

VECTRA® E130i | LCP | Glass Reinforced

Description

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

FDA compliant

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)

Physical properties	Value	Unit	Test Standard
Density	1610	kg/m ³	ISO 1183
Mold shrinkage - parallel	0.1	%	ISO 294-4
Mold shrinkage - normal	0.4	%	ISO 294-4
Humidity absorption (23°C/50%RH)	0.03	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	15000	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	150	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	1.6	%	ISO 527-2/1A
Flexural modulus (23°C)	13500	MPa	ISO 178
Flexural strength (23°C)	220	MPa	ISO 178
Flexural strain @ break	2.2	%	ISO 178
Compressive stress @ 1% strain	93	MPa	ISO 604
Charpy impact strength @ 23°C	43	kJ/m ²	ISO 179/1eU
Charpy notched impact strength @ 23°C	22	kJ/m ²	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	31	kJ/m ²	ISO 180/1U
Notched impact strength (Izod) @ 23°C	20	kJ/m ²	ISO 180/1A
Compressive modulus	14000	MPa	ISO 604
Rockwell hardness	71	M-Scale	ISO 2039-2

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	335	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	276	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	216	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	195	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	0.07	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	0.2	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	45	%	ISO 4589
Flammability at thickness h	V-0	class	UL94

Electrical properties	Value	Unit	Test Standard
Relative permittivity - 100 Hz	4	-	IEC 60250
Relative permittivity - 1 MHz	3.3	-	IEC 60250
Relative permittivity at 2.05 GHz	4.23	-	IPC TM-650 2.5.5.13
Dissipation factor - 100 Hz	100	E-4	IEC 60250
Dissipation factor - 1 MHz	250	E-4	IEC 60250

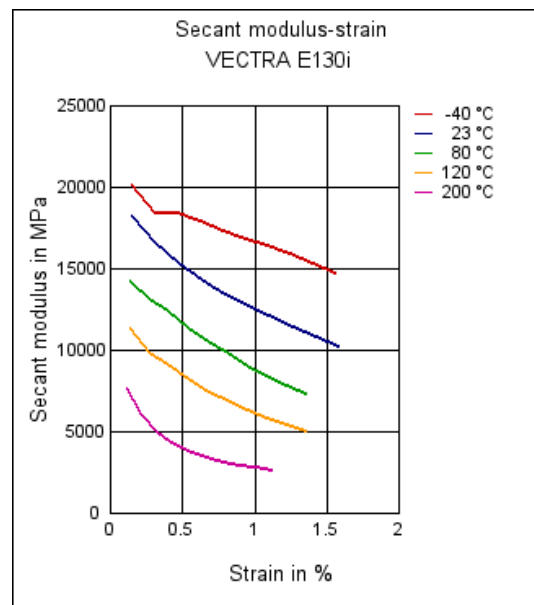
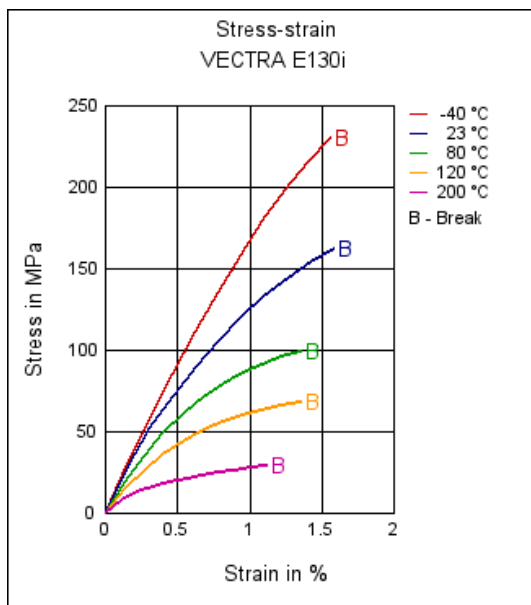
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Electrical properties	Value	Unit	Test Standard
Dissipation factor at 2.05 GHz	60	E-4	IPC TM-650 2.5.5.13
Volume resistivity	1E13	Ohm*m	IEC 60093
Surface resistivity	1E14	Ohm	IEC 60093
Electric strength	32	kV/mm	IEC 60243-1
Comparative tracking index CTI	175	-	IEC 60112
Arc resistance	140	s	Internal

Test specimen production	Value	Unit	Test Standard
Injection molding melt temperature	340	°C	ISO 294
Injection molding mold temperature	100	°C	ISO 294
Injection molding flow front velocity	150	mm/s	ISO 294
Injection molding hold pressure	69	MPa	ISO 294

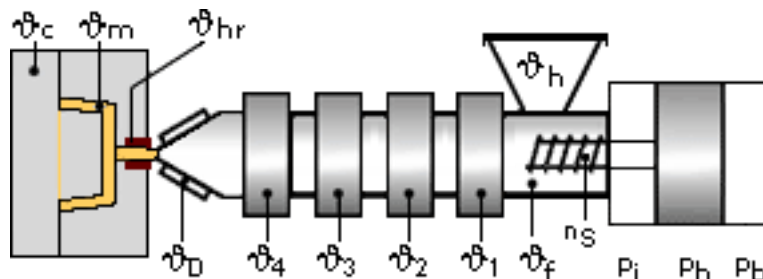
Stress-strain

Secant modulus-strain



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Typical injection moulding processing conditions



Pre Drying:

Necessary low maximum residual moisture content: 0.01%

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 $\leq -40^\circ\text{C}$. The time between drying and processing should be as short as possible.

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 ($\leq 24\text{ h}$).

Drying time: min. 4 / 6 h

Drying temperature: 150 - 170 °C

Temperature:

	$\vartheta_{\text{Manifold}}$	ϑ_{Mold}	ϑ_{Melt}	$\vartheta_{\text{Nozzle}}$	ϑ_{Zone4}	ϑ_{Zone3}	ϑ_{Zone2}	ϑ_{Zone1}	ϑ_{Feed}	$\vartheta_{\text{Hopper}}$
min (°C)	335	80	335	335	330	325	320	315	60	20
max (°C)	345	120	345	345	340	335	330	325	80	30

Pressure:

	Inj press	Hold press	Back pressure
min (bar)	500	500	0
max (bar)	1500	1500	30

Speed:

Injection speed: very fast

Screw speed

Screw diameter (mm)	16	25	40	55	75
Screw speed (RPM)	200	140	80	-	-

Special Info:

When using short metering strokes an accumulator is recommended to get short injection times

Injection Molding

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.

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Vectra LCPs are shear thinning, their melt viscosity decreases quickly as shear rate increases. For parts that are difficult to fill, the mold can increase the injection velocity to improve melt flow.

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