Technical Data Sheet

LCP LEO DiMiseio™

Elect Nano LCP LEO DiMiseio™ is a space-engineered, electrostatic discharge (ESD)-safe nanocomposite injection molding compound featuring a high-flow thermotropic liquid crystal polymer (LCP) base resin reinforced with 30 wt% thin glass fiber for enhanced mechanical properties and molding precision. This formulation utilizes Elect Nano's patented discrete carbon nanotube technology (dCNT), delivering superior uniformity of electrical properties throughout molded components, and incorporates fillers specifically selected to ensure complete demisability upon atmospheric reentry. Additional advantages include excellent high-temperature stability, low outgassing, atomic oxygen (AO) resistance, exceptional surface finish, good wear resistance, and low optical reflectance optimized for low Earth orbit (LEO) conditions.

	Test Method	Unit	Values
Physical Properties			
Density	ASTM D792	g/cm³	1.64
Mold Shrinkage (FD* – Type A)	ASTM D955	%	0.21
Mold Shrinkage (TD* – Type A)	ASTM D955	%	0.65
Mold Shrinkage (FD* – Type D2)	ASTM D955	%	0.34
Mold Shrinkage (TD* – Type D2)	ASTM D955	%	0.30
Mechanical Properties			
Tensile Strength	ISO 527-1,2	MPa	153
Tensile Modulus	ISO 527-1,2	GPa	17.9
Tensile Elongation at Break	ISO 527-1,2	%	1.18
Flexural Strength	ASTM D790	MPa	222
Flexural Modulus	ASTM D790	GPa	13.0
Notched Izod Impact Strength	ASTM D256	J/m	75.1
Thermal			
Specific Heat Capacity	ASTM E1269	J/(kg·K)	928
Thermal Effusivity	ASTM D7984	W·√s/(m²·K)	837
Thermal Conductivity	ASTM D7984	W/(m·K)	0.479
Heat Deflection Temperature (1.82 MPa)	ASTM D648	˚C	253.5
Coefficient of Thermal Expansion (FD*)	ASTM E831	µm/(m·˚C)	9.04
Coefficient of Thermal Expansion (ND*)	ASTM E831	µm/(m·˚C)	76.2
Electrical			
Surface Resistance	ANSI STM11.11	Ohm	1E+07

* FD = Flow Direction, TD = Transverse (Cross Flow) Direction, ND = Normal (Thickness) Direction

LCP LEO DiMiseio™

Processing Guidelines

Elect Nano LCP LEO DiMiseio™ 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˚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	˚C	140	130 – 150
Processing Parameters			
Injection Pressure	MPa	100	80 – 160
Injection Holding Pressure	MPa	60	40 – 100
Back Pressure	MPa	3	1 – 4
Holding Time	s	2	0.5 – 4
Injection Rate	cc/s	120	40 – 160
Injection Speed†	mm/s	60	20 – 80
Suck Back (Decompression)	mm	1	0 – 4
Melt Cushion	mm	4	3 – 5
Feed Zone Temperature	˚C	310	270 – 315
Compression Zone Temperature	˚C	300	280 – 300
Metering Zone Temperature	˚C	290	280 – 295
Nozzle Temperature	˚C	300	290 – 310
Melt Temperature	˚C	290	280 – 315
Mold Temperature	˚C	100	90 – 120
Screw Tangential Speed	mm/s	190	180 – 200
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.

Elect Nano LLC
3850 E. Baseline Rd, Suite 126
Mesa, AZ 85206
(480) 717-7103
www.electnano.com