Celanese
The chemistry inside innovation™

VECTRA® A115

Liquid Crystal Polymer

Provides easier flow than A130. Slightly tougher, but may warp slightly more than A130 in some parts. 15% glass reinforced. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural and black at 0.44mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electricals 240 °C, mechanicals 220 °C at 0.85mm. UL = Underwriters Laboratories (USA)

Product information

Resin Identification	LCP-GF15	ISO 1043
Part Marking Code	>LCP-GF15<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0.1	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.4	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	12000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.1	%	ISO 527-1/-2
Flexural modulus	12600	MPa	ISO 178
Flexural strength	240	MPa	ISO 178
Compressive modulus	10000	MPa	ISO 604
Compressive stress at 1% strain	40.7	MPa	ISO 604
Charpy notched impact strength, 23 °C	70	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23 °C	50	kJ/m²	ISO 180/1A
Izod impact strength, 23 °C	61	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	80		ISO 2039-2
Poisson's ratio	0.33[C]		

[C]: Calculated

Thermal properties

Melting temperature, 10 °C/min	280	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	230	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	250	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	157	°C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	162	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	10	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	18	E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at thickness h	V-0	class	IEC 60695-11-10

Electrical properties

Relative permittivity, 100Hz	3.5		IEC 62631-2-1
Relative permittivity, 1MHz	3		IEC 62631-2-1
Dissipation factor, 100Hz	200	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	180	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1

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Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	34	kV/mm	IEC 60243-1
Comparative tracking index	200		IEC 60112
Arc Resistance	135	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.003	%	Sim. to ISO 62
Water absorption, 2mm	0.006	%	Sim. to ISO 62
Density	1500	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	290	°C
Min. melt temperature	285	°C
Max. melt temperature	295	°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
Ejection temperature	234	°C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Special characteristics	Flame retardant, Light stabilised or stable to light, U.V. stabilised or stable to weather, Heat stabilised or stable to heat, High Flow, Chemical resistant, Improved weld line

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 A-grades should be dried at 150 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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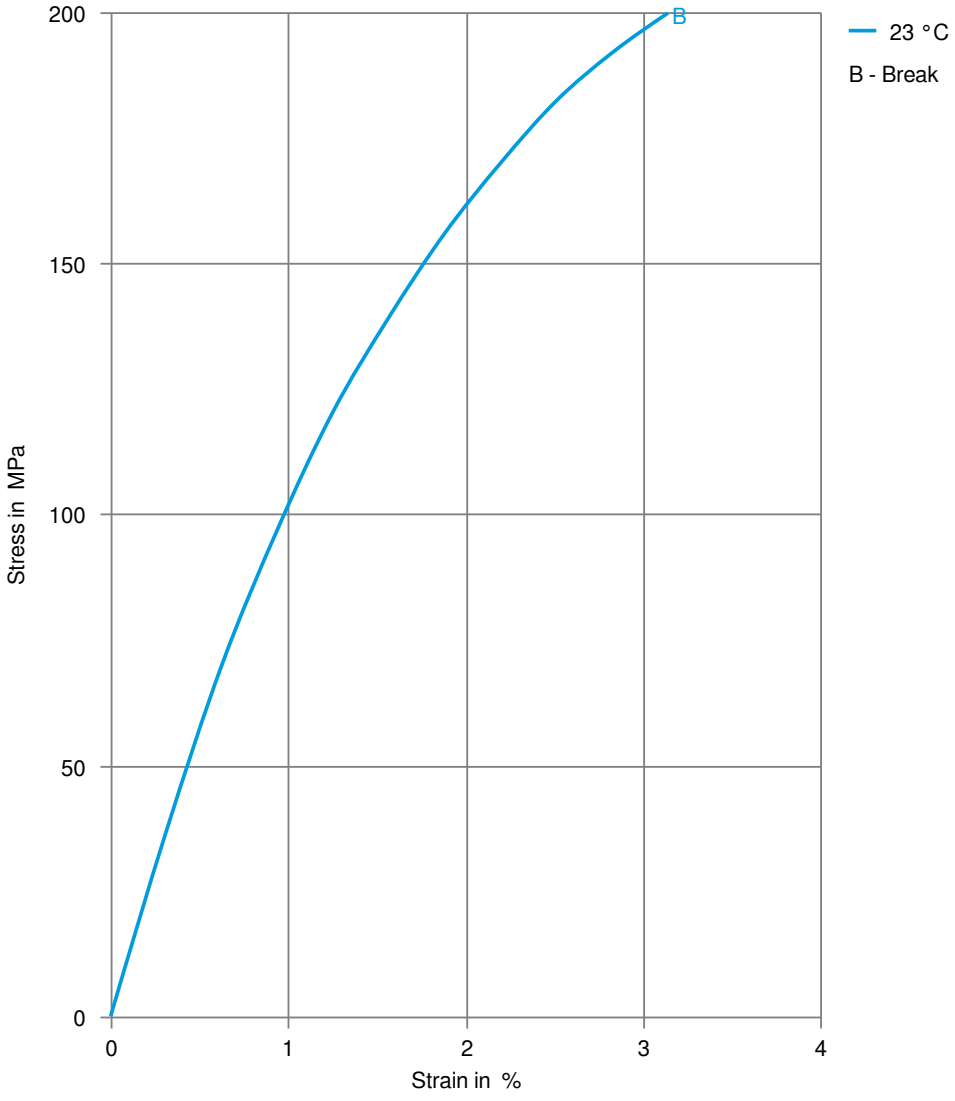
Stress-strain



