Celanese
The chemistry inside innovation™

VECTRA® A625

Liquid Crystal Polymer

Good wear characteristics. 25% graphite filled.
Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 at 0.45mm 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-CD25		ISO 1043
Part Marking Code	>LCP-CD25<		ISO 11469

Rheological properties

Molding shrinkage, parallel	0.1	%	ISO 294-4, 2577
Molding shrinkage, normal	0.5	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	1.31E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	20300	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	5.7	%	ISO 527-1/-2
Flexural modulus	1.52E6	psi	ISO 178
Flexural strength	20300	psi	ISO 178
Compressive modulus	1.31E6	psi	ISO 604
Compressive stress at 1% strain	10500	psi	ISO 604
Tensile creep modulus, 1h	1.42E6	psi	ISO 899-1
Tensile creep modulus, 1000h	1.09E6	psi	ISO 899-1
Charpy impact strength, 23°C	31.9	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	5.23	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	10.5	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	29.5	ftlb/in²	ISO 180/1U
Hardness, Rockwell, M-scale	62		ISO 2039-2

Tribological properties

Coefficient of dynamic friction, against steel	0.15		ISO 8295
Coefficient of dynamic friction, against brass	0.15		
Coefficient of dynamic friction, against aluminium	0.15		

Thermal properties

Melting temperature, 10°C/min	536	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	365	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	437	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	237	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	318	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.05	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.167	E-4/°F	ISO 11359-1/-2
Thermal conductivity, flow	3.68	W/(m K)	ISO 22007-2
Thermal conductivity, crossflow	2.11	W/(m K)	ISO 22007-2
Thermal conductivity, through plane	0.69	W/(m K)	ISO 22007-2

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Effective thermal diffusivity, flow	0.000002	m^2/s	ISO 22007-4
Effective thermal diffusivity, crossflow	0.000001	m^2/s	ISO 22007-4
Effective thermal diffusivity, through plane	3.3E-7	m^2/s	ISO 22007-4
Specific heat capacity of melt	1350	J/(kg K)	ISO 22007-4

Flammability

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

Electrical properties

Relative permittivity, 100Hz	30		IEC 62631-2-1
Relative permittivity, 1MHz	13		IEC 62631-2-1
Relative permittivity, 1GHz	31.8[OT, 1]		IEC 61189-2-721
Relative permittivity, 2GHz	32.6[OT, 2]		IEC 61189-2-721
Dissipation factor, 100Hz	400	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	1500	E-4	IEC 62631-2-1
Dissipation factor, 1GHz	1490[OT, 1]	E-4	IEC 61189-2-721
Dissipation factor, 2GHz	1870[OT, 2]	E-4	IEC 61189-2-721
Volume resistivity	1E14	Ohm.m	IEC 62631-3-1
Surface resistivity	1E11	Ohm	IEC 62631-3-2
Comparative tracking index	200		IEC 60112

[OT]: One time tested

[1]: Black color

[2]: Black color, tested at 1.9GHz

Physical/Other properties

Humidity absorption, 2mm	0.03	%	Sim. to ISO 62
Density	0.0556	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	545	°F
Min. melt temperature	545	°F
Max. melt temperature	554	°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

Automotive

OEM	STANDARD
Continental	TST N 055 72.03-001

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Characteristics

Processing	Injection Molding
Special characteristics	Flame retardant, Light stabilized or stable to light, Low wear / Low friction, 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 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.

