Celanese
The chemistry inside innovation™

VECTRA® A950

Liquid Crystal Polymer

Unreinforced Vectra grade suitable for extrusion.
Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant FDA compliant. UL-Listing V-0 in natural and black at 0.42mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electrical 240°C, mechanical 220°C. UL = Underwriters Laboratories (USA)

Product information

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

Rheological properties

Molding shrinkage, parallel	0	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	1.13E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	21500	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	5.7	%	ISO 527-1/-2
Flexural modulus	1.32E6	psi	ISO 178
Flexural strength	22900	psi	ISO 178
Tensile creep modulus, 1h	1.31E6	psi	ISO 899-1
Tensile creep modulus, 1000h	957000	psi	ISO 899-1
Charpy impact strength, 23°C	127	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	25.2	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	45.2	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	45.2	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	120	ftlb/in²	ISO 180/1U
Poisson's ratio	0.488		

Tribological properties

Coefficient of dynamic friction, against steel	0.12		ISO 8295
Coefficient of dynamic friction, against brass	0.12		
Coefficient of dynamic friction, against aluminium	0.12		

Thermal properties

Melting temperature, 10°C/min	536	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	379	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	201	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	293	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	-0.01	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.45	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	35	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	3.2		IEC 62631-2-1
Relative permittivity, 1MHz	3		IEC 62631-2-1
Dissipation factor, 100Hz	159	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	1E14	Ohm	IEC 62631-3-2
Electric strength	1190	kV/in	IEC 60243-1
Comparative tracking index	150		IEC 60112
Comparative tracking index M	group IIIb		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.03	%	Sim. to ISO 62
Water absorption, 2mm	0.06	%	Sim. to ISO 62
Density	0.0505	lb/in³	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	457	°F

Extrusion

Drying Temperature	284 - 320	°F
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.01	%
Melt Temperature Optimum	536	°F
Melt Temperature Range	518 - 572	°F

Characteristics

Processing	Injection Molding, Film Extrusion, Extrusion, Sheet Extrusion
Special characteristics	High Flow

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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.

