TECAWAFER PEEK LDS black - Microsystems

Chemical Designation
PEEK (Polyetheretherketone)

Colour
black

Density
1.67 g/cm^3

Fillers
mineral filler

Main features
- lithography capable
- PVD / CVD capable
- wirebonding possibile
- 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	condition	value	unit	test method		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	condition	value	unit	test method	comment
Tensile strength		102	MPa	DIN EN ISO 527-1	
Modulus of elasticity (tensile test)		10700	MPa	DIN EN ISO 527-1	
Elongation at break (tensile test)		2,3	%	DIN EN ISO 527-1	
Impact strength (Charpy)		31	kJ/m^2	DIN EN ISO 179-1eU	

Thermal properties	condition	value	unit	test method		comment
Glass transition temperature		143	°C	-	1)	(1) literature value (2) literature value (3) literature value (4) literature value
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)	26	10^{-6} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	perpendicular to the plane (RT - 100 °C)	18	10^{-6} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	in plane (200 °C - 260 °C)	67	10^{-6} K^{-1}	DIN EN ISO 11359-1;2		
Thermal expansion (CLTE)	perpendicular to the plane (200 °C - 260 °C)	46	10^{-6} K^{-1}	DIN EN ISO 11359-1;2		
Specific heat		0,97	J/(g*K)	DIN EN 821		
Thermal conductivity	in plane	1,7	W/(K*m)	ISO 22007-4:2008		
Thermal conductivity	perpendicular to the plane	0,5	W/(K*m)	ISO 22007-4:2008		

Electrical properties	condition	value	unit	test method	comment
surface resistivity		5,8 * 10^{12}	Ω	DIN EN 61340-2-3	
volume resistivity		5,8 * 10^{11}	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	0,004		-	
Dielectric constant	test frequency of 1 GHz	3,6		-	
Resistance to tracking (CTI)		225	V	DIN EN 60112	

Other properties	condition	value	unit	test method		comment
Water absorption	23 °C / 50 % relative humidity up to saturation	< 0,1	%	DIN EN ISO 62		(1) No listing at UL (Yellow Card). (2) LDS layer; test method: pull-off-test
Flammability (UL94)	at 0,8 mm	V0		DIN IEC 60695-11-10;	1)	
Adhesive strength (metal path)		19,4	N/mm^2	-	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	-		

- Information on storage and shelf life: The wafer must be stored dry in rooms with normal temperature and in closed containers. Materials sensitive to moisture must be sealed airtight. Protection against solar radiation must be guaranteed. As a rule, the wafer has no shelf life restrictions. Shelf life can be limited by individual additives.

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Date: 2025/03/25
Version: AC