DuPont™ Zenite® LCP

liquid crystal polymer resin

Zenite® 7130 BK010

Zenite® 7130 BK010 is a 30% glass reinforced, black liquid crystal polymer resin having excellent toughness and a heat deflection temperature of 310°C.

Property	Test Method	Units	Value
Identification			
Resin Identification	ISO 1043		LCP-GF30
Part Marking Code	ISO 11469		>LCP-GF30<
Mechanical			
Stress at Break	ISO 527	MPa (kpsi)	150 (22.0)
Tensile Strength, 3.2mm (0.125in)	ASTM D 638	MPa (kpsi)	
-40°C (-40°F)			230 (33.7)
23°C (73°F)			150 (21.7)
120°C (250°F)			75 (10.7)
150°C (300°F)			60 (8.6)
200°C (390°F)			56 (8.2)
250°C (480°F)			30 (4.3)
Strain at Break	ISO 527	%	1.5
Elongation at Break	ASTM D 638	%	1.7
Tensile Modulus	ISO 527	MPa (kpsi)	17000 (2470)

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ISO Mechanical properties measured at 4.0mm, ISO Electrical properties measured at 2.0mm, and all ASTM properties measured at 3.2mm.
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During molding, use protective equipment and clothing. Skin contact with molten Zenite ® resins can cause severe burns. Be particularly alert during purging.

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Property	Test Method	Units	Value
Mechanical			
Tensile Modulus, 3.2mm (0.125in)	ASTM D 638	MPa (kpsi)	
-40°C (-40°F)			23000 (3600)
23°C (73°F)			18000 (2600)
120°C (250°F)			14000 (2000)
150°C (300°F)			9000 (1300)
200°C (390°F)			9000 (1300)
250°C (480°F)			9000 (1300)
Shear Strength, 0.8mm (0.031in)	ASTM D 732	MPa (kpsi)	57 (8.2)
Shear Strength, 3.2mm (0.125in)	ASTM D 732	MPa (kpsi)	58 (8.4)
Flexural Modulus	ISO 178	MPa (kpsi)	13000 (1890)
Flexural Modulus, 0.8mm (0.031in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			22000 (3200)
23°C (73°F)			18000 (2600)
150°C (300°F)			9000 (1300)
200°C (390°F)			8000 (1100)
250°C (480°F)			5000 (700)
Flexural Modulus, 1.6mm (0.062in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			16000 (2300)
23°C (73°F)			14000 (2000)
150°C (300°F)			8000 (1200)
200°C (390°F)			6000 (800)
250°C (480°F)			4000 (600)
Flexural Modulus, 3.2mm (0.125in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			16000 (2300)
23°C (73°F)			13100 (1900)
120°C (250°F)			8000 (1100)
150°C (300°F)			8000 (1100)
200°C (390°F)			6500 (900)
250°C (480°F)			3500 (500)

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Property	Test Method	Units	Value
Mechanical			
Flexural Strength	ISO 178	MPa (kpsi)	210 (30.5)
Flexural Strength, 0.8mm (0.031in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			335 (48.5)
23°C (73°F)			215 (31.1)
150°C (300°F)			73 (10.6)
200°C (390°F)			53 (7.7)
250°C (480°F)			30 (4.4)
Flexural Strength, 1.6mm (0.062in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			290 (42.0)
23°C (73°F)			192 (27.9)
150°C (300°F)			69 (10.0)
200°C (390°F)			49 (7.1)
250°C (480°F)			29 (4.2)
Flexural Strength, 3.2mm (0.125in)	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			270 (39.2)
23°C (73°F)			183 (26.6)
120°C (250°F)			78 (11.3)
150°C (300°F)			64 (9.3)
200°C (390°F)			48 (7.0)
250°C (480°F)			30 (4.4)
Compressive Strength	ASTM D 695	MPa (kpsi)	89 (12.5)
Compressive Modulus	ASTM D 695	MPa (kpsi)	5300 (770)
Notched Izod Impact Strength	ISO 180/1A	kJ/m^2	18
Izod Impact, 0.8mm (0.031in)	ASTM D 256	J/m (ft lb/in)	
-40°C (-40°F)			490, 40%NB (9.2, 40%NB)
23°C (73°F)			400, 40%NB (7.5, 40%NB)
Izod Impact, 1.6mm (0.062in)	ASTM D 256	J/m (ft lb/in)	
-40°C (-40°F)			190 (3.6)
23°C (73°F)			170 (3.2)

