Celanese
The chemistry inside innovation™

VECTRA® A130

Liquid Crystal Polymer

The Standard for the Industry. Excellent balance of properties, including easy flow, easy processing, thermal stability, chemical resistance, mechanical and electrical properties. Suitable for vapor phase surface mount electrical and electronic devices. 30% glass reinforced Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural and black at 0.2mm thickness per UL 94 flame testing, and UL-5VA in natural at 1.5mm. 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-GF30		ISO 1043
Part Marking Code	>LCP-GF30<		ISO 11469

Rheological properties

Molding shrinkage, parallel	0.2	%	ISO 294-4, 2577
Molding shrinkage, normal	0.4	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	2.18E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	27600	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.1	%	ISO 527-1/-2
Flexural modulus	2.23E6	psi	ISO 178
Flexural strength	40600	psi	ISO 178
Compressive modulus	2.1E6	psi	ISO 604
Compressive stress at 1% strain	20000	psi	ISO 604
Tensile creep modulus, 1h	1.83E6	psi	ISO 899-1
Tensile creep modulus, 1000h	1.58E6	psi	ISO 899-1
Charpy notched impact strength, 23°C	20.9	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	14.3	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	13.8	ftlb/in²	ISO 180/1U
Hardness, Rockwell, M-scale	85		ISO 2039-2

Tribological properties

Coefficient of dynamic friction, against steel	0.14		ISO 8295
Coefficient of dynamic friction, against brass	0.14		
Coefficient of dynamic friction, against aluminium	0.14		

Thermal properties

Melting temperature, 10°C/min	536	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	455	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	482	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	374	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	320	°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	0.128	E-4/°F	ISO 11359-1/-2

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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	4.2		IEC 62631-2-1
Relative permittivity, 1MHz	3.7		IEC 62631-2-1
Dissipation factor, 100Hz	160	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
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	787	kV/in	IEC 60243-1
Comparative tracking index	175		IEC 60112
Arc Resistance	140	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.04	%	Sim. to ISO 62
Density	0.0581	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	554	°F
Min. melt temperature	545	°F
Max. melt temperature	563	°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
Ejection temperature	437	°F

Characteristics

Processing	Injection Molding
Special characteristics	Flame retardant, Light stabilized or stable to light, U.V. stabilized or stable to weather, Heat stabilized 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.

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Processing Notes

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.

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.

