Celanese
The chemistry inside innovation™

VECTRA® E150I

Liquid Crystal Polymer

Easy flowing grade with very good heat resistance, and mechanical properties. May reduce warpage in some parts compared to E130i. 50% glass reinforced. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural and black at 0.43mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electricals 240°C, mechanicals 240°C at 0.75mm. UL = Underwriters Laboratories (USA)

Product information

Resin Identification	LCP-GF50		ISO 1043
Part Marking Code	>LCP-GF50<		ISO 11469

Rheological properties

Molding shrinkage, parallel	0.2	%	ISO 294-4, 2577
Molding shrinkage, normal	0.5	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	2.9E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	18900	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	1	%	ISO 527-1/-2
Flexural modulus	2.76E6	psi	ISO 178
Flexural strength	29000	psi	ISO 178
Compressive modulus	2.61E6	psi	ISO 604
Compressive strength	21800	psi	ISO 604
Compressive stress at 1% strain	18100	psi	ISO 604
Charpy impact strength, 23°C	9.04	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.76	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	5.71	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	7.61	ftlb/in²	ISO 180/1U
Hardness, Rockwell, M-scale	66		ISO 2039-2

Thermal properties

Melting temperature, 10°C/min	635	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	500	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	437	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	392	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.03	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.0944	E-4/°F	ISO 11359-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	0.0591	in	IEC 60695-11-10
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0169	in	IEC 60695-11-10
UL recognition	yes		UL 94

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Electrical properties

Relative permittivity, 1MHz	4.7		IEC 62631-2-1
Dissipation factor, 1MHz	280	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E14	Ohm	IEC 62631-3-2
Electric strength	711	kV/in	IEC 60243-1
Arc Resistance	167	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.006	%	Sim. to ISO 62
Density	0.0653	lb/in^3	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	302	°F
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.01	%
Melt Temperature Optimum	644	°F
Min. melt temperature	635	°F
Max. melt temperature	653	°F
Max. screw tangential speed	0.2 - 0.3	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	176	°F
Max. mold temperature	248	°F
Back pressure	435	psi

Characteristics

Processing	Injection Molding
Special characteristics	Flame retardant, Heat stabilized or stable to heat, High Flow, Low Warpage, Lead-free soldering resistant

Additional information

Injection molding

Preprocessing

Vectra resins are well known for their excellent thermal and hydrolytic stability. In order to ensure these properties are optimum, the resin should be dried correctly prior to processing. Vectra Ei-grades and Vectra V143XL should be dried at 150°C for a minimum of 6 hours or at 170°C for a minimum of 4 hours in a desiccant dryer.

Processing

A three-zone screw evenly divided into feed, compression, and metering zones is preferred. A higher percentage of feed flights may be needed for smaller machines: 1/2 feed, 1/4 compression, 1/4 metering.

Vectra LCPs are shear thinning, their melt viscosity decreases quickly as shear

rate increases. For parts that are difficult to fill, the molder can increase the injection velocity to improve melt flow.

Processing Notes

Pre-Drying

VECTRA should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be =< - 40° C. The time between drying and processing should be as short as possible.