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Mechanical			
Izod Impact, 3.2mm (0.125in)	ASTM D 256	J/m (ft lb/in)	
-40°C (-40°F)			185 (3.5)
23°C (73°F)			225 (4.2)
Unnotched Izod Impact Strength	ISO 180/1U	kJ/m^2	30
Unnotched Impact, 0.8mm (0.031in)	ASTM D 4812	J/m (ft lb/in)	
-40°C (-40°F)			470, 60%NB (8.8, 60%NB)
23°C (73°F)			NB
Unnotched Impact, 1.6mm (0.062in)	ASTM D 4812	J/m (ft lb/in)	
-40°C (-40°F)			475 (8.9)
23°C (73°F)			840 (15.7)
Unnotched Impact, 3.2mm (0.125in)	ASTM D 4812	J/m (ft lb/in)	
-40°C (-40°F)			555 (10.4)
23°C (73°F)			740 (13.9)
Notched Charpy Impact Strength	ISO 179/1eA	kJ/m^2	
-30°C (-22°F)			20
23°C (73°F)			20
Unnotched Charpy Impact Strength	ISO 179/1eU	kJ/m^2	
-30°C (-22°F)			22
23°C (73°F)			30
Thermal			
Deflection Temperature	ISO 75-1/-2 1993/N_2	°C (°F)	
1.80MPa			310 (590)
Melting Temperature	ISO 11357-1/-3	°C (°F)	
10°C/min			352 (666)

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Property	Test Method	Units	Value
Thermal			
CLTE, Parallel	ISO 11359-1/-2	E-4/C (E-4/F)	
-40 - 260°C (-40 - 500°F), 2mm			-0.01
-40 - 260°C (-40 - 500°F), 4mm			0.02 (0.01)
-40 - 23°C (-40 - 73°F), 2mm			0.01
-40 - 23°C (-40 - 73°F), 4mm			0.02 (0.01)
23 - 55°C (73 - 130°F), 2mm			0.01
23 - 55°C (73 - 130°F), 4mm			0.03 (0.02)
55 - 160°C (130 - 320°F), 2mm			0
55 - 160°C (130 - 320°F), 4mm			0.02 (0.01)
160 - 260°C (320 - 500°F), 2mm			-0.04 (-0.02)
160 - 260°C (320 - 500°F), 4mm			-0.04 (-0.02)
CLTE, Normal	ISO 11359-1/-2	E-4/C (E-4/F)	
-40 - 260°C (-40 - 500°F), 2mm			0.83 (0.46)
-40 - 260°C (-40 - 500°F), 4mm			0.79 (0.44)
-40 - 23°C (-40 - 73°F), 2mm			0.60 (0.33)
-40 - 23°C (-40 - 73°F), 4mm			0.54 (0.30)
23 - 55°C (73 - 130°F), 2mm			0.68 (0.38)
23 - 55°C (73 - 130°F), 4mm			0.62 (0.34)
55 - 160°C (130 - 320°F), 2mm			0.86 (0.48)
55 - 160°C (130 - 320°F), 4mm			0.80 (0.44)
160 - 260°C (320 - 500°F), 2mm			1.02 (0.57)
160 - 260°C (320 - 500°F), 4mm			0.94 (0.52)
Glass Transition Temperature	ISO 11357-1/-2	°C (°F)	
10°C/min			120 (248)
Extrapolated End Melt Temp.	ASTM D 3418	°C (°F)	360 (680)
Thermal Conductivity	ASTM C 177	W/m K (Btu in/h ft^2 F)	0.32 (2.2)
Electrical			
Surface Resistivity	IEC 60093	ohm	1E16
Volume Resistivity	IEC 60093	ohm m	1E14

