

### Chemical Designation

PEEK (Polyetheretherketone)

### Colour

black

### Density

1.65 g/cm<sup>3</sup>

### Fillers

mineral filler

### Main features

- lithography capable
- PVD / CVD capable
- wirebonding possible
- electroplating possible
- developed for the LPKF-LDS® process
- reflow soldering possible
- inherent flame retardant
- low moisture absorption

### Target Industries

- MEMS technology
- sensor technology
- semiconductor technology
- electronics
- interposer technology
- cleanroom technology

General material information	parameter	value	unit	norm	comment
Diameter		100 ±0,3	mm	-	(1) 850 µm - 1200 µm possible
Bow		<100	µm	-	
Warpage		<100	µm	-	
Surface Roughness		Ra 0,03 - 0,05	µm	-	
thickness		1000 ±25	µm	-	1)
Mechanical properties	parameter	value	unit	norm	comment
Tensile strength		103	MPa	DIN EN ISO 527-1	
Modulus of elasticity (tensile test)		10700	MPa	DIN EN ISO 527-1	
Elongation at break (tensile test)		2,2	%	DIN EN ISO 527-1	
Impact strength (Charpy)		30	kJ/m <sup>2</sup>	DIN EN ISO 179-1eU	
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		143	°C	-	1)
Melting temperature		343	°C	-	2)
Service temperature	short term	300	°C	-	3)
Service temperature	long term	260	°C	-	4)
Thermal expansion (CLTE)	in plane (RT - 100 °C)	31	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	perpendicular to the plane (RT - 100 °C)	18	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	in plane (200 °C - 260 °C)	87	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	perpendicular to the plane (200 °C - 260 °C)	47	10 <sup>-6</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Specific heat		0,8	J/(g*K)	DIN EN 821	
Thermal conductivity	in plane	1,2	W/(K*m)	ISO 22007-4:2008	
Thermal conductivity	perpendicular to the plane	0,5	W/(K*m)	ISO 22007-4:2008	
Electrical properties	parameter	value	unit	norm	comment
surface resistivity		1 * 10 <sup>14</sup>	Ω	DIN EN 61340-2-3	
volume resistivity		9 * 10 <sup>14</sup>	Ω*m	DIN EN 61340-2-3	
Dielectric strength	70 mm x 70 mm x 3 mm	17,5	kV/mm	ISO 60243-1	
Dielectric loss factor	test frequency of 1 GHz	0,002	-	-	
Dielectric constant	test frequency of 1 GHz	3,6	-	-	
Resistance to tracking (CTI)		225	V	DIN EN 60112	
Other properties	parameter	value	unit	norm	comment
Water absorption	23 °C / 50 % relative humidity up to saturation	< 0,04	%	DIN EN ISO 62	(1) No listing at UL (Yellow Card).
Flammability (UL94)	at 0,9 mm	V0	-	DIN IEC 60695-11-10;	1) (2) LDS layer; test method: pull-off-test
Adhesive strength (metal path)		19,4	N/mm <sup>2</sup>	-	2)
Laser parameters	Power (LDS process)	2 - 8	W	-	
Laser parameters	Frequency (LDS process)	120 - 180	kHz	-	
Laser parameters	Forward movement (LDS process)	1,8 - 2,4	m/s	-	

