Celanese
The chemistry inside innovation™

VECTRA® E540i

Liquid Crystal Polymer

Mineral filled grade with low warp, easy flow and smooth surface appearance. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant. UL-Listing V-0 in natural and black at1.5mm 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-MD40	ISO 1043
Part Marking Code	>LCP-MD40<	ISO 11469

Rheological properties

Molding shrinkage, parallel	0	%	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	14500	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.9	%	ISO 527-1/-2
Flexural modulus	1.45E6	psi	ISO 178
Flexural strength	17400	psi	ISO 178
Compressive stress at 1% strain	7700	psi	ISO 604
Izod notched impact strength, 23°C	2.38	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	16.6	ftlb/in²	ISO 180/1U

Thermal properties

Melting temperature, 10°C/min	635	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	446	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	383	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.06	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.2	E-4/°F	ISO 11359-1/-2
Specific heat capacity solid	1290	J/(kg K)	ISO 22007-4

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	0.0591	in	IEC 60695-11-10
UL recognition	yes		UL 94

Electrical properties

Relative permittivity, 1MHz	3.6		IEC 62631-2-1
Dissipation factor, 1MHz	310	E-4	IEC 62631-2-1
Volume resistivity	1E14	Ohm.m	IEC 62631-3-1
Surface resistivity	1E15	Ohm	IEC 62631-3-2
Electric strength	1170	kV/in	IEC 60243-1
Comparative tracking index	200		IEC 60112

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Physical/Other properties

Humidity absorption, 2mm	0.005	%	Sim. to ISO 62
Water absorption, 2mm	0.008	%	Sim. to ISO 62
Density	0.0628	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	644	°F
Min. melt temperature	635	°F
Max. melt temperature	653	°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	590	°F

Automotive

OEM	STANDARD
Continental	TST N 055 72.03-001
Mercedes-Benz	Lighting bezels

Characteristics

Processing	Injection Molding
Special characteristics	Flame retardant, Heat stabilized or stable to heat, Specialty appearance, High Flow, Low Warpage

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

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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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