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Property	Test Method	Units	Value
Electrical			
Electric Strength	IEC 60243-1	kV/mm (V/mil)	
1.0mm			45 (1140)
2.0mm			27 (690)
Dielectric Strength, Short Time, 1.6mm	ASTM D 149	kV/mm (V/mil)	
23°C (73°F)			35 (900)
120°C (250°F)			34 (870)
150°C (300°F)			36 (920)
200°C (390°F)			35 (900)
Dielectric Strength, Short Time, 3.2mm	ASTM D 149	kV/mm (V/mil)	
23°C (73°F)			>28 (>710)
120°C (250°F)			>28 (>710)
150°C (300°F)			>26 (>660)
200°C (390°F)			>27 (>690)
Dielectric Constant	ASTM D 2520 B		
1E09 Hz, 2.0mm			4.2
1E10 Hz, 2.0mm			4.4
1E10 Hz, 2.0mm, Transverse			3.9
2E10 Hz, 2.0mm			4.3
Relative Permittivity	IEC 60250		
23°C (73°F), 1E2 Hz			4.1
23°C (73°F), 1E3 Hz			4.0
100°C (212°F), 1E3 Hz			4.4
150°C (300°F), 1E3 Hz			4.4
200°C (390°F), 1E3 Hz			4.4
23°C (73°F), 1E6 Hz			3.7
100°C (212°F), 1E6 Hz			4.1
150°C (300°F), 1E6 Hz			4.3
200°C (390°F), 1E6 Hz			4.3
Dielectric Strength, Step by Step, 1.6mm	ASTM D 149	kV/mm (V/mil)	31 (790)
Dielectric Strength, Step by Step, 3.2mm	ASTM D 149	kV/mm (V/mil)	24 (600)

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Property	Test Method	Units	Value
Electrical			
Dielectric Constant, 0.8mm (0.031in)	ASTM D 150		
23°C (73°F), 1E3 Hz			3.9
120°C (250°F), 1E3 Hz			4.4
150°C (300°F), 1E3 Hz			4.5
200°C (390°F), 1E3 Hz			4.4
23°C (73°F), 1E6 Hz			3.5
120°C (250°F), 1E6 Hz			4.3
150°C (300°F), 1E6 Hz			4.4
200°C (390°F), 1E6 Hz			4.4
Dielectric Constant, 0.8mm (0.031in)	ASTM D 2520 B		
23°C (73°F), 1E09 Hz			4.4
120°C (250°F), 1E09 Hz			4.4
150°C (300°F), 1E09 Hz			4.4
200°C (390°F), 1E09 Hz			4.8
Dielectric Constant, 1.6mm (0.062in)	ASTM D 2520 B		
23°C (73°F), 1E09 Hz			4.3
120°C (250°F), 1E09 Hz			4.4
150°C (300°F), 1E09 Hz			4.4
200°C (390°F), 1E09 Hz			4.7
Dielectric Constant, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F), 1E3 Hz			4.3
120°C (250°F), 1E3 Hz			4.9
150°C (300°F), 1E3 Hz			5.0
200°C (390°F), 1E3 Hz			5.0
23°C (73°F), 1E6 Hz			3.8
120°C (250°F), 1E6 Hz			4.5
150°C (300°F), 1E6 Hz			4.8
200°C (390°F), 1E6 Hz			4.9

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Property	Test Method	Units	Value
Electrical			
Dielectric Constant, 3.2mm (0.125in)	ASTM D 2520 B		
23°C (73°F), 1E09 Hz			4.3
120°C (250°F), 1E09 Hz			4.4
150°C (300°F), 1E09 Hz			4.4
200°C (390°F), 1E09 Hz			4.7
Dissipation Factor, 0.8mm (0.031in)	ASTM D 150		
23°C (73°F), 1E3 Hz			0.013
120°C (250°F), 1E3 Hz			0.007
150°C (300°F), 1E3 Hz			0.007
200°C (390°F), 1E3 Hz			0.012
23°C (73°F), 1E6 Hz			0.029
120°C (250°F), 1E6 Hz			0.030
150°C (300°F), 1E6 Hz			0.015
200°C (390°F), 1E6 Hz			0.009
Dissipation Factor, 0.8mm (0.031in)	ASTM D 2520 B		
1E09 Hz			0.004
Dissipation Factor	ASTM D 2520 B		
1E09 Hz, 2.0mm			0.005
Dissipation Factor, 0.8mm (0.031in)	ASTM D 2520 B		
120°C (250°F), 1E09 Hz			0.013
150°C (300°F), 1E09 Hz			0.019
200°C (390°F), 1E09 Hz			0.026
Dissipation Factor	ASTM D 2520 B		
1E10 Hz, 2.0mm			0.005
1E10 Hz, 2.0mm, Transverse			0.005
2E10 Hz, 2.0mm			0.006