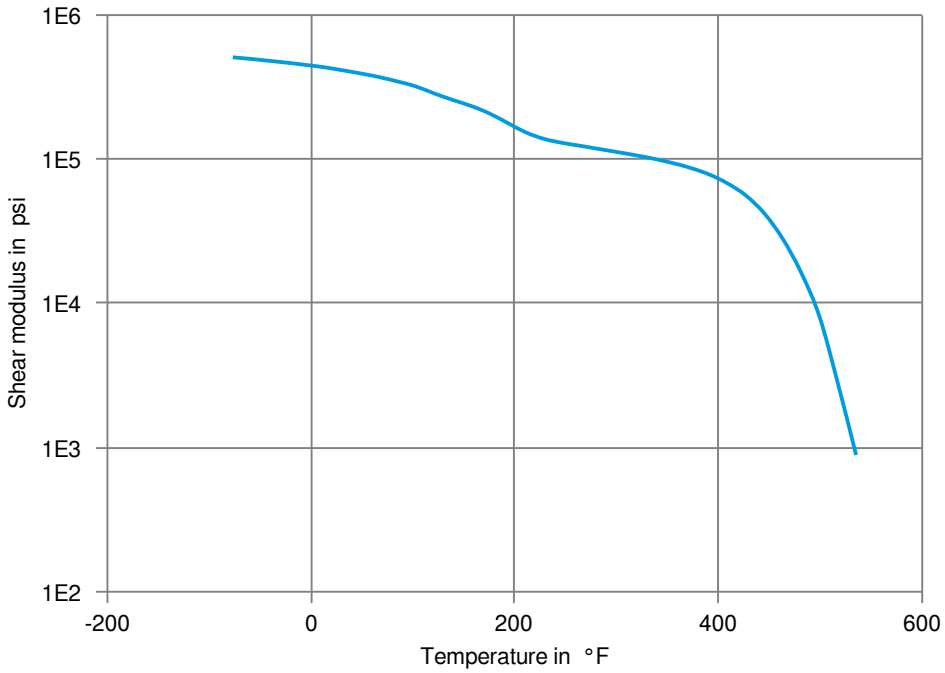
Storage

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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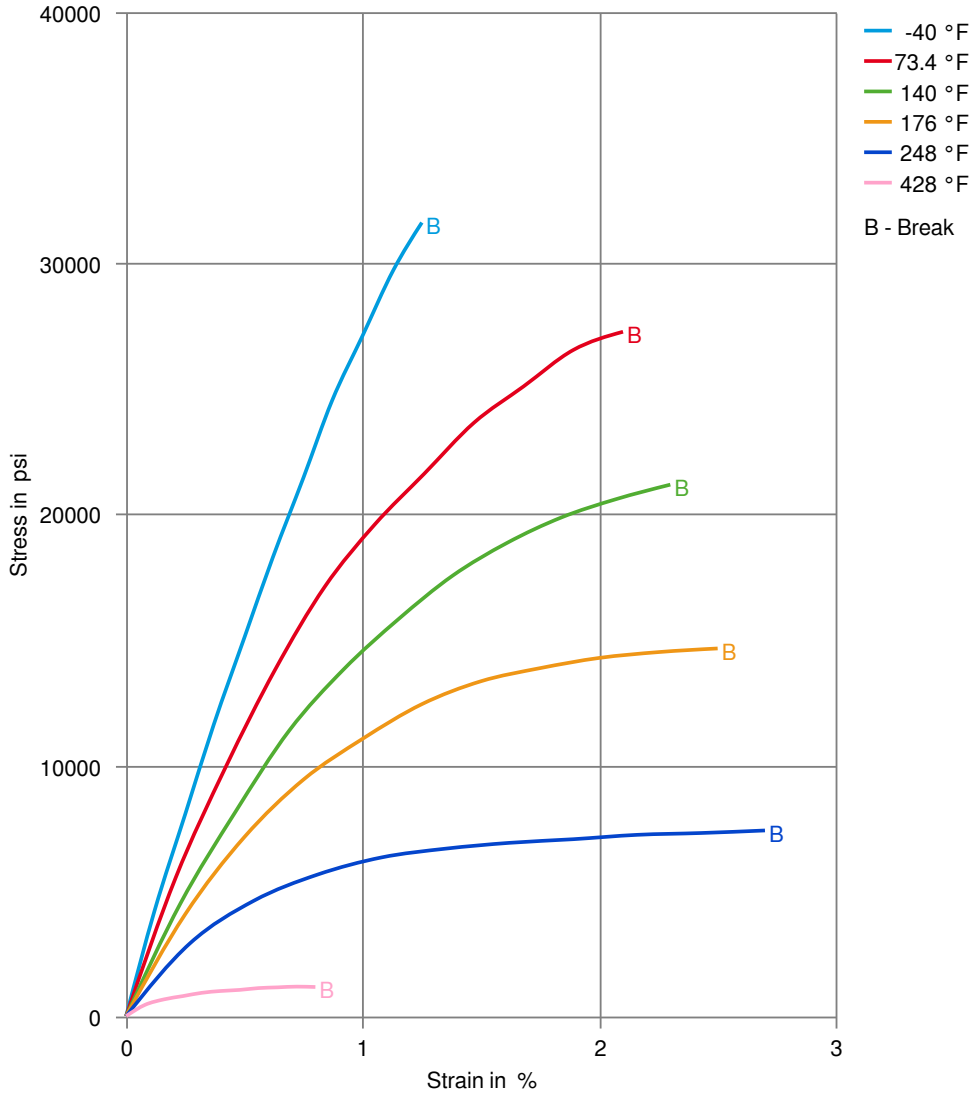
Dynamic Shear modulus-temperature



