Celanese
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VECTRA® E130i

Liquid Crystal Polymer

High temperature capability, easiest flow. Suitable where very thin walls are required. Used for broad range of SMT applications, with minimal dimensional change. 30% glass filled. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural and black at .2mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electrical 240 °C, mechanical 240 °C at 0.75mm. UL = Underwriters Laboratories (USA)

Product information

Resin Identification	LCP-GF30		ISO 1043
Part Marking Code	>LCP-GF30<		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	16000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	160	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.6	%	ISO 527-1/-2
Flexural modulus	15000	MPa	ISO 178
Flexural strength	220	MPa	ISO 178
Flexural strain at failure	2.2	%	ISO 178
Compressive modulus	14000	MPa	ISO 604
Compressive stress at 1% strain	93	MPa	ISO 604
Charpy impact strength, 23 °C	43	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23 °C	38	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23 °C	27	kJ/m²	ISO 180/1A
Izod impact strength, 23 °C	31	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	71		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	270	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	216	°C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	195	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	7	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	20	E-6/K	ISO 11359-1/-2
Thermal conductivity, flow	0.348[OT]	W/(m K)	ISO 22007-2
Specific heat capacity solid	1810[OT]	J/(kg K)	ISO 22007-4

[OT]: One time tested

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Flammability

Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Oxygen index	45	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	4		IEC 62631-2-1
Relative permittivity, 1000Hz	4.3[OT]		IEC 62631-2-1
Relative permittivity, 1MHz	3.9[OT]		IEC 62631-2-1
Dissipation factor, 100Hz	100	E-4	IEC 62631-2-1
Dissipation factor, 1000Hz	0	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	360[OT]	E-4	IEC 62631-2-1
Dissipation factor, 1GHz	60	E-4	IEC 61189-2-721
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E14	Ohm	IEC 62631-3-2
Electric strength	32	kV/mm	IEC 60243-1
Comparative tracking index	175		IEC 60112
Arc Resistance	140	s	UL 746B
Relative permittivity, printed circuits and boards, 2.5 GHz	3.9[OT, 1]		IEC 61189-2-721
Relative permittivity, printed circuits and boards, 10 GHz	3.8[2]		IEC 61189-2-721
Dissipation factor, printed circuits and boards, 2.5 GHz	60[OT, 1]	E-4	IEC 61189-2-721
Dissipation factor, printed circuits and boards, 10 GHz	52[2]	E-4	IEC 61189-2-721

[OT]: One time tested

[1]: Shifted data from 1.9GHz to 2.0GHz for harmonization purpose, only use 'whole' numbers

[2]: SR00077966, Vectra E130i VF3001 Naturalsample thickness 0.5 mm

Physical/Other properties

Humidity absorption, 2mm	0.03	%	Sim. to ISO 62
Density	1610	kg/m³	ISO 1183
Bulk density	710	kg/m³	ISO 60

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
Ejection temperature	255	°C

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Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Special characteristics	Light stabilised or stable to light, Heat stabilised or stable to heat, High Flow, 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).

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Bosch	N28 BN35-X001	Black
Bosch	N28 BN35-X001	Natural
Hyundai	MS941-03 Type P-2 FRVO	
Stellantis	B62 0300 / 61/223E/221M/C4	01378_20_03233

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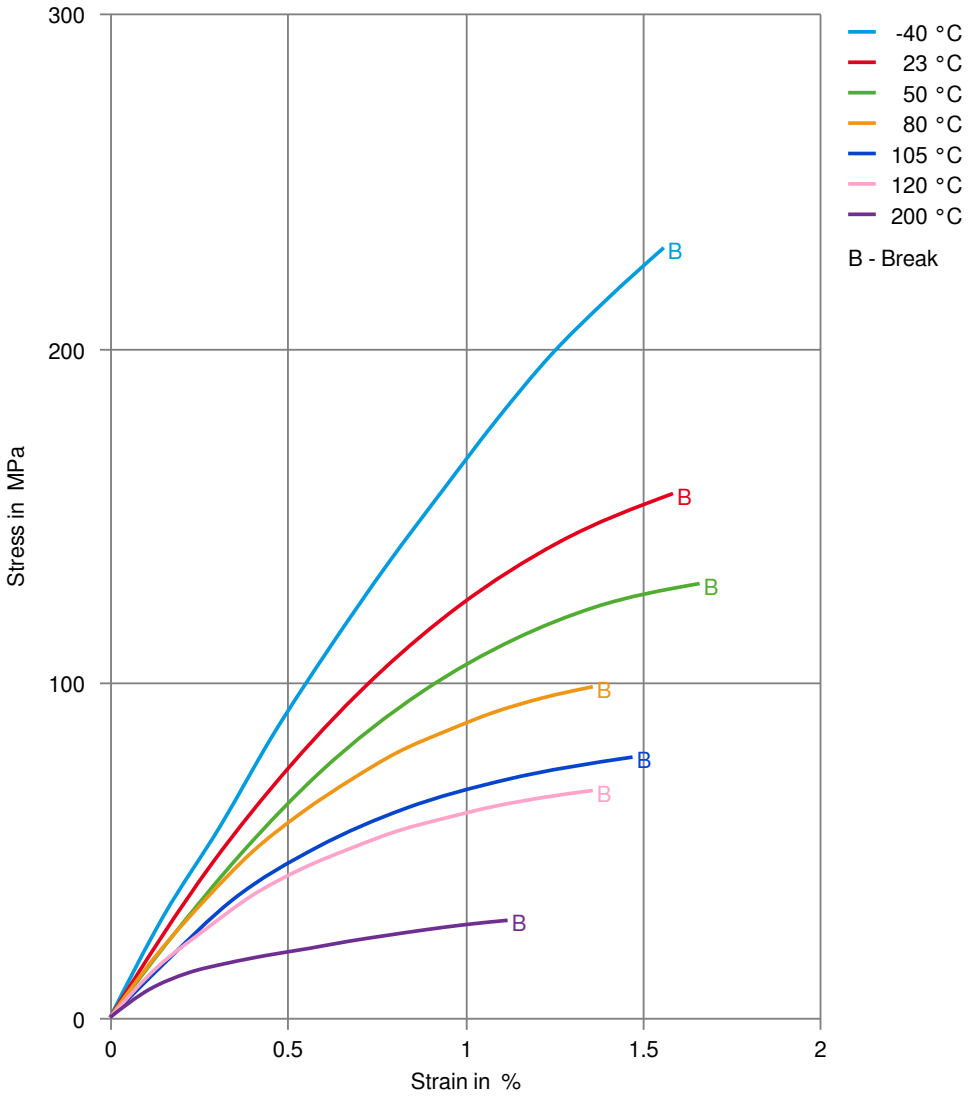
Stress-strain



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Secant modulus-strain