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Property	Test Method	Units	Value
Electrical			
Dissipation Factor	IEC 60250	E-4	
23°C (73°F), 1E2 Hz			140
23°C (73°F), 1E3 Hz			150
100°C (212°F), 1E3 Hz			100
150°C (300°F), 1E3 Hz			100
200°C (390°F), 1E3 Hz			130
23°C (73°F), 1E6 Hz			300
100°C (212°F), 1E6 Hz			450
150°C (300°F), 1E6 Hz			180
200°C (390°F), 1E6 Hz			100
Dissipation Factor, 1.6mm (0.062in)	ASTM D 2520 B		
23°C (73°F), 1E09 Hz			0.004
120°C (250°F), 1E09 Hz			0.014
150°C (300°F), 1E09 Hz			0.020
200°C (390°F), 1E09 Hz			0.028
Dissipation Factor, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F), 1E3 Hz			0.013
120°C (250°F), 1E3 Hz			0.006
150°C (300°F), 1E3 Hz			0.006
200°C (390°F), 1E3 Hz			0.012
23°C (73°F), 1E6 Hz			0.029
120°C (250°F), 1E6 Hz			0.034
150°C (300°F), 1E6 Hz			0.014
200°C (390°F), 1E6 Hz			0.009
Dissipation Factor, 3.2mm (0.125in)	ASTM D 2520 B		
23°C (73°F), 1E09 Hz			0.004
120°C (250°F), 1E09 Hz			0.016
150°C (300°F), 1E09 Hz			0.022
200°C (390°F), 1E09 Hz			0.030
250°C (480°F), 1E09 Hz			0.033

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Property	Test Method	Units	Value
Electrical			
CTI	IEC 60112	V	175
CTI	UL 746A	V	100-174
Flammability			
Flammability Classification	IEC 60695-11-10		
0.4mm			V-0
Flammability Classification	UL94		
0.4mm			V-0
Oxygen Index	ASTM D 2863	%	
3.2mm (0.125in)			39
Oxygen Index	ISO 4589-1/-2	%	45
Temperature Index			
RTI, Electrical	UL 746B	°C	
0.75mm			240
RTI, Impact	UL 746B	°C	
0.75mm			210
RTI, Strength	UL 746B	°C	
0.75mm			240

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Other			
Density	ISO 1183	kg/m^3 (g/cm^3)	1620 (1.62)
Hardness, Rockwell	ASTM D 785		
Scale M			63
Scale R			110
Taber Abrasion	ASTM D 1044	mg	
CS-17 Wheel, 1kg, 1000 cycles			63
UL Regrind Approval	UL 746D	%	50
Molding Shrinkage	ISO 294-4	%	
Normal, 2.0mm			0.6
Parallel, 2.0mm			0.01
Mold Shrinkage	ASTM D 955	%	
Flow, 1.6mm (0.062in)			-0.1
Flow, 3.2mm (0.125in)			0
Transverse, 1.6mm (0.062in)			0.9
Transverse, 3.2mm (0.125in)			0.8
Processing			
Melt Temperature Range		°C (°F)	360-370 (680-700)
Melt Temperature Optimum		°C (°F)	365 (690)
Mold Temperature Range		°C (°F)	40-150 (105-300)
Mold Temperature Optimum		°C (°F)	80 (175)
Drying Time, Dehumidified Dryer		h	3
Drying Temperature		°C (°F)	150 (304)
Processing Moisture Content		%	<0.01

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