

Polyetheretherketone (PEEK)

Polyetheretherketone is a semi-crystalline thermoplastic with excellent sliding properties, very good mechanical properties, even under thermal load and an excellent resistance to chemicals. The high continuous working temperature rounds off the profile of this high-performance plastic and makes it a virtually universally useable design material for highly loaded parts. The polyetheretherketone finished products that we offer consist of high density polyetheretherketone types produced by extrusion or moulding processes.

Main properties

- High continuous working temperature (+250 °C in air)
- High mechanical strength
- High rigidity
- High creep resistance, also at high temperatures
- Good sliding properties
- High wear resistance
- High dimensional stability
- Excellent chemical resistance
- Resistant to hydrolysis
- Good electrical insulator
- Radiation resistant
- Physiologically safe
- Fire resistant (UL 94 V 0)

Colour natural (≈ RAL 7032), black

Sliding properties

PEEK ideally combines good sliding properties with high mechanical strength and thermal stability as well as excellent chemical resistance. Because of this, it is suitable for sliding applications. Modified types containing carbon fibre, PTFE and graphite, with highest wear resistance, a low coefficient of friction and a high pv limiting value, are available for component parts that are subject to especially high abrasion and wear.

Weathering effects

PEEK is resistant to x-rays, β -rays and γ -rays. Hence PEEK is ideal for use in the pharmaceutical and nuclear industries. PEEK is not resistant to UV rays in combination with atmospheric oxygen.

Chemical resistance

PEEK is resistant to non-oxidising acids, concentrated alkaline solutions, salt solutions, cleaning agents or paraffin oils. It is not resistant to oxidising agents such as concentrated sulphuric acid, nitric acid or hydrogen fluoride.

Behaviour in fire

PEEK is rated fire resistant in the highest category. When the source of ignition is removed PEEK is self-extinguishing. The oxygen index (the oxygen concentration required for combustion) is 35%.

Areas of use

- Chemical and petrochemical industries
- Pharmaceutical industry
- Food industry
- Nuclear industry
- Aerospace industry
- Defence technology

Applications

- Gears
- Friction bearings
- Bobbins
- Fittings (e.g. casing for hot water meters)
- Valves
- Piston ring
- Parts for car engines (e.g. bearing cages)

Machining

In addition to its good welding and bonding properties PEEK can be easily machined. The semi-finished products can be drilled, milled, sawed, planed and turned on a lathe. It is also possible to cut a thread into the material or insert a threaded element. Generally no cooling or lubricating emulsion is necessary.