

What is PEEK MG black

PEEK MG black

PEEK, medical grade (black)

PEEK MG black is a polyetheretherketone in medical grade (MG), developed for surgical instruments and components of medical devices. It combines maximum purity and excellent sterilisation resistance with the high strength, stiffness and temperature resistance of PEEK. The black colouring serves the optical differentiation of instruments and components.

Properties

PEEK MG black is a semi-crystalline high-performance thermoplastic with high tensile strength, stiffness and hardness. It withstands repeated steam, gamma and plasma sterilisation without loss of properties, is highly resistant to chemicals and hydrolysis, and is flame retardant (UL 94 V0). Biocompatibility is tested on the semi-finished product according to ISO 10993-5.

The colouring is achieved with medically suitable pigments; it changes the mechanical values only slightly. In combination with appropriate additives, the black colouring enables X-ray-visible components.

Advantages

- Medical grade, biocompatibility tested according to ISO 10993-5
- Excellent sterilisation resistance (steam, gamma, plasma)
- High strength, stiffness and hardness
- Continuous service up to 250 °C, very good chemical resistance

Disadvantages

- Pigmented grade – food contact only after case-by-case assessment (see FDA declaration)
- High material cost compared to engineering plastics
- Not resistant to concentrated sulphuric acid and some halogenated hydrocarbons

Processing

PEEK MG 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.

For medical devices we supply with batch traceability and material certificate on request; machining is carried out with cooling lubricants suitable for medical technology.

Typical Applications

PEEK MG black is used wherever components are repeatedly sterilised and must remain high-strength, dimensionally stable and biocompatible – for example for surgical instruments, handles, sample holders and components of medical and diagnostic devices.

- Handles and functional parts of surgical instruments
- Sterilisable components for medical and diagnostic devices
- Colour-coded instrument sets and sample holders

Typical Properties

- Medical grade
- Black colouring, X-ray visible in combination with appropriate additives

Product Examples

- Instrument handles and components
- Sterilisable device components
- Colour-coded instrument sets

Typical Industries

- Medical Technology
- Laboratory and Diagnostics
- Pharmaceutical Industry

- Sterilisation resistant

	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	%	15
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