

## VECTRA® MT@4350 - LCP

### Description

40% mineral, low warp & easy flow with smooth surface appearance

Vectra® MT4350 VF3001 (natural) is a mineral filled high flow LCP grade for injection molding

Vectra® MT4350 VF3001 (natural) is a special grade developed for medical industry applications and complies with:

- Food Contact Substance Notification (FCN) No. 742 of the Food and Drug Administration (FDA) and is listed in the Drug Master File (DMF 8464) and the Device Master File (MAF 315)
- the corresponding EU and national registry regulatory requirements
- biocompatibility in tests corresponding to USP 23 Class VI and/or ISO 10993
- low residual monomers
- no animal products

Mineral filled grade with low warp, easy flow and smooth surface appearance.

Chemical abbreviation according to ISO 1043-1 : LCP

Inherently flame retardant

Physical properties	Value	Unit	Test Standard
Density	1740	kg/m <sup>3</sup>	ISO 1183
Molding shrinkage, parallel (flow)	0	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	0.5	%	ISO 294-4, 2577

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	10000	MPa	ISO 527-1, -2
Tensile stress at break, 5mm/min	100	MPa	ISO 527-1, -2
Tensile strain at break, 5mm/min	3	%	ISO 527-1, -2
Flexural modulus, 23°C	11000	MPa	ISO 178
Flexural strength, 23°C	125	MPa	ISO 178
Charpy notched impact strength, 23°C	5	kJ/m <sup>2</sup>	ISO 179/1eA
Izod impact notched, 23°C	4	kJ/m <sup>2</sup>	ISO 180/1A
Izod impact unnotched, 23°C	35	kJ/m <sup>2</sup>	ISO 180/1U

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	335	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	230	°C	ISO 75-1, -2
Coeff. of linear therm expansion, parallel	0.1	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	0.36	E-4/°C	ISO 11359-2
Flammability at thickness h	V-0	class	UL 94
thickness tested (h)	1.50	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Dielectric constant (Dk), 1MHz	3.6	-	IEC 60250
Dissipation factor, 1MHz	310	E-4	IEC 60250
Volume resistivity, 23°C	1E14	Ohm*m	IEC 62631-3-1
Surface resistivity, 23°C	1E15	Ohm	IEC 62631-3-2
Electric strength, 23°C (AC)	46	kV/mm	IEC 60243-1
Comparative tracking index	PLC 3	-	UL 746

### Typical injection moulding processing conditions

Pre Drying	Value	Unit
Necessary low maximum residual moisture content	0.01	%
Drying time	4 - 6	h
Drying temperature	170	°C

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Temperature	Value	Unit
Hopper temperature	20 - 30	°C
Feeding zone temperature	60 - 80	°C
Zone1 temperature	315 - 325	°C
Zone2 temperature	320 - 330	°C
Zone3 temperature	325 - 335	°C
Zone4 temperature	330 - 340	°C
Nozzle temperature	335 - 345	°C
Melt temperature	335 - 360	°C
Mold temperature	80 - 120	°C
Hot runner temperature	335 - 345	°C

Pressure	Value	Unit
Injection pressure	500 - 1500	bar
Hold pressure	500 - 1500	bar
Back pressure max.	30	bar

Speed	Value
Injection speed	very fast

Screw Speed	Value	Unit
Screw speed diameter, 16mm	200	RPM
Screw speed diameter, 25mm	140	RPM
Screw speed diameter, 40mm	80	RPM

### Other text information

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

#### Longer pre-drying times/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 ( $\leq 24$  h).

#### 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.

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.

#### 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 LCP MT4310 and MT4350 should be dried at  $150^{\circ}\text{C}$  for a minimum of 6 hours or at  $170^{\circ}\text{C}$  for a minimum of 4 hours in a desiccant dryer.

### Characteristics

**Product Categories**                      Medical technology