

## VECTRA® S135 | LCP | Glass Reinforced

### Description

35% glass reinforced Vectra grade with very low outgassing, very high heat deflection temperature (335°C) and stiffness. Typical applications are lampsockets, lensholders for beamers, electrical and electronic parts like connectors, relays, switches, coil bobbins and also under the hood applications.

Chemical abbreviation according to ISO 1043-1 : LCP

Inherently flame retardant

UL-Listing V-0 in natural at 0.28mm thickness per UL 94 flame testing.

Relative-Temperature-Index (RTI) according to UL 746B: electrical 130°C, mechanical 130°C.

UL = Underwriters Laboratories (USA)

Physical properties	Value	Unit	Test Standard
Density	<b>1670</b>	kg/m <sup>3</sup>	ISO 1183
Mold shrinkage - parallel	<b>0.4</b>	%	ISO 294-4
Mold shrinkage - normal	<b>0.6</b>	%	ISO 294-4

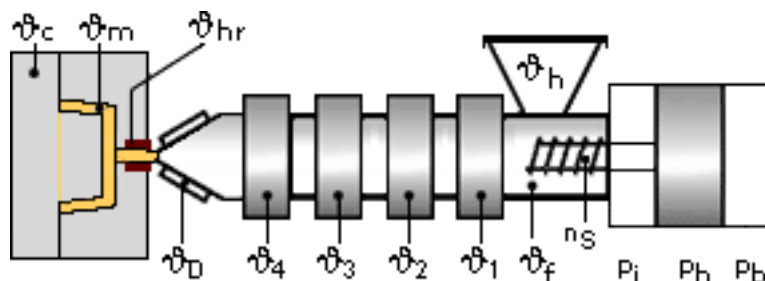
Mechanical properties	Value	Unit	Test Standard
Tensile stress at break (5mm/min)	<b>140</b>	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	<b>1.3</b>	%	ISO 527-2/1A
Flexural modulus (23°C)	<b>14500</b>	MPa	ISO 178
Flexural strength (23°C)	<b>230</b>	MPa	ISO 178
Flexural strain @ break	<b>2</b>	%	ISO 178
Charpy notched impact strength @ 23°C	<b>12</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	<b>14</b>	kJ/m <sup>2</sup>	ISO 180/1U
Notched impact strength (Izod) @ 23°C	<b>12.0</b>	kJ/m <sup>2</sup>	ISO 180/1A

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	<b>350</b>	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	<b>340</b>	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	<b>267</b>	°C	ISO 75-1/-2
Coeff.of linear therm. expansion (parallel)	<b>0.01</b>	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	<b>0.23</b>	E-4/°C	ISO 11359-2
Flammability at thickness h	<b>V-0</b>	class	UL94

Electrical properties	Value	Unit	Test Standard
Relative permittivity - 1 MHz	<b>3.5</b>	-	IEC 60250
Dissipation factor - 1 MHz	<b>90</b>	E-4	IEC 60250
Volume resistivity	<b>1E15</b>	Ohm*m	IEC 60093
Surface resistivity	<b>1E17</b>	Ohm	IEC 60093
Electric strength	<b>37</b>	kV/mm	IEC 60243-1

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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 ( $\leq 24$  h).

**Drying time: 6 h**

**Drying temperature: 150 - 170 °C**

#### Temperature:

	$\varnothing$ Manifold	$\varnothing$ Mold	$\varnothing$ Melt	$\varnothing$ Nozzle	$\varnothing$ Zone4	$\varnothing$ Zone3	$\varnothing$ Zone2	$\varnothing$ Zone1	$\varnothing$ Feed	$\varnothing$ Hopper
min (°C)	360	80	370	370	365	360	355	350	60	20
max (°C)	370	120	380	380	375	370	365	360	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

	16	25	40	55	75
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:  $\frac{1}{2}$  feed,  $\frac{1}{4}$  compression,  $\frac{1}{4}$  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.

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### General Disclaimer

**NOTICE TO USERS:** Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values.

Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use.

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