Zenite® LCP

liquid crystal polymer resin

PRELIMINARY DATA

Zenite® 7130 BK & WT

30% Glass Reinforced Liquid Crystal Polymer Resin

Zenite® 7130 is a 30% glass reinforced LCP resin having excellent toughness and a heat deflection temperature of 289 C. It is well suited for use in the automotive, electrical/electronic, telecommunications, and aerospace industries.

Property	Test Method	Units	Value
Mechanical			
Tensile Strength, 1.6mm (0.063in)	ASTM D 638	MPa (kpsi)	
-40C (-40F)			235 (34.1)
23C (73F)			173 (25.1)
120C (248F)			79 (11.5)
150C (302F)			72 (10.4)
200C (392F)			54 (7.8)
250C (482F)			39 (5.7)
Tensile Strength, 3.2mm (0.125in)	ASTM D 638	MPa (kpsi)	
-40C (-40F)			230 (33.7)
23C (73F)			150 (21.7)
120C (250F)			75 (10.7)
149C (300F)			60 (8.6)
200C (392F)			56 (8.2)
250C (482F)			30 (4.3)
Elongation at Break, 1.6mm (0.063in)	ASTM D 638	%	
-40C (-40F)			1.3
23C (73F)			1.6
120C (248F)			1.2
150C (302F)			1.0
200C (392F)			1.0
250C (482F)			0.8

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Mechanical properties measured at 23°C (73°F) unless otherwise stated.
Mechanical properties measured at 3.18mm (0.125in) unless otherwise stated.

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			
Elongation at Break, 3.2mm (0.125in)	ASTM D 638	%	1.7
Tensile Modulus, 1.6mm (0.063in)	ASTM D 638	MPa (kpsi)	
-40C (-40F)			26890 (3900)
23C (73F)			19306 (2880)
150C (302F)			12066 (1750)
200C (392F)			9308 (1350)
250C (482F)			8963 (1300)
Tensile Modulus, 3.2mm (0.125in)	ASTM D 638	MPa (kpsi)	
-40C (-40F)			23000 (3600)
23C (73F)			18000 (2600)
120C (250F)			14000 (2000)
149C (300F)			9000 (1300)
200C (392F)			9000 (1300)
250C (482F)			9000 (1300)
Shear Strength, 0.8mm (0.032in)	ASTM D 732	MPa (kpsi)	57 (8.2)
Shear Strength, 3.2mm (0.125in)	ASTM D 732	MPa (kpsi)	58 (8.4)
Flexural Modulus, 0.8mm (0.032in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			22000 (3200)
23C (73F)			18000 (2600)
149C (300F)			9000 (1300)
200C (392F)			8000 (1100)
250C (482F)			5000 (700)
Flexural Modulus, 1.6mm (0.063in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			16000 (2300)
23C (73F)			14000 (2000)
149C (300F)			8000 (1200)
200C (392F)			6000 (800)
250C (482F)			4000 (600)
Flexural Modulus, 3.2mm (0.125in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			16000 (2300)
23C (73F)			13100 (1900)
120C (250F)			8000 (1100)
149C (300F)			8000 (1100)
200C (392F)			6500 (900)
250C (482F)			3500 (500)

