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VECTRA® A515

Liquid Crystal Polymer

Easier flow and slightly improved toughness over A530. Outstanding hydrolytic stability. 15% mineral filled. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural at 0.38mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electrical 130°C, mechanical 130°C. UL = Underwriters Laboratories (USA)

Product information

Resin Identification	LCP-MD15	ISO 1043
Part Marking Code	>LCP-MD15<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.6	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	12000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	190	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	4.8	%	ISO 527-1/-2
Flexural modulus	12000	MPa	ISO 178
Flexural strength	180	MPa	ISO 178
Compressive modulus	9500	MPa	ISO 604
Compressive stress at 1% strain	79.3	MPa	ISO 604
Charpy notched impact strength, 23°C	90	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	60	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	126	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	63		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	185	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	232	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	103	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	149	°C	ISO 306
Vicat softening temperature, 50°C/h 10N	149	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	30	E-6/K	ISO 11359-1/-2

Flammability

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

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Electrical properties

Relative permittivity, 100Hz	3.8		IEC 62631-2-1
Relative permittivity, 1MHz	3.2		IEC 62631-2-1
Dissipation factor, 100Hz	100	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	200	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	40	kV/mm	IEC 60243-1
Comparative tracking index	175		IEC 60112
Arc Resistance	145	s	UL 746B

Physical/Other properties

Density	1520	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

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Mineral Filler
Special characteristics	Flame retardant, Light stabilised or stable to light, Specialty appearance, Hydrolysis resistant, High Flow

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

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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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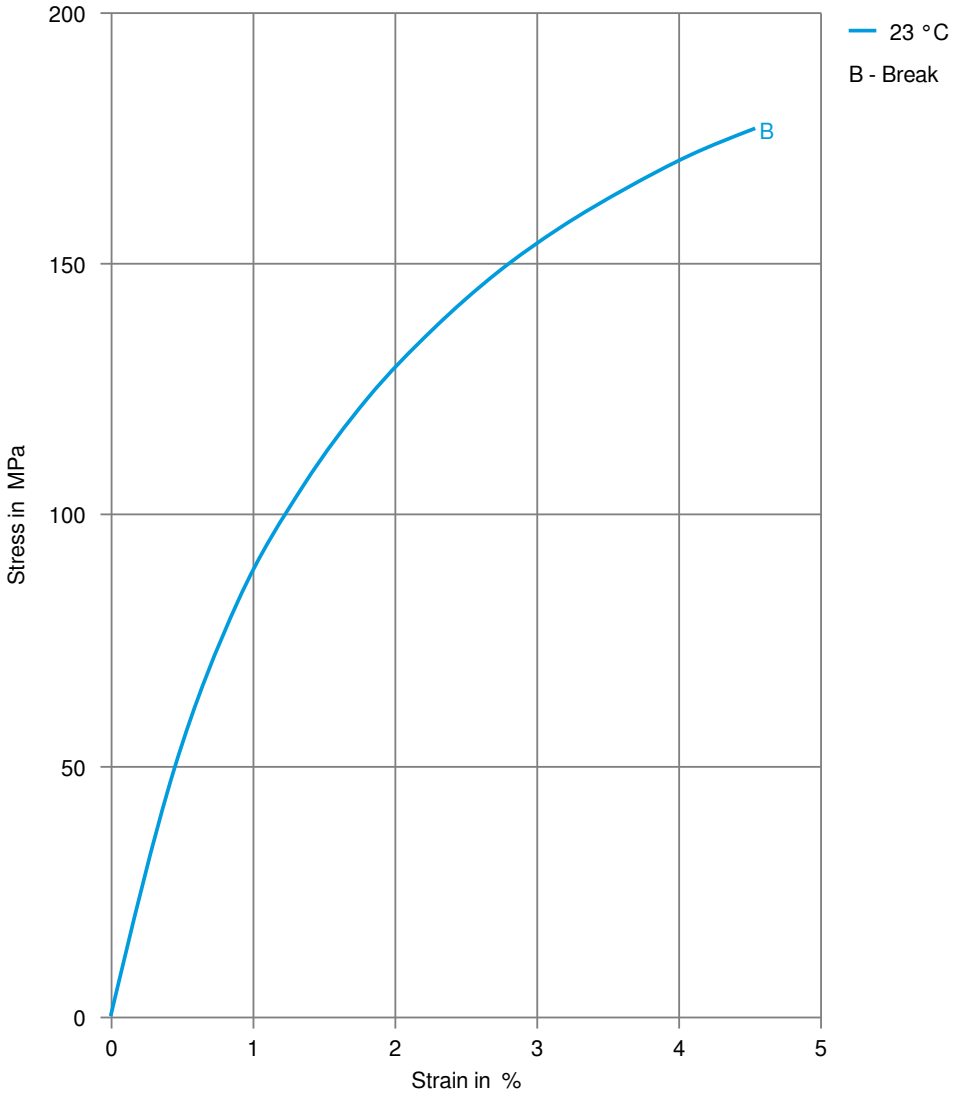
Stress-strain



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Secant modulus-strain