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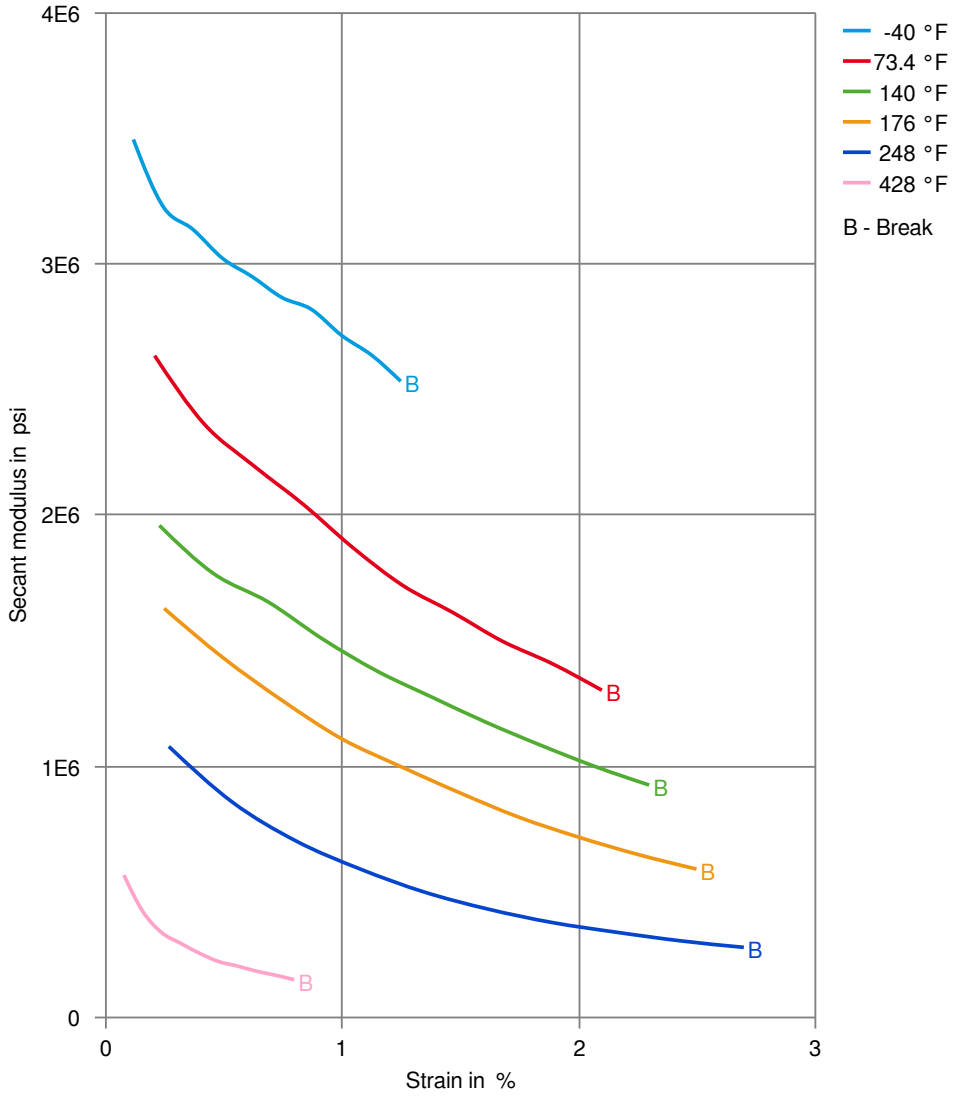
Stress-strain



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Secant modulus-strain



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