

# VICTREX® PEEK 450FE20

Polyetheretherketone

Victrex plc

## Message:

High performance thermoplastic material, 20% filled with PTFE PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding and extrusion, standard flow, FDA food contact compliant, colour natural / beige.

Tribological applications. Excellent wear resistance, very low coefficient of friction. Chemically resistant to aggressive environments.

| General Information                |                                  |                   |                 |
|------------------------------------|----------------------------------|-------------------|-----------------|
| Filler / Reinforcement             | PTFE fiber, 20% filler by weight |                   |                 |
| Features                           | Semicrystallization              |                   |                 |
|                                    | Low friction coefficient         |                   |                 |
|                                    | Good liquidity                   |                   |                 |
|                                    | Good chemical resistance         |                   |                 |
|                                    | Good wear resistance             |                   |                 |
|                                    | Compliance of Food Exposure      |                   |                 |
| Agency Ratings                     | FDA Food Exposure, Not Rated     |                   |                 |
| Appearance                         | Beige                            |                   |                 |
|                                    | Natural color                    |                   |                 |
| Forms                              | Particles                        |                   |                 |
| Physical                           | Nominal Value                    | Unit              | Test Method     |
| Density <sup>1</sup>               | 1.40                             | g/cm <sup>3</sup> | ISO 1183        |
| Spiral Flow                        | 13.0                             | cm                | Internal method |
| Molding Shrinkage <sup>2</sup>     |                                  |                   | ISO 294-4       |
| Vertical flow direction: 180°C     | 1.7                              | %                 | ISO 294-4       |
| Flow direction: 180°C              | 1.2                              | %                 | ISO 294-4       |
| Hardness                           | Nominal Value                    | Unit              | Test Method     |
| Durometer Hardness (Shore D, 23°C) | 81                               |                   | ISO 868         |
| Mechanical                         | Nominal Value                    | Unit              | Test Method     |
| Tensile Modulus (23°C)             | 2900                             | MPa               | ISO 527-2       |
| Tensile Stress (Yield, 23°C)       | 78.0                             | MPa               | ISO 527-2       |
| Tensile Strain (Break, 23°C)       | 25                               | %                 | ISO 527-2       |
| Flexural Modulus (23°C)            | 3200                             | MPa               | ISO 178         |
| Flexural Stress                    |                                  |                   | ISO 178         |
| 3.5% strain, 23°C                  | 100                              | MPa               | ISO 178         |
| 23°C <sup>3</sup>                  | 125                              | MPa               | ISO 178         |
| 125°C                              | 70.0                             | MPa               | ISO 178         |
| 175°C                              | 18.0                             | MPa               | ISO 178         |
| 275°C                              | 13.0                             | MPa               | ISO 178         |

|                                                                              |                      |                   |                    |
|------------------------------------------------------------------------------|----------------------|-------------------|--------------------|
| Compressive Stress                                                           |                      |                   | ISO 604            |
| 23°C                                                                         | 105                  | MPa               | ISO 604            |
| 120°C                                                                        | 65.0                 | MPa               | ISO 604            |
| <b>Impact</b>                                                                | <b>Nominal Value</b> | <b>Unit</b>       | <b>Test Method</b> |
| Charpy Notched Impact Strength (23°C)                                        | 6.0                  | kJ/m <sup>2</sup> | ISO 179/1eA        |
| Charpy Unnotched Impact Strength (23°C)                                      | No Break             |                   | ISO 179            |
| Notched Izod Impact (23°C)                                                   | 7.5                  | kJ/m <sup>2</sup> | ISO 180/A          |
| Unnotched Izod Impact Strength (23°C)                                        | No Break             |                   | ISO 180            |
| <b>Thermal</b>                                                               | <b>Nominal Value</b> | <b>Unit</b>       | <b>Test Method</b> |
| Heat Deflection Temperature (1.8 MPa, Unannealed)                            | 150                  | °C                | ISO 75-2/Af        |
| Glass Transition Temperature                                                 | 143                  | °C                | ISO 11357-2        |
| Melting Temperature                                                          | 343                  | °C                | ISO 11357-3        |
| Linear thermal expansion coefficient                                         |                      |                   | ISO 11359-2        |
| Flow: < 143°C                                                                | 4.0E-4               | cm/cm/°C          | ISO 11359-2        |
| Flow: > 143°C                                                                | 1.2E-3               | cm/cm/°C          | ISO 11359-2        |
| Lateral: < 143°C                                                             | 6.0E-4               | cm/cm/°C          | ISO 11359-2        |
| Lateral: > 143°C                                                             | 1.4E-3               | cm/cm/°C          | ISO 11359-2        |
| <b>Electrical</b>                                                            | <b>Nominal Value</b> | <b>Unit</b>       | <b>Test Method</b> |
| Volume Resistivity (23°C)                                                    | 1.0E+16              | ohms·cm           | IEC 60093          |
| Dielectric Strength (2.00 mm)                                                | 26                   | kV/mm             | IEC 60243-1        |
| Dielectric Constant (23°C, 1 kHz)                                            | 2.80                 |                   | IEC 60250          |
| Dissipation Factor (23°C, 1 MHz)                                             | 4.0E-3               |                   | IEC 60250          |
| Comparative Tracking Index                                                   | 150                  | V                 | IEC 60112          |
| <b>Fill Analysis</b>                                                         | <b>Nominal Value</b> | <b>Unit</b>       | <b>Test Method</b> |
| Melt Viscosity (400°C)                                                       | 340                  | Pa·s              | ISO 11443          |
| <b>Injection</b>                                                             | <b>Nominal Value</b> | <b>Unit</b>       |                    |
| Drying Temperature                                                           | 120 - 150            | °C                |                    |
| Drying Time                                                                  | 3.0 - 5.0            | hr                |                    |
| Hopper Temperature                                                           | < 100                | °C                |                    |
| Rear Temperature                                                             | 355                  | °C                |                    |
| Middle Temperature                                                           | 360 - 365            | °C                |                    |
| Front Temperature                                                            | 370                  | °C                |                    |
| Nozzle Temperature                                                           | 375                  | °C                |                    |
| Mold Temperature                                                             | 170 - 200            | °C                |                    |
| <b>Injection instructions</b>                                                |                      |                   |                    |
| Runner: Die / nozzle >3mm, manifold >3.5mmGate: >2mm or 0.5 x part thickness |                      |                   |                    |
| <b>NOTE</b>                                                                  |                      |                   |                    |
| 1.                                                                           | Crystalline          |                   |                    |
| 2.                                                                           | 375°C nozzle         |                   |                    |
| 3.                                                                           | at Yield             |                   |                    |

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