

LCP LP ESD TGF40

Elect Nano LCP LP ESD TGF40 is a next-generation electrostatic discharge (ESD) safe injection molding compound with a high temperature liquid crystal polymer base resin and 40 wt% thin glass fiber for improved mechanical properties and low particle contamination in clean room environments. This material utilizes Elect Nano's patented discrete carbon nanotube technology (dCNT) to achieve superior electrical property uniformity across molded specimens. Other benefits include extreme temperature stability, excellent surface finish, good wear resistance, high contrast laser marking and low warpage.

	Test Method	Unit	Values
Physical Properties			
Density	ASTM D792	g/cm ³	1.87
Mold Shrinkage (Flow Direction)	ASTM D955	%	0.22
Mold Shrinkage (Transverse Direction)	ASTM D955	%	0.4
Mechanical Properties			
Tensile Strength	ASTM D638	MPa	>150*
Tensile Modulus	ASTM D638	GPa	18.9
Tensile Elongation at Break	ASTM D638	%	>1.5%*
Flexural Strength	ASTM D790	MPa	187
Flexural Modulus	ASTM D790	GPa	15.7
Notched Izod Impact Strength	ASTM D256	J/m	52.5
Thermal			
Heat Deflection Temperature (1.82 MPa)	ASTM E 2092	°C	330
Electrical			
Surface Resistance	ANSI STM11.11	Ohm	1E+07

**Note: Tensile specimens failed in the grips so true tensile strength could not be measured*

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Processing Guidelines

Elect Nano LCP LP ESD TGF40 is generally noted to have low moisture absorption at equilibrium, but properly drying material prior to injection molding is critical in achieving high quality molded parts. Drying should be carried out in a desiccant or membrane dryer that can maintain a dew point of $< -40^{\circ}\text{C}$. Proper mold cavity design is critical for achieving high strength, defect-free parts. Ensure cavities have uniform wall thickness where possible and smooth transitions in areas with varying wall thickness to avoid jetting and backfilling which can entrap air. Maximize the injection speed until flow instabilities or surface defects are observed. Increase venting at the end of flow patterns and weld lines until flash appears.

	Unit	Recommended	Range
Drying Conditions			
Max Moisture Content	ppm	<100	0 – 300
Drying Time	hrs	6	4 – 8
Drying Temperature	$^{\circ}\text{C}$	140	130 – 150
Processing Parameters			
Injection Pressure	MPa	100	80 – 160
Injection Holding Pressure	MPa	60	40 – 100
Back Pressure	MPa	0.75	0.5 – 1
Holding Time	s	5	1 – 5
Injection Rate	cc/s	80	40 – 160
Injection Speed*	mm/s	40	20 – 80
Suck Back (Decompression)	mm	1	0 – 4
Melt Cushion	mm	4	3 – 5
Feed Zone Temperature	$^{\circ}\text{C}$	370	360 – 370
Compression Zone Temperature	$^{\circ}\text{C}$	365	355 – 365
Metering Zone Temperature	$^{\circ}\text{C}$	360	355 – 365
Nozzle Temperature	$^{\circ}\text{C}$	365	360 – 370
Melt Temperature	$^{\circ}\text{C}$	365	360 – 370
Mold Temperature	$^{\circ}\text{C}$	120	80 – 140
Screw Tangential Speed	mm/s	200	150 – 250
Screw Rotational Rate*	RPM	75	60 – 250

*Note: Linear injection speed (mm/s) and screw rotational rate (RPM) values depend on screw diameter. Values shown are calculated from the injection rates and screw tangential speed ranges for a 50mm diameter screw.