

What is PEEK CF30 black

PEEK CF30 black

PEEK, carbon-fibre reinforced 30 %

PEEK CF30 black is a polyetheretherketone reinforced with 30 % carbon fibres. The carbon fibres give the already high-strength PEEK a considerably higher stiffness and strength, very low thermal expansion and a heat deflection temperature of up to 315 °C – combined with electrical conductivity and low weight.

Properties

PEEK CF30 black is a semi-crystalline high-performance thermoplastic with embedded short carbon fibres. The fibres considerably increase tensile modulus and yield stress, raise the thermal conductivity and lower the coefficient of thermal expansion; the material remains mechanically highly loadable and dimensionally stable even above the glass transition temperature of 150 °C. The carbon fibres make it electrically conductive and black.

Like all PEEK grades, the material is flame retardant (UL 94 V0), highly resistant to chemicals and hydrolysis, and radiation-resistant. The fibre reinforcement reduces the elongation at break; the fibres are abrasive to tools.

Advantages

- Very high stiffness and strength, even at high temperatures
- Very low thermal expansion, high dimensional stability
- Continuous service up to 250 °C, HDT 315 °C
- Electrically conductive, low density

Disadvantages

- Low elongation at break, more brittle than unfilled PEEK
- Carbon fibres are abrasive to tools
- Not generally declared for food contact (see FDA declaration)
- High material cost compared to engineering plastics

Processing

PEEK CF30 black can be machined using all conventional cutting methods; because of the high hardness, carbide tools with sharp cutting edges are recommended. Good cooling via chip removal remains important to avoid heat build-up and residual stresses in the part.

For tight tolerances and thick-walled parts, we recommend intermediate annealing to relieve machining stresses; thanks to the low moisture absorption, no conditioning is required.

Carbon-fibre-containing dust generated during machining is electrically conductive and must be extracted to avoid short circuits in machines and electronics.

Typical Applications

PEEK CF30 black is used wherever maximum stiffness and dimensional stability at high temperatures together with electrical dissipation are required – for example in aerospace, mechanical engineering, the semiconductor industry and oil and gas.

- Structural parts and brackets for aerospace
- Wafer handling and process components
- Highly stressed sliding, bearing and sealing elements

Typical Properties

- Very high stiffness and strength
- Electrically conductive
- Continuous service up to 250 °C

Product Examples

- Structural parts and brackets
- Wafer handling components
- Bearing and sealing elements

Typical Industries

- Aerospace
- Mechanical Engineering
- Semiconductor Industry
- Oil & Gas

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.40
Water absorption	DIN EN ISO 62	%	0.140
Flammability (Thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	120
Elongation at break	DIN EN ISO 527	%	7
Tensile modulus of elasticity	DIN EN ISO 527	MPa	6.500
Ball indentation hardness	DIN EN ISO 2039-1	MPa	310
Shore hardness	DIN EN ISO 868	scale D	91
Thermal Properties			
Melting temperature	ISO 11357-3	°C	343
Thermal conductivity	DIN 52612-1	W / (m * K)	0.92
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	25
Service temperature, long term	Average	°C	-20 ... 250
Service temperature, short term (max.)	Average	°C	310
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	315