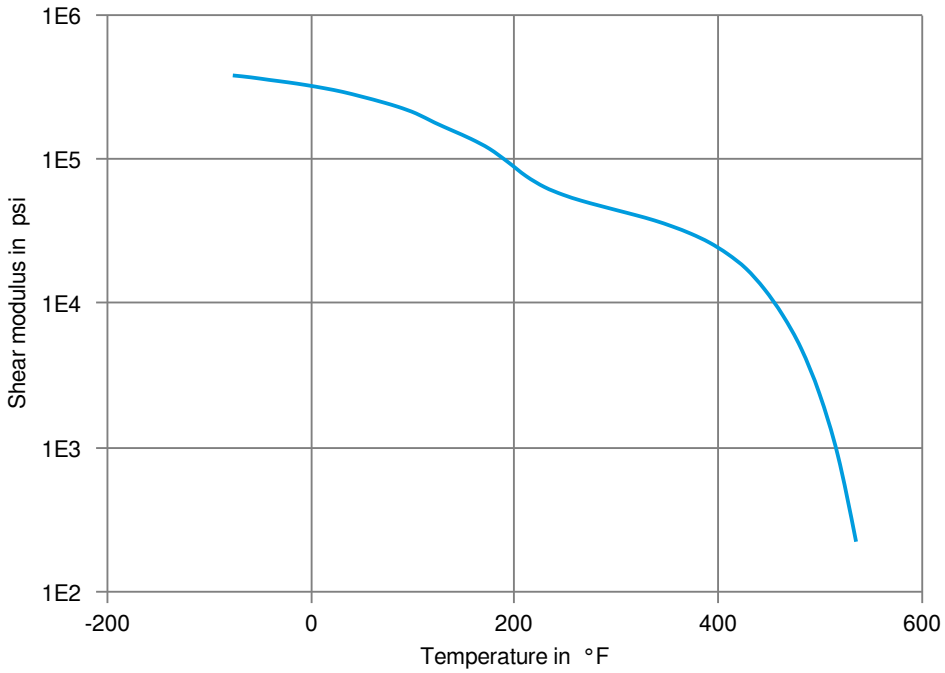
Storage

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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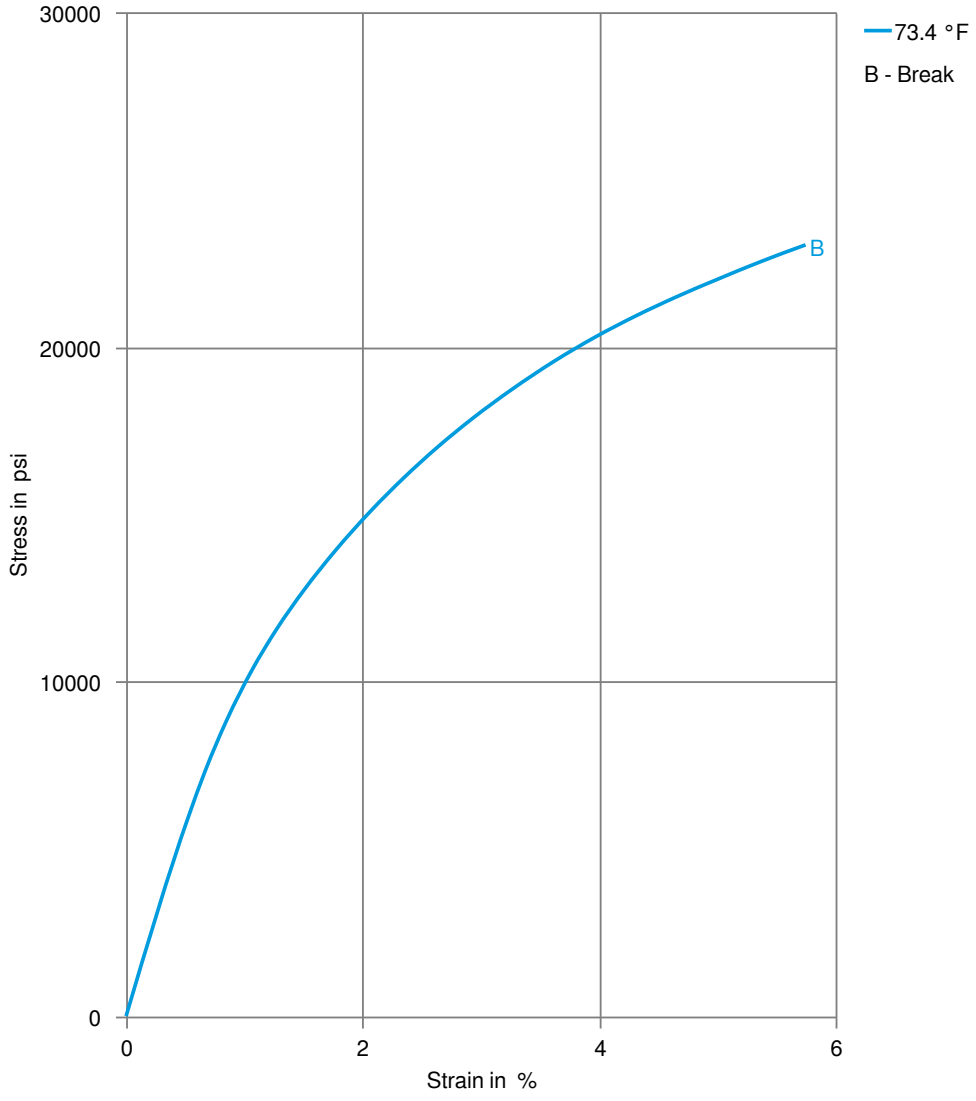
Dynamic Shear modulus-temperature



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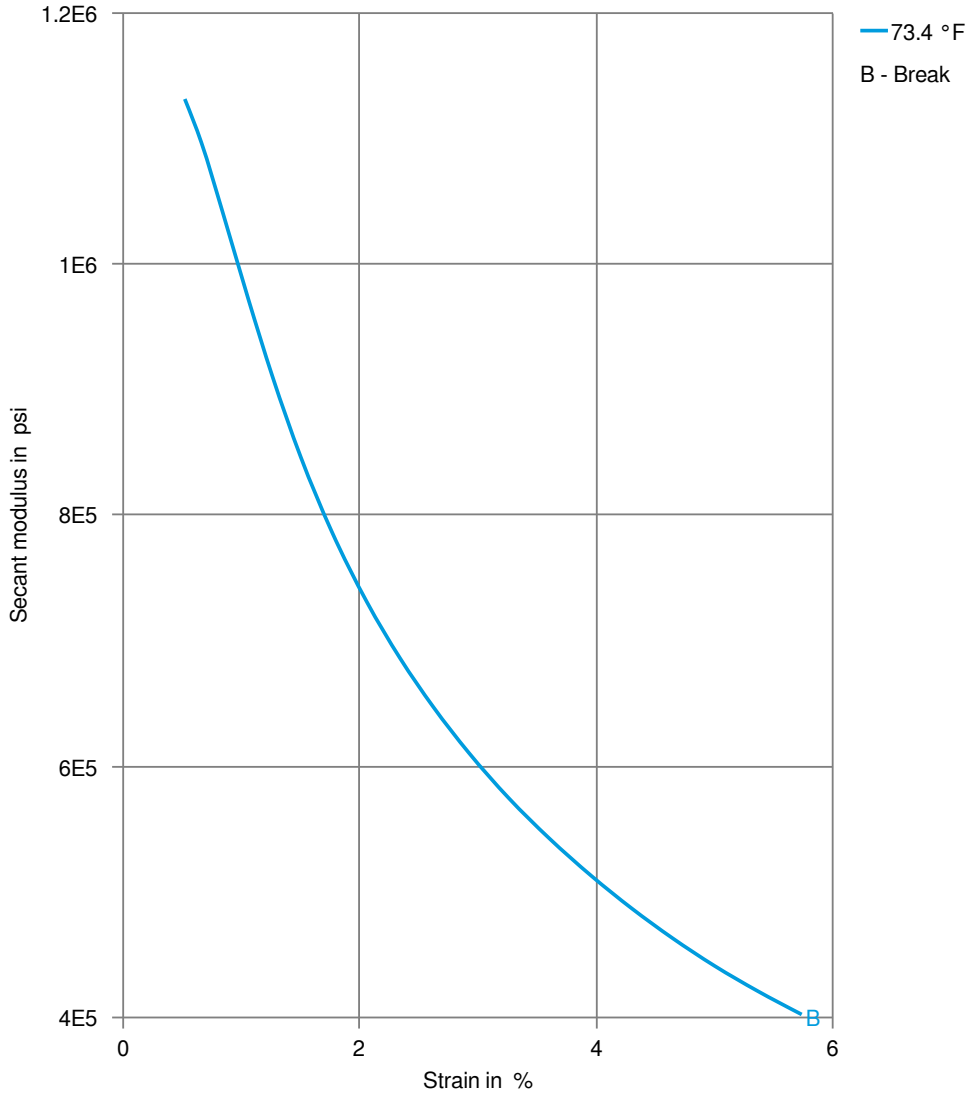
Stress-strain



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Secant modulus-strain



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