Zenite® LCP

liquid crystal polymer resin

Zenite® 6130L BK010

Lubricated 30% Glass Reinforced Liquid Crystal Polymer Resin

Zenite® 6130L is a lubricated 30% glass reinforced LCP resin. It is well suited for use in the automotive, electrical/electronic, telecommunications, and aerospace industries.

Property	Test Method	Units	Value
Mechanical			
Stress at Break, 1.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			260 (38)
-30°C (-20°F)			240 (35)
23°C (73°F)			180 (26.1)
120°C (250°F)			70 (10.2)
150°C (300°F)			55 (8)
200°C (390°F)			40 (5.8)
250°C (480°F)			22 (3.2)
Stress at Break, 2.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			225 (33)
-30°C (-20°F)			210 (30)
23°C (73°F)			150 (21.7)
120°C (250°F)			60 (8.7)
150°C (300°F)			50 (7.3)
200°C (390°F)			35 (5.1)
250°C (480°F)			20 (2.9)

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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			
Stress at Break, 4.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			200 (29)
-30°C (-20°F)			190 (27.5)
23°C (73°F)			130 (18.9)
120°C (250°F)			55 (8)
150°C (300°F)			45 (6.5)
200°C (390°F)			30 (4.4)
250°C (480°F)			18 (2.6)
Strain at Break, 1.0mm	ISO 527-1/-2	%	
-40°C (-40°F)			1.7
-30°C (-20°F)			1.8
23°C (73°F)			1.9
120°C (250°F)			1.2
150°C (300°F)			1.2
200°C (390°F)			1.1
250°C (480°F)			1.0
Strain at Break, 2.0mm	ISO 527-1/-2	%	
-40°C (-40°F)			1.8
-30°C (-20°F)			1.9
23°C (73°F)			2.2
120°C (250°F)			1.5
150°C (300°F)			1.3
200°C (390°F)			1.1
250°C (480°F)			1.1
Strain at Break, 4.0mm	ISO 527-1/-2	%	
-40°C (-40°F)			1.9
-30°C (-20°F)			1.9
23°C (73°F)			1.8
120°C (250°F)			1.7
150°C (300°F)			1.4
200°C (390°F)			1.1
250°C (480°F)			1.0

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Property	Test Method	Units	Value
Mechanical			
Tensile Modulus, 1.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			21900 (3180)
-30°C (-20°F)			20000 (2900)
23°C (73°F)			16700 (2430)
120°C (250°F)			7800 (1150)
150°C (300°F)			6900 (1000)
200°C (390°F)			5500 (800)
250°C (480°F)			4500 (650)
Tensile Modulus, 2.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			19700 (2850)
-30°C (-20°F)			18300 (2650)
23°C (73°F)			15300 (2220)
120°C (250°F)			7300 (1050)
150°C (300°F)			6500 (950)
200°C (390°F)			4700 (680)
250°C (480°F)			3000 (430)
Tensile Modulus, 4.0mm	ISO 527-1/-2	MPa (kpsi)	
-40°C (-40°F)			19000 (2760)
-30°C (-20°F)			18000 (2600)
23°C (73°F)			13000 (1890)
120°C (250°F)			6400 (930)
150°C (300°F)			5900 (850)
200°C (390°F)			4200 (610)
250°C (480°F)			2700 (390)
Flexural Modulus, 1.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			20800 (3020)
23°C (73°F)			16200 (2350)
120°C (250°F)			7820 (1130)
150°C (300°F)			7500 (1100)
200°C (390°F)			5830 (850)
250°C (480°F)			3820 (550)

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Property	Test Method	Units	Value
Mechanical			
Flexural Modulus, 2.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			16600 (2400)
23°C (73°F)			12500 (1800)
120°C (250°F)			7600 (1100)
150°C (300°F)			7100 (1000)
200°C (390°F)			5070 (740)
250°C (480°F)			3690 (530)
Flexural Modulus, 4.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			15700 (2300)
23°C (73°F)			12000 (1740)
120°C (250°F)			6900 (1000)
150°C (300°F)			6200 (900)
200°C (390°F)			5050 (730)
250°C (480°F)			3560 (520)
Flexural Strength, 1.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			327 (47)
23°C (73°F)			211 (31)
120°C (250°F)			79 (12)
150°C (300°F)			65 (9)
200°C (390°F)			43 (6)
250°C (480°F)			23 (3)
Flexural Strength, 2.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			287 (42)
23°C (73°F)			191 (28)
120°C (250°F)			75 (11)
150°C (300°F)			61 (9)
200°C (390°F)			39 (6)
250°C (480°F)			21 (3)

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Property	Test Method	Units	Value
Mechanical			
Flexural Strength, 4.0mm	ISO 178	MPa (kpsi)	
-40°C (-40°F)			258 (37)
23°C (73°F)			167 (24)
120°C (250°F)			68 (10)
150°C (300°F)			54 (8)
200°C (390°F)			37 (5)
250°C (480°F)			20 (3)
Izod Impact	ASTM D 256	J/m (ft lb/in)	
3.2mm (0.126in)			120 (2.3)
Notched Charpy Impact	ISO 179/1eA	kJ/m^2	
-30°C (-22°F)			30
23°C (73°F)			35
Unnotched Charpy Impact	ISO 179/1eU	kJ/m^2	
-30°C (-22°F)			25
23°C (73°F)			35
Thermal			
Deflection Temperature	ISO 75-1/-2	°C (°F)	
1.80MPa			265 (510)
Melting Temperature	ISO 3146C	°C (°F)	335 (635)
Electrical			
Surface Resistivity	IEC 60093	ohm	>1E15
Relative Permittivity	IEC 60250		
1E2 Hz			4.5
1E6 Hz			4.0
Volume Resistivity	IEC 60093	ohm m	>1E14
Dielectric Strength, Short Time, 0.8mm	ASTM D 149	kV/mm (V/mil)	
23°C (73°F)			40 (1020)
120°C (250°F)			41 (1050)
150°C (300°F)			37 (950)
200°C (392°F)			40 (1010)

