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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

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

Typical mechanical properties

Tensile modulus	20000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	130	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1	%	ISO 527-1/-2
Flexural modulus	19000	MPa	ISO 178
Flexural strength	200	MPa	ISO 178
Compressive modulus	18000	MPa	ISO 604
Compressive strength	150	MPa	ISO 604
Compressive stress at 1% strain	125	MPa	ISO 604
Charpy impact strength, 23°C	19	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	10	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	12	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	16	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	66		ISO 2039-2
Poisson's ratio	0.33[C]		

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	335	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	260	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	225	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	200	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	6	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	17	E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.43	mm	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	28	kV/mm	IEC 60243-1
Arc Resistance	167	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.006	%	Sim. to ISO 62
Density	1810	kg/m³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	150	°C
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.01	%
Melt Temperature Optimum	340	°C
Min. melt temperature	335	°C
Max. melt temperature	345	°C
Screw tangential speed	0.2 - 0.3	m/s
Mold Temperature Optimum	100	°C
Min. mould temperature	80	°C
Max. mould temperature	120	°C
Back pressure	3	MPa

Characteristics

Processing	Injection Moulding
Special characteristics	Flame retardant, Heat stabilised 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

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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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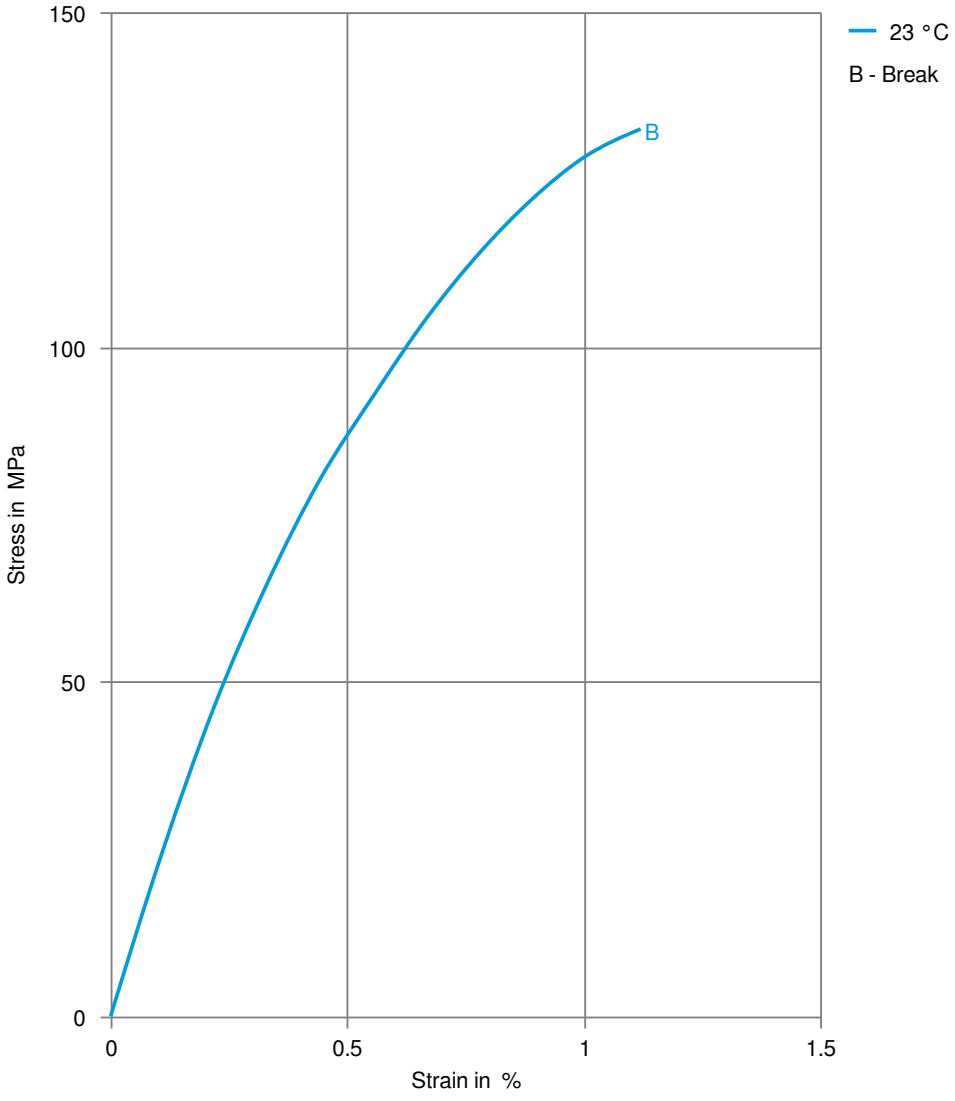
Stress-strain



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Secant modulus-strain