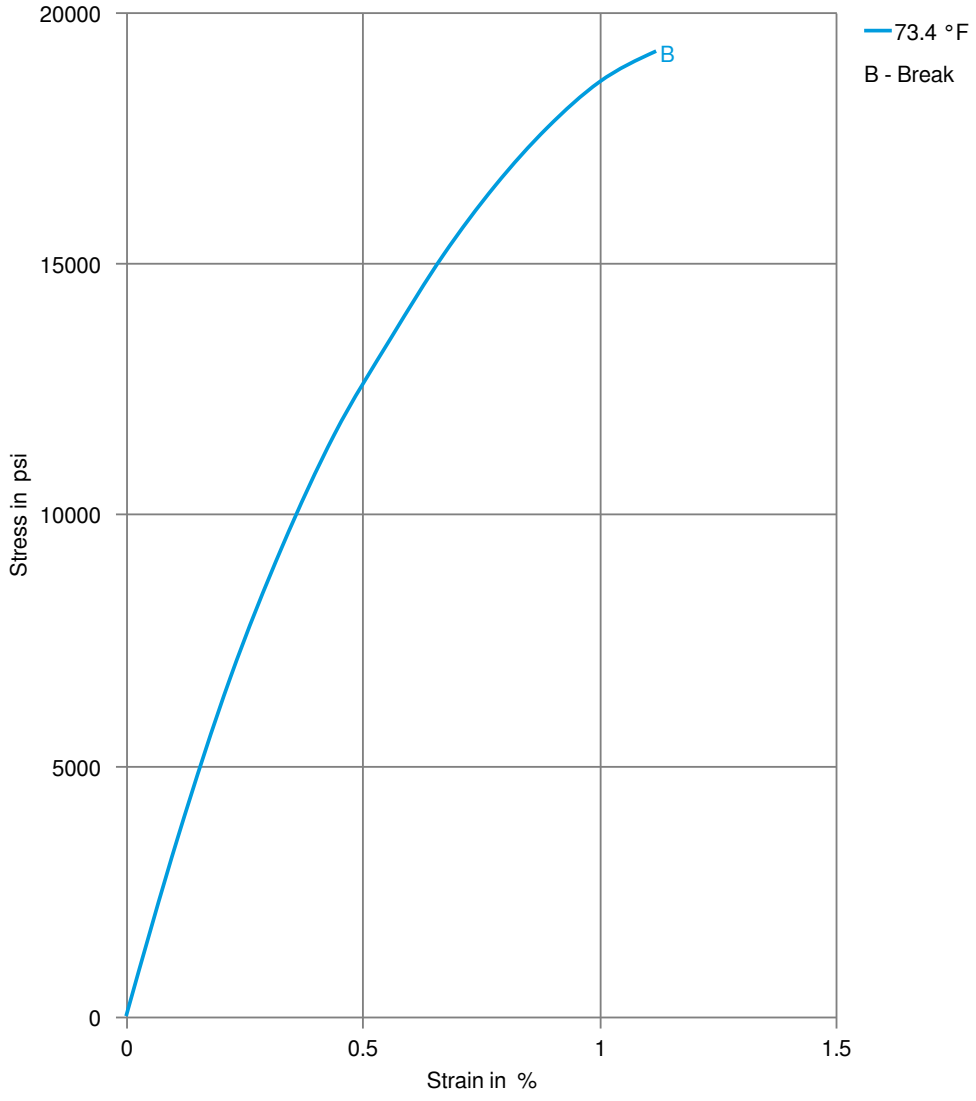
Storage

For subsequent storage of the material in the dryer until processed the temperature does not need to be lowered for grades A, B, C, D and V (<= 24 h).

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Stress-strain

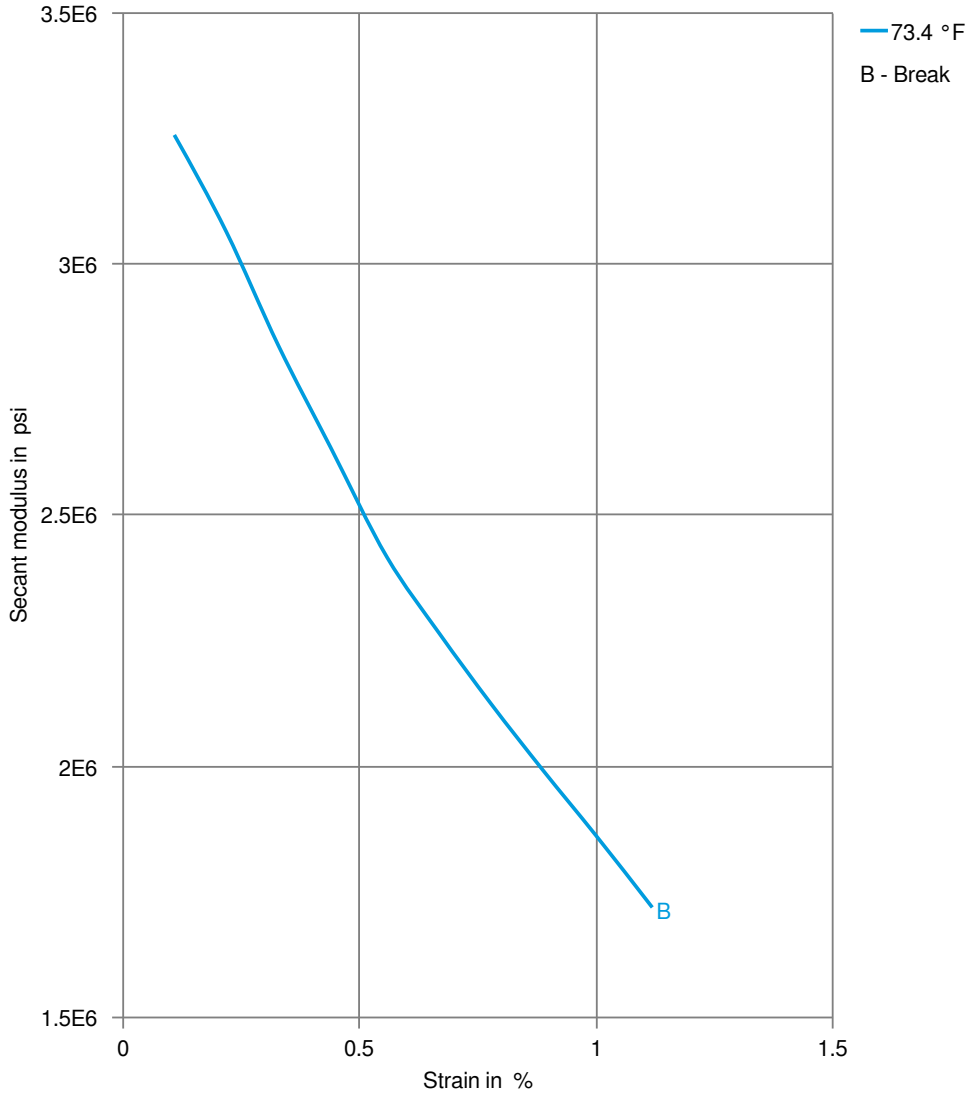


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Liquid Crystal Polymer

Secant modulus-strain



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