

What is PEEK FG natural

PEEK FG natural

PEEK, food grade (FG)

PEEK FG natural is a polyetheretherketone in a food grade compound (FG). It offers the complete property profile of PEEK – continuous service up to 250 °C, high strength, excellent resistance to chemicals, hydrolysis and sterilisation – in a grade designed for contact with foodstuffs.

Properties

PEEK FG natural is a semi-crystalline high-performance thermoplastic with high tensile strength and stiffness, good impact strength and very high abrasion and wear resistance. It is flame retardant (UL 94 V0) with low smoke density, electrically insulating, radiation-resistant and permanently withstands hot water, steam and aggressive cleaning media.

The compound is designed for food contact; compliance is described in the associated FDA declaration. The low moisture absorption ensures stable dimensions even during wet cleaning.

Advantages

- Compound designed for food contact
- Continuous service up to 250 °C, steam and sterilisation resistant
- High strength, abrasion and wear resistance
- Excellent resistance to chemicals and hydrolysis

Disadvantages

- High material cost compared to engineering plastics
- Not resistant to concentrated sulphuric acid and some halogenated hydrocarbons

Processing

PEEK FG 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.

For components with food contact, we use food-compatible cooling lubricants and supply with batch traceability on request.

Typical Applications

PEEK FG natural is used wherever food contact coincides with high temperatures, steam or aggressive cleaning media – for example in the food and beverage industry, the pharmaceutical industry and medical technology.

- Valve, pump and dosing components
- Guide, sliding and format parts in filling lines
- Sterilisable components for pharma and medical technology

Typical Properties

- Compound suitable for food contact
- Premium material for continuous service up to around 250 °C
- Steam and sterilisation resistant

Product Examples

- Valve and pump components
- Guide and format parts
- Sterilisable components

Typical Industries

- Food Industry
- Pharmaceutical Industry
- Medical Technology

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.31
Water absorption	DIN EN ISO 62	%	0.200
Flammability (Thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	110
Elongation at break	DIN EN ISO 527	%	20
Tensile modulus of elasticity	DIN EN ISO 527	MPa	4.000
Ball indentation hardness	DIN EN ISO 2039-1	MPa	230
Shore hardness	DIN EN ISO 868	scale D	88
Thermal Properties			
Melting temperature	ISO 11357-3	°C	343
Thermal conductivity	DIN 52612-1	W / (m * K)	0.25
Thermal capacity	DIN 52612	kJ / (kg * K)	1.34
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	50
Service temperature, long term	Average	°C	-60 ... 250
Service temperature, short term (max.)	Average	°C	310
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	152