TECACOMP LCP LDS black 1014978 - Compounds

Chemical Designation
LCP (Liquid crystal polymer)

Colour
black

Density
1.75 g/cm^3

former material REZ-RS-4107

Main features
- developed for the LPKF-LDS® process
- low thermal expansion

Target Industries
- automotive industry
- electrical engineering
- LED lighting technology
- mechanical engineering

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength		93	MPa	DIN EN ISO 527-1	
Modulus of elasticity (tensile test)		10500	MPa	DIN EN ISO 527-1	
Elongation at break (tensile test)		1,3	%	DIN EN ISO 527-1	
Impact strength (Charpy)		8	kJ/m^2	DIN EN ISO 179-1eU	

Thermal properties	parameter	value	unit	norm	comment
Melting temperature		320	°C	-	
Heat distortion temperature	HDT A	274	°C	ISO-R 75 Method A	
Service temperature	short term	260	°C	-	
Service temperature	long term	200	°C	-	
Thermal expansion (CLTE)	longitudinal (at 50 - 100 °C)	16	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	transverse (at 50 - 100 °C)	32	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	longitudinal (at 100 - 150 °C)	25	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	transverse (at 100 - 150 °C)	40	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	longitudinal (at 150 - 200 °C)	30	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	transverse (at 150 - 200 °C)	49	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	longitudinal (at 200 - 250 °C)	34	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	transverse (at 200 - 250 °C)	60	10^{-6} K^{-1}	DIN EN ISO 11359-1;2	
Specific heat		1,25	J/(g*K)	DIN EN 821	
Thermal conductivity	in-plane	1,61	W/(K*m)	ISO 22007-4:2008	
Thermal conductivity	through-plane	0,76	W/(K*m)	ISO 22007-4:2008	
Thermal diffusivity	in-plane	0,93	mm^2/s	ISO 22007-4:2008	
Thermal diffusivity	through-plane	0,31	mm^2/s	ISO 22007-4:2008	

Electrical properties	parameter	value	unit	norm	comment
surface resistivity		4,1 x 10^{12}	Ω	DIN EN 61340-2-3	
volume resistivity		3,8 x 10^{11}	Ω*m	DIN EN 61340-2-3	
Dielectric loss factor	test frequency of 1 GHz	0,003		-	
Dielectric constant	test frequency of 1 GHz	3,52		-	
Resistance to tracking (CTI)		275	V	DIN EN 60112	

Other properties	parameter	value	unit	norm	comment
Molding shrinkage	longitudinal	0,10	%	DIN EN ISO 294-4	(1) test method: pull-off-test
Molding shrinkage	transverse	0,30	%	DIN EN ISO 294-4	
Water absorption	23 °C / 50 % relative humidity up to saturation	< 0,1	%	DIN EN ISO 62	
Flammability (UL94)	3,0 mm	V0		DIN IEC 60695-11-10;	
Adhesive strength (metal path)		9,1	N/mm^2	- 1)	
Laser Marking Parameter	Power	2 - 5	W	-	
Laser Marking Parameter	Frequency	100 - 200	kHz	-	
Laser Marking Parameter	Forward movement	1,6 - 3,2	m/s	-	

Processing parameter	parameter	value	unit	norm	comment
Cylinder/processing temperature		320 - 340	°C	-	
Nozzle temperature		350	°C	-	
Injection pressure		1500	bar	-	
Zone 1		320	°C	-	
Zone 2		325	°C	-	
Zone 3		330	°C	-	
Zone 4		340	°C	-	
Mould temperature		160	°C	-	
Material temperature		320	°C	-	
Injection rate		fast		-	

Back pressure	1 - 3	bar	-
hold pressure	300 - 600	bar	-

- This material can be processed as a thermoplastic taking the normal technical provisions into account. The above mentioned information refers exclusively to the injection moulding process.
- Back pressure and injection rate should be adjusted to the component geometry accordingly. The optimum processing temperature depends upon the respective geometry of the moulded part and can be different from machine to machine.

Predrying	*parameter*	*value*	*unit*	*norm*	*comment*
Permissible residual moisture content		< 0,1	%	-	
Drying temperature		150	°C	-	
Drying time		3 - 5	h	-	

- To achieve optimum mechanical properties, it is recommended to pre-dry the material with the above mentioned parameters.
- Information on storage and shelf life: The granules must be stored in dry, normally tempered rooms and in closed containers. For moisture-sensitive materials, the granules must be sealed airtight. Protection against direct sunlight must be guaranteed. The granules are usually subject to the requirements of no shelf life limitation. Shelf Life may be limited by some additives.

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Date: 2023/05/23

Version: AP