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Property	Test Method	Units	Value
Mechanical			
Flexural Strength, 0.8mm (0.032in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			335 (48.5)
23C (73F)			215 (31.1)
149C (300F)			73 (10.6)
200C (392F)			53 (7.7)
250C (482F)			30 (4.4)
Flexural Strength, 1.6mm (0.063in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			290 (42.0)
23C (73F)			192 (27.9)
149C (300F)			69 (10.0)
200C (392F)			49 (7.1)
250C (482F)			29 (4.2)
Flexural Strength, 3.2mm (0.125in)	ASTM D 790	MPa (kpsi)	
-40C (-40F)			270 (39.2)
23C (73F)			183 (26.6)
120C (250F)			78 (11.3)
149C (300F)			64 (9.3)
200C (392F)			48 (7.0)
250C (482F)			30 (4.4)
Compressive Strength, 3.2mm (0.125in)	ASTM D 695	MPa (kpsi)	89 (12.5)
Compressive Modulus, 3.2mm (0.125in)	ASTM D 695	MPa (kpsi)	5300 (770)
Flexural Fatigue, 3.2mm (0.125in)	ASTM D 671	cycles	
28MPa (4000psi)			>14,664,000
41MPa (6000psi)			5,263,333
69MPa (10000psi)			2667
Izod Impact, 0.8mm (0.032in)	ASTM D 256	J/m (ft lb/in)	
-40C (-40F)			490, 40%NB (9.2, 40%NB)
23C (73F)			400, 40%NB (7.5, 40%NB)
Izod Impact, 1.6mm (0.063in)	ASTM D 256	J/m (ft lb/in)	
-40C (-40F)			190 (3.6)
23C (73F)			170 (3.2)
Izod Impact, 3.2mm (0.125in)	ASTM D 256	J/m (ft lb/in)	
-40C (-40F)			185 (3.5)
23C (73F)			225 (4.2)

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Property	Test Method	Units	Value
Mechanical			
Unnotched Impact, 0.8mm (0.032in)	ASTM D 4812	J/m (ft lb/in)	
-40C (-40F)			470, 60%NB (8.8, 60%NB)
23C (73F)			NB
Unnotched Impact, 1.6mm (0.063in)	ASTM D 4812	J/m (ft lb/in)	
-40C (-40F)			475 (8.9)
23C (73F)			840 (15.7)
Unnotched Impact, 3.2mm (0.125in)	ASTM D 4812	J/m (ft lb/in)	
-40C (-40F)			555, 60%NB (10.4, 60%NB)
23C (73F)			740, 20%NB (13.9, 20%NB)
Thermal			
Heat Deflection Temperature	ASTM D 648	°C (°F)	
1.8MPa (264psi)			289 (552)
CLTE, Parallel	ASTM E 228	E-4/C (E-4/F)	
23 - 150C (73 - 302F), 1.6mm (0.063in)			0.04 (0.02)
23 - 150C (73 - 302F), 3.2mm (0.126in)			0.14 (0.08)
CLTE, Normal	ASTM E 228	E-4/C (E-4/F)	
23 - 150C (73 - 302F), 1.6mm (0.063in)			0.43 (0.24)
23 - 150C (73 - 302F), 3.2mm (0.126in)			0.36 (0.20)
Glass Transition Temperature	ASTM D 3418	°C (°F)	120 (250)
Extrapolated End Melt Temp.	ASTM D 3418	°C (°F)	360 (680)
Melting Point	ASTM D 3418	°C (°F)	352 (666)
Thermal Conductivity	ASTM C 177	W/m K (Btu in/h ft2 F)	0.32 (2.2)
Electrical			
Surface Resistivity	ASTM D 257	ohm	1 E15
Volume Resistivity	ASTM D 257	ohm cm	1 E16
Dielectric Strength, Short Time, 1.6mm	ASTM D 149	kV/mm (V/mil)	
23C (73F)			35 (900)
120C (250F)			34 (870)
150C (300F)			36 (920)
200C (392F)			35 (880)
Dielectric Strength, Short Time, 3.2mm	ASTM D 149	kV/mm (V/mil)	
23C (73F)			>28 (>710)
120C (250F)			>28 (>710)
150C (300F)			>26 (>670)
200C (392F)			>27 (>690)
Dielectric Strength, Step by Step	ASTM D 149	kV/mm (V/mil)	31 (780)
1.6mm (0.063in)			31 (780)
3.2mm (0.126in)			24 (600)

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Mechanical properties measured at 3.18mm (0.125in) unless otherwise stated.

