# TECAPEEK® black polyetheretherketone - Stock Shapes

### Chemical Designation
PEEK (Polyetheretherketone)

### Colour
black opaque

### Density
1.31 g/cm$^3$

### Main features
- made exclusively from Victrex® resin
- excellent chemical resistance
- high thermal resistance
- good heat deflection temperature
- good machinability
- very good slide and wear properties
- hydrolysis and superheated steam resistant

### Target Industries
- aircraft and aerospace technology
- oil and gas industry
- chemical plant engineering
- semiconductor technology
- food engineering
- medical technology
- automotive industry
- process engineering
- mechanical engineering

| Mechanical properties | condition | value | | test method | | comment |
|---|---|---|---|---|---|---|
| Modulus of elasticity (tensile test) | 1% Sec, 73 °F | 650,000 | psi | ASTM D 638 | | (1) Data obtained from public source<br>(2) Data obtained from public source<br>(3) Injection molded specimen data obtained from public source<br>(4) injection molded specimen, data obtained from public source |
| Tensile strength at yield | @ 73 °F | 16,000 | psi | ASTM D 638 | | |
| Tensile strength at break | @ 73 °F | 16,000 | psi | ASTM D 638 | 1) | |
| Elongation at yield | @ 73 °F | 4.9 | % | ASTM D 638 | | |
| Elongation at break | @ 73 °F | 40 | % | ASTM D 638 | | |
| Flexural strength | @ 73 °F | 26,000 | psi | ASTM D 790 | | |
| Modulus of elasticity (flexural test) | @ 73 °F | 600,000 | psi | ASTM D 790 | | |
| Compression strength | @ 73 °F<br>10% strain | 17,500 | psi | ASTM D 695 | | |
| Compression modulus | @ 73 °F | 493,000 | psi | ASTM D 695 | 2) | |
| Notched impact strength (Izod) | @ 73 °F | 0.95 | ft-lbs/in | ASTM D 256 | | |
| Rockwell hardness | M Scale | 99 | | ASTM D 785 | | |
| Coefficient of friction | @ 68 °F<br>Static , 40 psi | 0.20 | | ASTM D 3702 | 3) | |
| Coefficient of friction | @ 68 °F,<br>Dynamic 40 psi 50 fpm | 0.25 | | ASTM D 3702 | 4) | |
| Wear (K) factor | 40 psi, 50 fpm | 200 | *$10^{-10}$ in$^3$ -min/ft-lb-hr | ASTM D 3702 | | |

| Thermal properties | condition | value | | test method | | comment |
|---|---|---|---|---|---|---|
| Glass transition temperature | midpoint | 302 | °F | DIN EN ISO 11357 | 1) | (1) Data obtained from public source<br>(2) Injection molded specimen<br>(3) Data obtained from public source<br>(4) Injection molded specimen<br>(5) Injection molded specimen from public source<br>(6) Injection molded specimen from public source |
| Melting temperature | | 633 | °F | - | | |
| Deflection temperature | @264 psi | 320 | °F | ASTM D 648 | 2) | |
| Service temperature | short term | 572 | °F | - | 3) | |
| Service temperature | Long Term | 480 | °F | - | 4) | |
| Thermal expansion (CLTE) | < Tg, along fllow | 2.5 | *$10^{-5}$ in/in/°F | DIN EN ISO 11359-1;2 | 5) | |
| Thermal conductivity | | 2.01 | BTU-in/hr-ft$^2$-°F | ISO 22007-4:2008 | 6) | |

| Electrical properties | condition | value | | test method | | comment |
|---|---|---|---|---|---|---|
| surface resistivity | | 1.0*$10^{16}$ | Ω/square | ASTM D 257 | 1) | (1) Injection molded specimen<br>(2) Injection molded specimen<br>(3) Injection molded specimen<br>(4) Injection molded specimen from public source<br>(5) injection molded data from public source |
| Volume resistivity | @ 73 °F | 4.9*$10^{16}$ | Ω*cm | ASTM D 149 | 2) | |
| Dielectric strength | 0.1" thick IEC 60243-1 | 630 | V/mil | - | 3) | |
| Dissipation factor | @ 73 °F, 1 MHz | 0.003 | | DIN IEC 60250 | 4) | |
| Dielectric constant | @ 73 °F, 1 kHz | 2.8 | | DIN IEC 60250 | 5) | |

| Other properties | condition | value | | test method | | comment |
|---|---|---|---|---|---|---|
| Limiting PV | | 69000 | psi-fpm | ASTM D 3702 | 1) | (1) publicly sourced data<br>(2) injection molded data, publicly sourced data<br>(3) Injection molded specimen 3.0mm<br>(4) Storage temperature range |
| Moisture absorption | @ saturation, 73 °F | 0.45 | % | DIN EN ISO 62 | 2) | |
| Moisture absorption | @ 24 hrs, 73 °F | 0.02 | % | ASTM D 570 | | |
| Flammability (UL94) | | V0 | | - | 3) | |
| HZ Technical guidelines | Storage Temperature | 50 - 100 | °F | - | 4) | |

- Resin specification:
  ASTM D4000-11 PEEK
  Shapes specification:
  ASTM D6262-12 S-PAEK0111