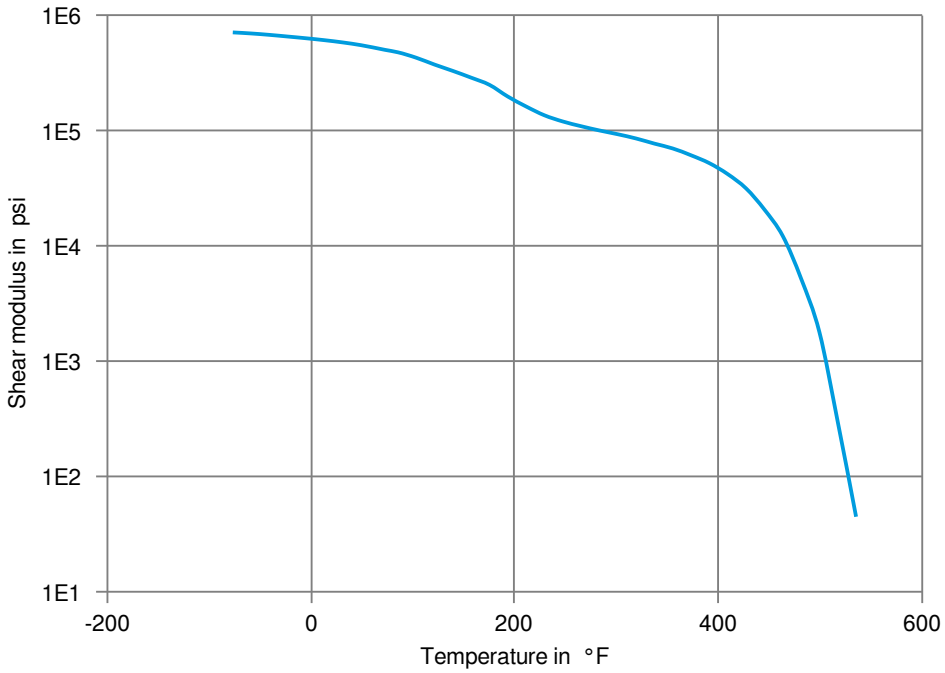
Storage

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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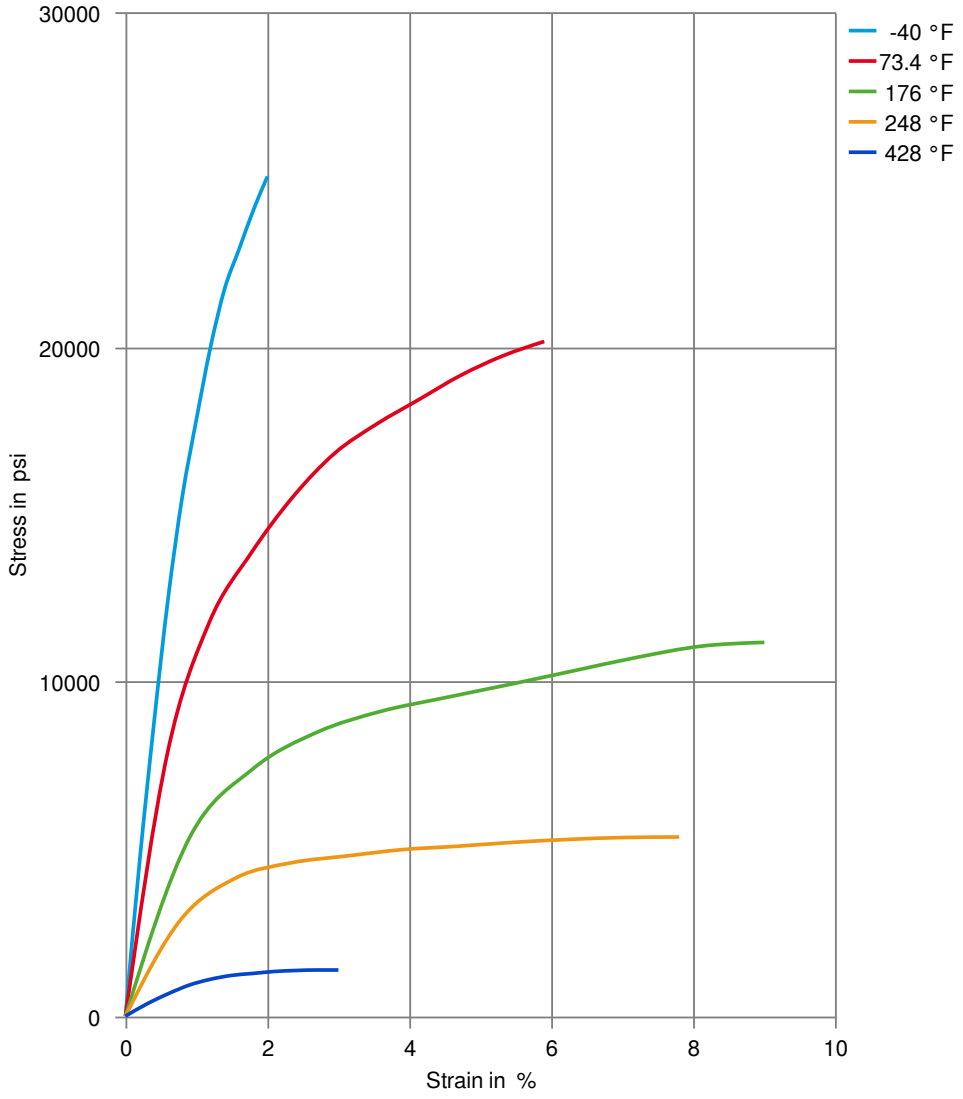
Dynamic Shear modulus-temperature



