

PEEK (POLYETHERETHERKETONE) + 30%CF MATERIAL DATA SHEET

- Very high maximum allowable service temperature in air (250°C continuously, up to 310°C for short periods of time)
- High mechanical strength, stiffness and creep resistance, also at elevated temperatures
- Excellent chemical and hydrolysis resistance
- Excellent wear & frictional behavior
- Very good dimensional stability
- Excellent resistance to high energy radiation (gamma- and X-rays)
- Inherent low flammability and very low levels of smoke evolution during combustion

This 30% carbon fiber reinforced grade combines even higher stiffness, mechanical strength and creep resistance than PEEK-GF 30 with an optimum wear resistance. Moreover, compared to unreinforced PEEK, the carbon fibers considerably reduce thermal expansion and provide 3.5 times higher thermal conductivity - dissipating heat from the bearing surface faster, improving bearing life and pressure-velocity capabilities.

| PROPERTIES | Test methods | Units | VALUES |
|---|--------------------|-------------------|-----------------------|
| Colour | - | - | black |
| Density | ISO 1183-1 | g/cm ³ | 1.40 |
| Water absorption: | | | |
| - after 24/96 h immersion in water of 23°C | ISO 62 | mg | 4 / 9 |
| | ISO 62 | % | 0.05 / 0.11 |
| - at saturation in air of 23°C / 50% RH | - | % | 0.16 |
| - at saturation in water of 23°C | - | % | 0.35 |
| Thermal Properties | | | |
| Melting temperature (DSC, 10°C/min) | ISO 11357-1/-3 | °C | 340 |
| Glass transition temperature (DSC, 20°C/min) | ISO 11357-1/-2 | °C | - |
| Thermal conductivity at 23°C | - | W/(K.m) | 0.92 |
| Coefficient of linear thermal expansion: | | | |
| - average value between 23 and 100°C | - | m/(m.K) | 25 x 10 ⁻⁶ |
| - average value between 23 and 150°C | - | m/(m.K) | 25 x 10 ⁻⁶ |
| - average value above 150°C | - | m/(m.K) | 55 x 10 ⁻⁶ |
| Temperature of deflection under load: | | | |
| - method A: 1.8 MPa | ISO 75-1/-2 | °C | 230 |
| Max. allowable service temperature in air: | | | |
| - for short periods | - | °C | 310 |
| - continuously : for min. 20,000 h | - | °C | 250 |
| Min. service temperature | - | °C | -20 |
| Flammability: | | | |
| - "Oxygen Index" | ISO 4589-1/-2 | % | 40 |
| - according to UL 94 (1.5 / 3 mm thickness) | - | - | V-0 / V-0 |
| Mechanical Properties at 23°C | | | |
| Tension test: | | | |
| - tensile stress at yield / tensile stress at break | ISO 527-1/-2 | MPa | NYP / 144 |
| - tensile strength | ISO 527-1/-2 | MPa | 144 |
| - tensile strain at break | ISO 527-1/-2 | % | 5 |
| - tensile modulus of elasticity | ISO 527-1/-2 | MPa | 9200 |
| Compression test: | | | |
| - compressive stress at 1 / 2 % nominal strain | ISO 604 | MPa | 69 / 125 |
| Charpy impact strength - unnotched | ISO 179-1/1eU | kJ/m ² | 50 |
| Charpy impact strength - notched | ISO 179-1/1eA | kJ/m ² | 5 |
| Ball indentation hardness | ISO 2039-1 | N/mm ² | 310 |
| Rockwell hardness | ISO 2039-2 | - | M 102 |
| Electrical Properties at 23 °C | | | |
| Electric strength | IEC 60243-1 | kV/mm | - |
| Volume resistivity | IEC 60093 | Ohm.cm | < 10 ⁵ |
| Surface resistivity | ANSI/ESD STM 11.11 | Ohm/sq. | < 10 ⁵ |
| Relative permittivity εr: - at 100 Hz | IEC 60250 | - | - |
| - at 1 MHz | IEC 60250 | - | - |
| Dielectric dissipation factor tan δ: - at 100 Hz | IEC 60250 | - | - |
| - at 1 MHz | IEC 60250 | - | - |
| Comparative tracking index (CTI)- | IEC 60112- | - | - |

Note: 1 g/cm³ = 1,000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 kV/mm = 1 MV/m.

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