

KETRON PEEK-1000 stock shapes are produced from virgin polyetheretherketone resin and offer the highest toughness and impact strength of all KETRON PEEK grades.

The composition of the raw materials used for the production of the KETRON PEEK-1000 natural stock shapes complies with the directives of the European Union and with the American FDA regulations concerning plastic materials intended to come into contact with foodstuffs. These features, added to its excellent sterilisability by means of steam, dry heat, ethylene oxide and gamma irradiation, make this grade very popular in medical*, pharmaceutical and food processing industries.

Physical properties (indicative values*)

PROPERTIES	Test methods ISO/(IEC)	Units	VALUES
Colour	—	—	natural (brownish grey)/black
Density	1183	g/cm ³	1.31
Water absorption:			
- after 24h/96h immersion in water of 23°C (1)	62	mg	5/10
- at saturation in air of 23°C / 50% RH	—	%	0.06/0.12
- at saturation in water of 23°C	—	%	0.20
	—	%	0.45
Thermal Properties			
Melting temperature	—	°C	340
Thermal conductivity at 23°C	—	W/(K·m)	0.25
Coefficient of linear thermal expansion:			
- average value between 23 and 100°C	—	m/(m·K)	50·10 ⁻⁶
- average value between 23 and 150°C	—	m/(m·K)	55·10 ⁻⁶
- average value above 150°C	—	m/(m·K)	130·10 ⁻⁶
Temperature of deflection under load:			
- method A: 1.8 MPa	75	°C	160
Max. allowable service temperature in air:			
- for short periods (2)	—	°C	310
- continuously: for min. 20,000h (3)	—	°C	250
Flammability (4):			
- "Oxygen index"	4589	%	35
- according to UL 94 (1.5/3 mm thickness)	—	—	V-0/V-0
Mechanical Properties at 23°C			
Tension test (5):			
- tensile stress at yield (6)	527	MPa	110
- tensile strain at break (6)	527	%	20
- tensile modulus of elasticity (7)	527	MPa	4,400
Compression test (8):			
- compressive stress at 1% nominal strain (7)	604	MPa	29
- compressive stress at 2% nominal strain (7)	604	MPa	57
Charpy impact strength - Unnotched (9)	179/1eU	kJ/m ²	no break
Charpy impact strength - Notched	179/1eA	kJ/m ²	3.5
Ball indentation hardness (10)	2039-1	N/mm ²	230
Rockwell hardness (10)	2039-2	—	M 105
Electrical Properties at 23°C			
Electric strength (11)	(60243)	kV/mm	24
Volume resistivity	(60093)	Ω·cm	> 10 ¹⁴
Surface resistivity	(60093)	Ω	> 10 ¹³
Relative permittivity ε _r :			
- at 100 Hz	(60250)	—	3.2
- at 1 MHz	(60250)	—	3.2
Dielectric dissipation factor tan δ :			
- at 100 Hz	(60250)	—	0.001
- at 1 MHz	(60250)	—	0.002
Comparative tracking index (CTI)	(60112)	—	150

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m

Availability

Round Rods: Ø 3-200 mm - **Plates:** Thicknesses 5-100 mm - **Tubes:** O.D. 50-200 mm

* Quadrant Engineering Plastic Products does not allow, approve or support human implantable applications utilising its materials.

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Legend

- (1) According to method 1 of ISO 62 and done on discs Ø 50 x 3 mm.
- (2) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.
- (3) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength of about 50% as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
- (4) These mostly estimated ratings, derived from raw material supplier data, are not intended to reflect hazards presented by the materials under actual fire conditions. There is no UL-yellow card available for KETRON PEEK-1000 stock shapes.
- (5) Test specimens: Type 1 B.
- (6) Test speed: 5 mm/min.
- (7) Test speed: 1 mm/min.
- (8) Test specimens: cylinders Ø 12 x 30 mm.
- (9) Pendulum used: 4 J.
- (10) 10 mm thick test specimens.
- (11) 1 mm thick test specimens.

It is important to know that the electric strength of black KETRON PEEK-1000 can be as low as 50% of the value for natural material.

- This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.**