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Electrical			
Dielectric Const, 1E03 Hz, 0.8mm (0.032in)	ASTM D 150		
23C (73F)			3.9
120C (250F)			4.4
150C (300F)			4.5
200C (392F)			4.4
Dielectric Const, 1E03 Hz, 3.2mm (0.125in)	ASTM D 150		
23C (73F)			4.3
120C (250F)			4.9
150C (300F)			5.0
200C (392F)			5.0
Dielectric Const, 1E06 Hz, 0.8mm (0.032in)	ASTM D 150		
23C (73F)			3.5
120C (250F)			4.3
150C (300F)			4.4
200C (392F)			4.4
Dielectric Const, 1E06 Hz, 3.2mm (0.125in)	ASTM D 150		
23C (73F)			3.8
120C (250F)			4.5
150C (300F)			4.8
200C (392F)			4.9
Dielectric Const, 1E09 Hz, 0.8mm (0.032in)	ASTM D 2520 B		
23C (73F)			4.4
120C (250F)			4.4
150C (300F)			4.4
200C (392F)			4.8
Dielectric Const, 1E09 Hz, 1.6mm (0.063in)	ASTM D 2520 B		
23C (73F)			4.3
120C (250F)			4.4
150C (300F)			4.4
200C (392F)			4.7
Dielectric Const, 1E09 Hz, 3.2mm (0.125in)	ASTM D 2520 B		
23C (73F)			4.3
120C (250F)			4.4
150C (300F)			4.4
200C (392F)			4.7

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Property	Test Method	Units	Value
Electrical			
Dissipation Fact, 1E03 Hz, 0.8mm (0.032in)	ASTM D 150		
23C (73F)			0.013
120C (250F)			0.007
150C (300F)			0.007
200C (392F)			0.012
Dissipation Fact, 1E03 Hz, 3.2mm (0.125in)	ASTM D 150		
23C (73F)			0.013
120C (250F)			0.006
150C (300F)			0.006
200C (392F)			0.012
Dissipation Fact, 1E06 Hz, 0.8mm (0.032in)	ASTM D 150		
23C (73F)			0.029
120C (250F)			0.030
150C (300F)			0.015
200C (392F)			0.009
Dissipation Fact, 1E06 Hz, 3.2mm (0.125in)	ASTM D 150		
23C (73F)			0.029
120C (250F)			0.034
150C (300F)			0.014
200C (392F)			0.009
Dissipation Fact, 1E09 Hz, 0.8mm (0.032in)	ASTM D 2520 B		
23C (73F)			0.004
120C (250F)			0.013
150C (300F)			0.019
200C (392F)			0.026
Dissipation Fact, 1E09 Hz, 1.6mm (0.063in)	ASTM D 2520 B		
23C (73F)			0.004
120C (250F)			0.014
150C (300F)			0.020
200C (392F)			0.028
Dissipation Fact, 1E09 Hz, 3.2mm (0.125in)	ASTM D 2520 B		
23C (73F)			0.004
120C (250F)			0.016
150C (300F)			0.022
200C (392F)			0.030
250C (482F)			0.033
CTI	ASTM D 3638	V	167

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Property	Test Method	Units	Value
Flammability			
Rating @ Thickness	UL94		V-0
Thickness Tested	UL94	mm	0.75
Limited Oxygen Index	ASTM D 2863	%	
3.2mm (0.126in)			39
Temperature Index			
RTI, Electrical	UL 746B	°C	
0.75mm			240
1.5mm			240
3.0mm			240
RTI, Mechanical with Impact	UL 746B	°C	
1.5mm			210
3.0mm			210
RTI, Mechanical without Impact	UL 746B	°C	
0.75mm			240
1.5mm			240
3.0mm			240
Other			
Specific Gravity	ASTM D 792		
Black			1.62
White			1.66
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
Mold Shrinkage	ASTM D 955	%	
Flow, 1.6mm (0.063in)			-0.1
Flow, 3.2mm (0.126in)			0
Transverse, 1.6mm (0.063in)			0.9
Transverse, 3.2mm (0.126in)			0.8
Processing			
Melt Temperature Range		°C (°F)	363-371 (685-700)
Mold Temperature Range		°C (°F)	30-95 (85-200)
Drying Time, Dehumidified Dryer		h	2
Drying Temperature		°C (°F)	135 (275)
Processing Moisture Content		%	<0.01

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