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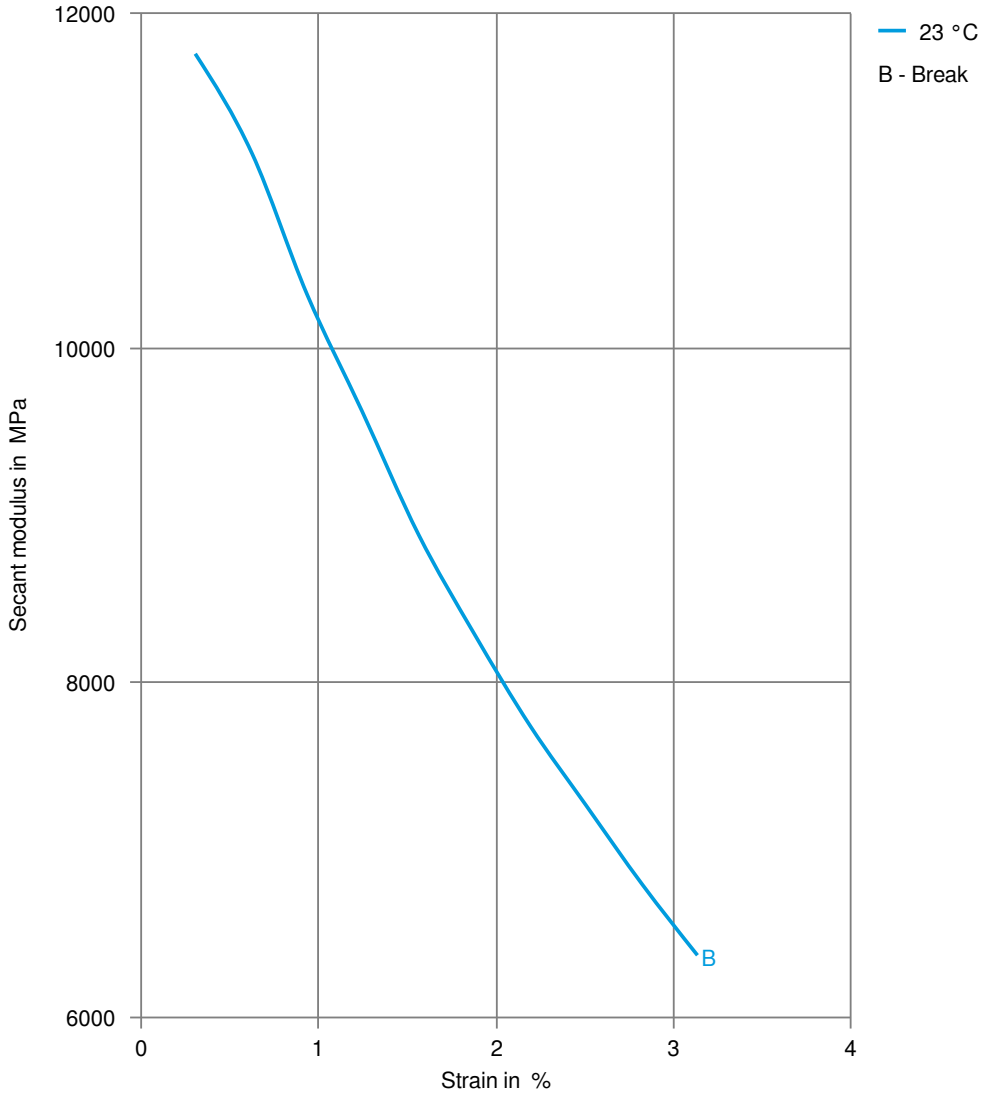
Secant modulus-strain



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