water Absorption Saturation (100°C)     | 0.45          | %                 | ISO 62          |
| Mechanical                              | Nominal Value | Unit              | Test Method     |
| Tensile Modulus (23°C)                  | 25000         | MPa               | ISO 527-1       |
| Tensile Stress                          |               |                   | ISO 527-2       |
| Break, 23°C                             | 250           | MPa               |                 |
| Break, 125°C                            | 150           | MPa               |                 |
| Break, 175°C                            | 85.0          | MPa               |                 |
| Break, 275°C                            | 50.0          | MPa               |                 |
| Tensile Strain (Break, 23°C)            | 1.9           | %                 | ISO 527-2       |
| Flexural Modulus (23°C)                 | 21500         | MPa               | ISO 178         |
| Flexural Stress                         |               |                   | ISO 178         |
| 23°C                                    | 370           | MPa               |                 |
| 125°C                                   | 250           | MPa               |                 |
| 175°C                                   | 120           | MPa               |                 |
| 275°C                                   | 60.0          | MPa               |                 |
| Compressive Stress                      |               |                   | ISO 604         |
| 23°C                                    | 280           | MPa               |                 |
| 120°C                                   | 180           | MPa               |                 |
| 200°C                                   | 60.0          | MPa               |                 |
| Impact                                  | Nominal Value | Unit              | Test Method     |
| Charpy Notched Impact Strength (23°C)   | 10.5          | kJ/m <sup>2</sup> | ISO 179/1eA     |
| Charpy Unnotched Impact Strength (23°C) | 60.0          | kJ/m <sup>2</sup> | ISO 179/1U      |
| Notched Izod Impact Strength (23°C)     | 12.0          | kJ/m <sup>2</sup> | ISO 180/A       |
| Unnotched Izod Impact Strength (23°C)   | 60.0          | kJ/m <sup>2</sup> | ISO 180         |
| Thermal                                 | Nominal Value | Unit              | Test Method     |
| Deflection Temperature Under Load       |               |                   | ISO 75-2/Af     |
| 1.8 MPa, Unannealed                     | 333           | °C                |                 |

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| Thermal                      | Nominal Value | Unit  | Test Method |
|------------------------------|---------------|-------|-------------|
| 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                      | 6             | ppm/K |             |
| > 143°C                      | 6             | ppm/K |             |
| CLTE - Average               |               |       | ISO 11359-2 |
| < 143°C                      | 50            | ppm/K |             |
| > 143°C                      | 140           | ppm/K |             |
| Thermal Conductivity         |               |       | ISO 22007-4 |
| 23°C <sup>4</sup>            | 0.95          | W/m/K |             |
| 23°C <sup>5</sup>            | 2.0           | W/m/K |             |

| Electrical                             | Nominal Value | Unit    | Test Method |
|----------------------------------------|---------------|---------|-------------|
| Volume Resistivity <sup>6</sup> (23°C) | 1.0E+5        | ohms·cm | IEC 60093   |

| Fill Analysis          | Nominal Value | Unit | Test Method |
|------------------------|---------------|------|-------------|
| Melt Viscosity (420°C) | 800           | 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   | 390           | °C   |
| Middle Temperature | 400 to 405    | °C   |
| Front Temperature  | 410           | °C   |
| Nozzle Temperature | 415           | °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: 415°C, 1.00 mm |
| <sup>2</sup> Mould Temperature: 200°C, Melt Temperature: 415°C, 3.00 mm |
| <sup>3</sup> 415°C nozzle, 200°C tool                                   |
| <sup>4</sup> Average                                                    |
| <sup>5</sup> Along flow                                                 |
| <sup>6</sup> 1V                                                         |