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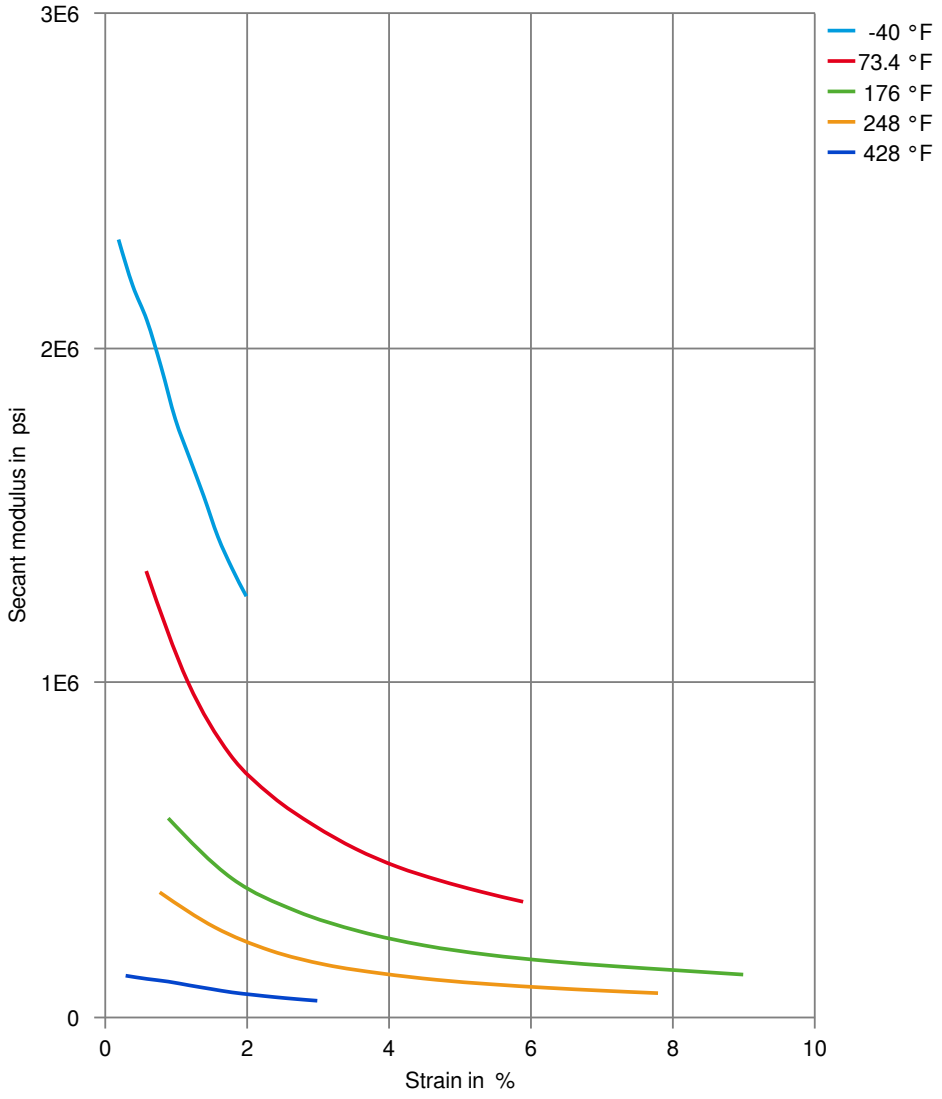
Stress-strain



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Secant modulus-strain



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