

## What is PEEK MG green

# PEEK MG green

PEEK, medical grade (green)

PEEK MG green 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 green colouring serves the optical differentiation of instruments and components.

### Properties

PEEK MG green 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.

#### 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 green 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 green 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
- Green colouring for optical detectability
- Sterilisation resistant

#### Product Examples

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

#### Typical Industries

- Medical Technology
- Laboratory and Diagnostics
- Pharmaceutical Industry

|                                         | Test Method                 | Unit                 | Value       |
|-----------------------------------------|-----------------------------|----------------------|-------------|
| <b>General Properties</b>               |                             |                      |             |
| Density                                 | DIN EN ISO 1183-1           | g / cm <sup>3</sup>  | 1.34        |
| Water absorption                        | DIN EN ISO 62               | %                    | 0.200       |
| Flammability (Thickness 3 mm / 6 mm)    | UL 94                       |                      | V0 / V0     |
| <b>Mechanical Properties</b>            |                             |                      |             |
| Yield stress                            | DIN EN ISO 527              | MPa                  | 110         |
| Elongation at break                     | DIN EN ISO 527              | %                    | 10          |
| Tensile modulus of elasticity           | DIN EN ISO 527              | MPa                  | 4.000       |
| Notched impact strength                 | ISO 179-1/1eA               | kJ / m <sup>2</sup>  | 3.6         |
| Compressive modulus                     | DIN EN ISO 604              | MPa                  | 3.400       |
| Ball indentation hardness               | DIN EN ISO 2039-1           | MPa                  | 230         |
| Shore hardness                          | DIN EN ISO 868              | scale D              | 87          |
| <b>Thermal Properties</b>               |                             |                      |             |
| Melting temperature                     | ISO 11357-3                 | °C                   | 341         |
| 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 <sup>-6</sup> / 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         |