

# VICTREX FG™ POLYMER 120/121

## General Information

### Product Description

High performance Food Grade thermoplastic material, glass fiber reinforced PolyEtherEtherKetone (PEEK), semi crystalline, granules for injection moulding, colour natural/beige (120) and black (121).

The VICTREX FG™ 100 family of materials is intended for applications needing 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.

## Material Properties

| Physical                              | Nominal Value | Unit              | Test Method     |
|---------------------------------------|---------------|-------------------|-----------------|
| Density (Crystalline)                 | 1.52          | g/cm <sup>3</sup> | ISO 1183        |
| Spiral Flow <sup>1</sup>              | 16.0          | cm                | Internal Method |
| Molding Shrinkage <sup>2</sup>        |               |                   | ISO 294-4       |
| Across Flow                           | 0.90          | %                 |                 |
| Flow                                  | 0.30          | %                 |                 |
| 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 Stress                        |               |                   | ISO 527-2       |
| Break, 23°C                           | 180           | MPa               |                 |
| Break, 125°C                          | 120           | MPa               |                 |
| Break, 175°C                          | 70.0          | MPa               |                 |
| Break, 225°C                          | 60.0          | MPa               |                 |
| Break, 275°C                          | 40.0          | MPa               |                 |
| Tensile Strain (Break, 23°C)          | 2.2           | %                 | ISO 527-2       |
| Tensile Creep - @ 1000 hr, 60 MPa     |               |                   |                 |
| 23°C                                  | 0.09          | %                 |                 |
| 120°C                                 | 0.21          | %                 |                 |
| Flexural Modulus (23°C)               | 11500         | MPa               | ISO 178         |
| Flexural Stress                       |               |                   | ISO 178         |
| 23°C                                  | 275           | MPa               |                 |
| 125°C                                 | 210           | MPa               |                 |
| 175°C                                 | 115           | MPa               |                 |
| 275°C                                 | 75.0          | MPa               |                 |
| Compressive Stress                    |               |                   | ISO 604         |
| 23°C                                  | 250           | MPa               |                 |
| 120°C                                 | 160           | MPa               |                 |
| 200°C                                 | 55.0          | MPa               |                 |
| Impact                                | Nominal Value | Unit              | Test Method     |
| Notched Izod Impact Strength (23°C)   | 8.0           | 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)        | 87.0          |                   | ISO 868         |

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| Thermal                                                  | Nominal Value | Unit    | Test Method |
|----------------------------------------------------------|---------------|---------|-------------|
| Deflection Temperature Under Load<br>1.8 MPa, Unannealed | 335           | °C      | ISO 75-2/Af |
| Glass Transition Temperature (Onset)                     | 143           | °C      | ISO 11357-2 |
| Melting Temperature                                      | 343           | °C      | ISO 11357-3 |
| CLTE - Flow                                              |               |         | ISO 11359-2 |
| < 143°C                                                  | 20            | ppm/K   |             |
| > 143°C                                                  | 20            | ppm/K   |             |
| CLTE - Average                                           |               |         | ISO 11359-2 |
| < 143°C                                                  | 45            | ppm/K   |             |
| > 143°C                                                  | 110           | ppm/K   |             |
| Thermal Conductivity <sup>3</sup> (23°C)                 | 0.30          | W/m/K   | ISO 22007-4 |
| Electrical                                               | Nominal Value | Unit    | Test Method |
| Volume Resistivity (23°C)                                | 1.0E+16       | ohms-cm | IEC 60093   |
| Dielectric Strength (2.00 mm)                            | 21.5          | kV/mm   | IEC 60243-1 |

## Typical Processing Information

| Injection              | Nominal Value | Unit |
|------------------------|---------------|------|
| Drying Temperature     | 120 to 150    | °C   |
| Drying Time            | 3.0 to 5.0    | hr   |
| Suggested Max Moisture | 0.020         | %    |
| Hopper Temperature     | < 100         | °C   |
| Rear Temperature       | 355           | °C   |
| Middle Temperature     | 360           | °C   |
| Front Temperature      | 365           | °C   |
| Nozzle Temperature     | 370           | °C   |
| Mold Temperature       | 170 to 200    | °C   |

### Injection Notes

Runner: Die / nozzle >3mm, manifold >3.5mm

Gate: >2mm or 0.5 x part thickness

Important notes:

- 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.
- 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](http://www.victrex.com) or upon request.

### Notes

<sup>1</sup> Mold Temperature: 180°C, Melt Temperature: 370°C, 1.00 mm

<sup>2</sup> 370°C nozzle, 180°C tool

<sup>3</sup> Average

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**Revision Date: December 2023**

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