

What is PEEK GF30 natural

PEEK GF30 natural

PEEK, glass-fibre reinforced 30 %

PEEK GF30 natural is a polyetheretherketone reinforced with 30 % glass fibres. The reinforcement significantly increases stiffness and strength, reduces thermal expansion and raises the heat deflection temperature to 315 °C – while retaining electrical insulation. Ideal for mechanically highly loaded, dimensionally stable components even above the glass transition temperature of 150 °C.

Properties

PEEK GF30 natural is a semi-crystalline high-performance thermoplastic with embedded short glass fibres. The fibres increase tensile modulus and yield stress, improve dimensional stability and considerably reduce the tendency to creep. Unlike carbon-fibre reinforced PEEK, the material remains electrically insulating.

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 glass fibres are abrasive to tools and mating surfaces.

Advantages

- High stiffness and strength, even at high temperatures
- Very high heat deflection temperature (HDT 315 °C)
- Low tendency to creep, good dimensional stability
- Electrically insulating, continuous service up to 250 °C

Disadvantages

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

Processing

PEEK GF30 natural 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.

Glass-fibre-containing dust generated during machining should be extracted.

Typical Applications

PEEK GF30 natural is used wherever high stiffness and dimensional stability at high temperatures together with electrical insulation are required – for example in aerospace, mechanical engineering, electronics and chemical apparatus engineering.

- Structural parts and brackets for aerospace
- Insulating and support parts in electronics
- Dimensionally stable valve and pump components

Typical Properties

- High stiffness through glass-fibre reinforcement
- Very high heat deflection temperature
- Electrically insulating

Product Examples

- Structural parts and brackets
- Insulating and support parts
- Valve and pump components

Typical Industries

- Aerospace
- Mechanical Engineering
- Electronics
- Chemical Apparatus Engineering

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.51
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	80
Elongation at break	DIN EN ISO 527	%	5
Tensile modulus of elasticity	DIN EN ISO 527	MPa	6.000
Notched impact strength	DIN EN ISO 179	kJ / m ²	3.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	250
Shore hardness	DIN EN ISO 868	scale D	89
Thermal Properties			
Melting temperature	ISO 11357-3	°C	343
Thermal conductivity	DIN 52612-1	W / (m * K)	0.43
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	30
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