

What is PEEK CM CF30 black

PEEK CM CF30 black

PEEK, carbon-fibre reinforced, special compound CM

PEEK CM CF30 black is a polyetheretherketone reinforced with 30 % carbon fibres and compression moulded (CM) into sheets. Compared to extruded PEEK CF30, the compression-moulded variant offers an even higher tensile modulus and a very low level of residual stress – for extremely dimensionally stable, highly loaded components even above the glass transition temperature.

Properties

PEEK CM CF30 black is a semi-crystalline high-performance thermoplastic with embedded short carbon fibres. Compression moulding produces an isotropic structure with minimal internal stresses, so that even large-area and thick-walled components can be produced with low distortion. The carbon fibres make the material electrically conductive, increase thermal conductivity and lower the thermal expansion to $25 \cdot 10^{-6}/K$.

Like all PEEK grades, the material is flame retardant (UL 94 V0) and highly resistant to chemicals and hydrolysis. The high stiffness goes hand in hand with a very low elongation at break; the fibres are abrasive to tools.

Advantages

- Maximum stiffness (tensile modulus 9,500 MPa) and dimensional stability
- Very low residual stress, low-distortion machining
- Continuous service from -60 to 250 °C
- Electrically conductive, low density

Disadvantages

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

Processing

PEEK CM 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. The compression-moulded sheets also allow large-area machining with low distortion.

Typical Applications

PEEK CM CF30 black is used wherever extreme dimensional stability and stiffness at high temperatures are required – for example in the semiconductor industry (wafer handling), aerospace, mechanical engineering and oil and gas.

- Wafer handling and process components
- Precision structural parts for aerospace
- Highly stressed bearing, guide and sealing elements

Typical Properties

- Very high stiffness through carbon-fibre reinforcement
- Very low residual stress
- Electrically conductive

Product Examples

- Wafer handling components
- Precision structural parts
- 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	1.42
Water absorption	DIN EN ISO 62	%	0.14
Flammability (Thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	100
Elongation at break	DIN EN ISO 527	%	1.5
Tensile modulus of elasticity	DIN EN ISO 527	MPa	9.500
Notched impact strength	DIN EN ISO 179	kJ / m ²	2.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	260
Shore hardness	DIN EN ISO 868	scale D	90
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	-60 ... 250
Service temperature, short term (max.)	Average	°C	310