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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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Property	Test Method	Units	Value
Electrical			
Dielectric Strength, Short Time, 1.6mm	ASTM D 149	kV/mm (V/mil)	
23°C (73°F)			35 (900)
120°C (250°F)			33 (840)
150°C (300°F)			31 (800)
200°C (392°F)			33 (850)
Dielectric Strength, Short Time, 3.2mm	ASTM D 149	kV/mm (V/mil)	
23°C (73°F)			29 (740)
120°C (250°F)			28 (730)
150°C (300°F)			27 (680)
Dielectric Strength, Step by Step	ASTM D 149	kV/mm (V/mil)	
0.8mm (0.032in)			30 (760)
1.6mm (0.063in)			29 (740)
3.2mm (0.126in)			26 (650)
Dielectric Const, 1E03 Hz, 0.8mm (0.032in)	ASTM D 150		
23°C (73°F)			4.0
120°C (250°F)			4.5
150°C (300°F)			4.5
200°C (392°F)			4.5
Dielectric Const, 1E03 Hz, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F)			4.4
120°C (250°F)			5.0
150°C (300°F)			5.0
200°C (392°F)			5.0
Dielectric Const, 1E06 Hz, 0.8mm (0.032in)	ASTM D 150		
23°C (73°F)			3.6
120°C (250°F)			4.3
150°C (300°F)			4.4
200°C (392°F)			4.4

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Property	Test Method	Units	Value
Electrical			
Dielectric Const, 1E06 Hz, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F)			3.9
120°C (250°F)			4.8
150°C (300°F)			4.8
200°C (392°F)			4.9
Dielectric Const, 1E09 Hz, 0.8mm (0.032in)	ASTM D 2520 B		
23°C (73°F)			4.4
120°C (250°F)			4.4
150°C (300°F)			4.4
200°C (392°F)			4.5
Dielectric Const, 1E09 Hz, 1.6mm (0.063in)	ASTM D 2520 B		
23°C (73°F)			4.3
120°C (250°F)			4.4
150°C (300°F)			4.4
200°C (392°F)			4.5
Dielectric Const, 1E09 Hz, 3.2mm (0.125in)	ASTM D 2520 B		
23°C (73°F)			4.3
120°C (250°F)			4.4
150°C (300°F)			4.4
200°C (392°F)			4.5
250°C (482°F)			4.8
Dissipation Factor	IEC 60250	E-4	
1E2 Hz			150
1E6 Hz			310
Dissipation Fact, 1E03 Hz, 0.8mm (0.032in)	ASTM D 150		
23°C (73°F)			0.013
120°C (250°F)			0.008
150°C (300°F)			0.009
200°C (392°F)			0.015

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Property	Test Method	Units	Value
Electrical			
Dissipation Fact, 1E03 Hz, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F)			0.013
120°C (250°F)			0.006
150°C (300°F)			0.007
200°C (392°F)			0.014
Dissipation Fact, 1E06 Hz, 0.8mm (0.032in)	ASTM D 150		
23°C (73°F)			0.026
150°C (300°F)			0.016
200°C (392°F)			0.010
Dissipation Fact, 1E06 Hz, 3.2mm (0.125in)	ASTM D 150		
23°C (73°F)			0.027
120°C (250°F)			0.032
150°C (300°F)			0.018
200°C (392°F)			0.009
Dissipation Fact, 1E09 Hz, 0.8mm (0.032in)	ASTM D 2520 B		
23°C (73°F)			0.004
120°C (250°F)			0.012
150°C (300°F)			0.018
200°C (392°F)			0.025
Dissipation Fact, 1E09 Hz, 1.6mm (0.063in)	ASTM D 2520 B		
23°C (73°F)			0.004
120°C (250°F)			0.014
150°C (300°F)			0.020
200°C (392°F)			0.028
Dissipation Fact, 1E09 Hz, 3.2mm (0.125in)	ASTM D 2520 B		
23°C (73°F)			0.004
120°C (250°F)			0.016
150°C (300°F)			0.023
200°C (392°F)			0.032
250°C (482°F)			0.034

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Property	Test Method	Units	Value
Electrical			
Electric Strength	IEC 60243-1	kV/mm	37
CTI	ASTM D 3638	V	100-174
Flammability			
Flammability Classification	UL94		
0.38mm			V-0
0.75mm			V-0
1.5mm			V-0
3.0mm			V-0
1.5mm Nominal Rating	UL94		V-0
1.5mm Nominal Thickness Tested	UL94	mm	1.5
Other Thickness Rating	UL94		V-0
Other Thickness Tested	UL94	mm	0.38
Oxygen Index	ISO 4589	%	41
Other			
Density	ISO 1183	kg/m^3 (g/cm^3)	1620 (1.62)
Processing			
Melt Temperature Range		°C (°F)	350-360 (660-680)
Melt Temperature Optimum		°C (°F)	355 (670)
Mold Temperature Range		°C (°F)	30-160 (85-320)
Mold Temperature Optimum		°C (°F)	90 (194)
Drying Time, Dehumidified Dryer		h	4
Drying Temperature		°C (°F)	130 (265)
Processing Moisture Content		%	<0.01

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